

SRI International

July 15, 2010

Feeding Your Kids: Research Design



Prepared for:

Mr. Carey White
Chief Financial Officer and Chief Technology Officer
Club One, Inc.
555 Market Street, 13th Floor
San Francisco, CA 94105

Submitted by:

Dr. Dana Petersen
Dr. Janet Brigham
Ms. Kristen Rouspil

SRI Project No. P19314



333 Ravenswood Avenue • Menlo Park, California 94025-3493 • 650.859.2000 • www.sri.com

RESEARCH DESIGN

Introduction

Feeding Your Kids, developed by Club One as part of the Clinton Global Health Initiative, is an innovative, Internet-based behavior change intervention offered at no cost to caregivers who are interested in improving their own and their children's eating habits. The program provides information and suggestions for feasible, simple ways that parents and other primary caregivers (hereafter referred to as *caregivers*) can model healthful eating habits while encouraging children to adopt more healthful habits as well. Feeding Your Kids is not a weight-loss program, but instead is designed to change caregivers' behaviors such that newly adopted behaviors lead to lifelong improvements in children's nutrition and dietary practices, thus reducing the overall prevalence of childhood overweight and obesity.

The hectic pace of many families' lives and the inhospitable environment in which caregivers must make food and feeding choices (e.g., abundance of fast, prepackaged, and high-calorie foods with unclear nutrition labeling) drives even the best-intentioned caregivers to tolerate less than desirable eating habits. Providing an inexpensive and effective intervention that supports children's nutrition for a large number of caregivers is possible through Feeding Your Kids. Because the cost of administering the Feeding Your Kids program is low, the potential reach of the program is large, and the possible health benefits are numerous, it is important to study the effectiveness of Feeding Your Kids.

In this report, we describe the background and significance of today's childhood poor nutrition, overweight, and obesity crisis and more fully describe the Feeding Your Kids program. We then propose a multimethod research design that will provide useful information about the ways in which users of the program react to the program's design and content. The design also provides a method for statistically evaluating the effectiveness of the program with a randomized wait-list control trial study.

Background

Nutritional surveillance in the United States suggests that many children may be eating a less-than-healthy diet that fails to meet nutritional recommendations (Taylor, Evers, & Mc Kenna, 2005). They are eating too much sugar and saturated fat and too little fruit, vegetables, and milk products (Lino, Basiotis, Gerrior, & Carlson, 2002; Enns, Mickle, & Goldman, 2003).

Furthermore, the availability of processed foods has skyrocketed, portion sizes have increased, and children eat fewer meals at home with their families—all compounding children's difficulty in eating healthful diets (Variyam & Smith, 2010). Unhealthful eating habits during childhood may interfere with optimal growth and development and set the stage for poor eating habits in later life (Taylor, Evers, & Mc Kenna, 2005). Unhealthful eating habits are inextricably linked to the current childhood overweight and obesity problem.

Childhood overweight and obesity prevalence rates have nearly doubled during the past three decades (Faith, Scanlon, Birch, & Sherry, 2004). According to the 2007–08 National Health and Nutrition Examination Survey, approximately 17% of children ages 2 to 19 years are obese (Centers for Disease Control and Prevention, 2010a). Overweight and obese children are at elevated risk for physical and psychological health problems including Type 2 diabetes, dyslipidemia, and hypertension, as well as negative self-esteem, stress, depression, and social discrimination (Centers for Disease Control and Prevention, 2010c; Dehghan, Akhtar-Danesh, & Merchant, 2005; Faith, et al., 2004; National Research Council Committee on Diet and Health, 1998; U.S. Department of Health and Human Services, 1988). These elevated risks are costly both for the individual and for society (Centers for Disease Control and Prevention, 2009; Lobstein, Baur, & Uauy, 2004).

Although the mechanisms of childhood overweight and obesity are not fully understood, researchers agree that they have multiple causes, including genetic and behavioral factors. Recent increases in prevalence, however, suggest that children’s environments play a larger role than thought in the past. Therefore, it is critical to identify environmental factors that can be positively modified for prevention or treatment. Some of the environmental factors implicated in overweight and obesity are the lack of safe outdoor spaces for physical activity, restricted access to affordable and healthful foods, poor institutional child care and school policies about food and physical activity, an unhealthy food environment at home, and inappropriate caregiver behavior and feeding practices (Centers for Disease Control and Prevention, 2010b). Given that children’s dietary practices evolve within the context of the family and home, the food environment at home and caregiver feeding practices are important and particularly mutable environmental factors (Faith, et al., 2004).

Studies suggest that interventions aimed at preventing childhood overweight and obesity should involve caregivers as forces for change in their children’s health (Barlow & Dietz, 1998; Lindsay, Sussner, Kim, & Gortmaker, 2006). The Expert Committee for Obesity Evaluation and Treatment identified caregivers’ food-related skills and behaviors as key components of successful interventions (Barlow & Dietz, 1998). Caregivers’ feeding attitudes and practices determine which foods children are offered and control the timing, size, and context of eating (Birch & Fisher, 1995; Birch, Fisher, Grimm-Thomas, Sawyer, & Johnson, 2001). Caregivers’ food preferences, eating behavior, and attitudes about food, along with the quantity and variety of foods in the home establish a food environment (Golan, Weizman, Apter, & Fainaru, 1998; Lindsay, et al., 2006). Additionally, caregivers’ feeding practices are related to children’s food preferences, consumption patterns and habits, and ability to self-regulate food intake—all of which may influence overweight or obesity (Birch & Fisher, 1995). Caregivers need to become educated so they can promote healthful nutrition for the family; making a lifestyle change in eating is a solid step toward improved lifelong health.

Although much research has been done on how caregivers shape their children’s eating habits, far less research has examined the effectiveness of programs aimed at changing children’s behavior by improving caregivers’ behavior (Lindsay, et al., 2006). In one such study, Golan et al. (1998) found that children ages 6 to 11 achieved greater weight reduction when caregivers were the agents of change, compared with when children themselves were the agents of change (Golan, et al., 1998). This finding suggests that programs that target caregiver practices could be effective in improving children’s dietary practices in the short run and combating childhood overweight and obesity in the long run (Golan & Crow, 2004; Golan, et al., 1998). Feeding Your

Kids is an example of such a program. It provides information and suggestions for feasible, simple ways caregivers can model healthful eating habits while nudging children toward more healthful nutrition. Studying the effectiveness of low-cost population-based strategies to prevent and reduce childhood obesity, such as Feeding Your Kids, should be a public health priority.

Feeding Your Kids Program Description

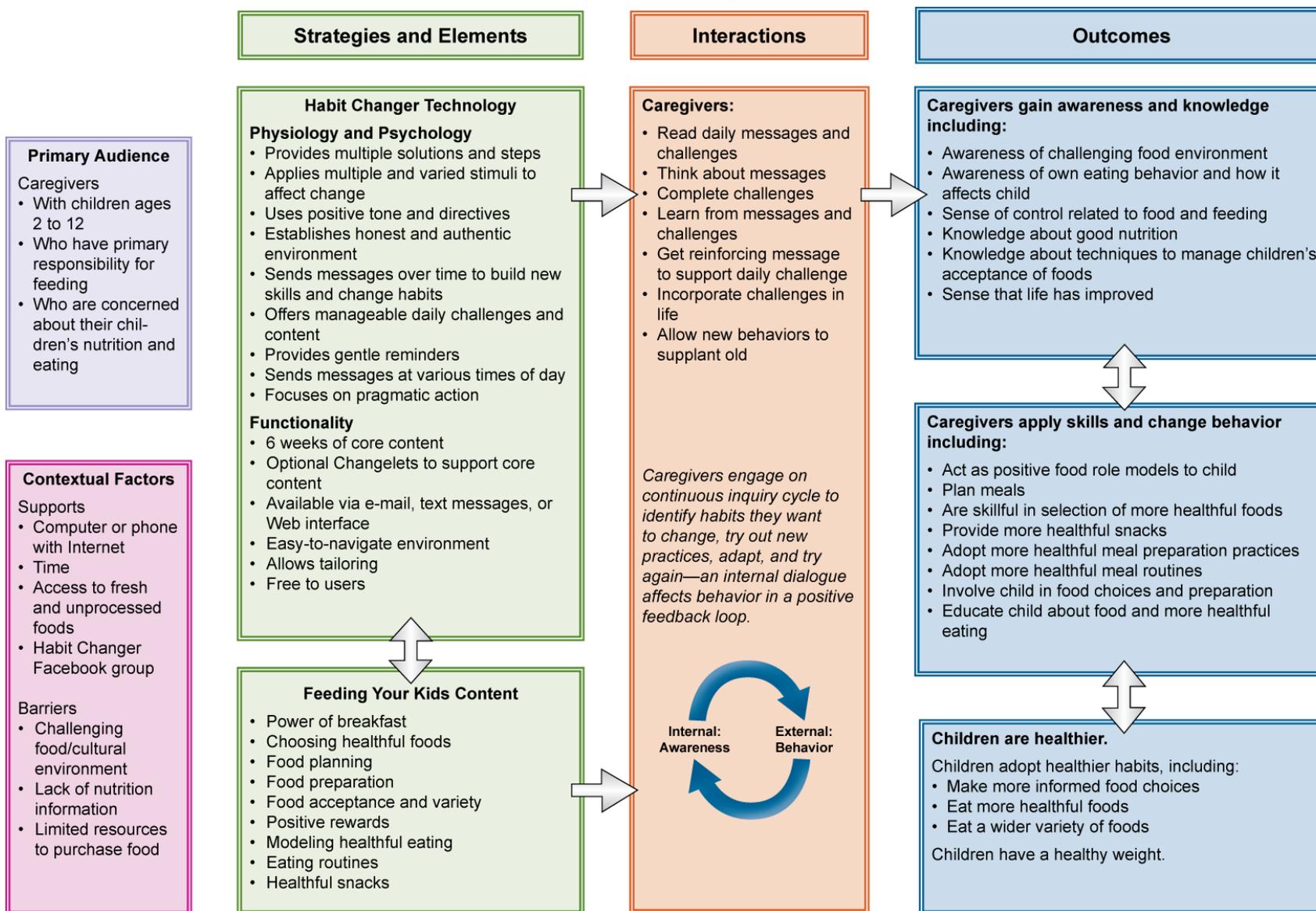
Feeding Your Kids, developed by Club One as part of the Clinton Global Health Initiative, is an innovative, Internet-based behavior change intervention to help caregivers make small changes in choosing healthful foods and developing healthful eating habits. The program works directly with caregivers to affect change in children's eating by providing basic, everyday guidance in decisionmaking about feeding children and teaching good eating habits. Feeding Your Kids is not a weight-loss program, but instead is designed to change caregivers' behaviors such that newly adopted behaviors lead to lifelong improvements in children's nutrition and dietary practices, thereby reducing population-level prevalence of childhood overweight and obesity. As part of Club One's commitment to the Clinton Global Health initiative, Feeding Your Kids is offered free to interested caregivers.

The Feeding Your Kids logic model is presented in Exhibit 1. A logic model is a graphic illustration of how program components are expected to produce desired outcomes. The logic model suggests that caregivers who are interested in their child's nutrition and eating will enroll in the program, actively engage with the program, and learn ways to positively model good food habits. This chain of events eventually will lead to more children eating more healthful foods and maintaining a healthy weight.

As shown in the logic model, Feeding Your Kids works with caregivers who are primarily responsible for preparing food and have an interest in the nutrition and eating habits of their children ages 2 through 12. The program uses Habit Changer, an Internet-based application that prompts caregivers daily for 42 days with information about food and nutrition, ideas about shopping and meal preparation, resources, and inspiration. Messages are delivered by e-mail, text messages, or a web interface. The Habit Changer technology underlying Feeding Your Kids is based on theories of cognitive behavior, mindfulness, and neuroplasticity (Eng & Burciaga, 2009). The technology provides multiple solutions and steps for each issue raised during the program, sends positive messages at varied times throughout the day, offers manageable and engaging challenges, focuses on pragmatic action, and sends information incrementally to build skills and eventually change habits.

Feeding Your Kids includes 6 weeks of core content and four optional 5-day Changelets. Each day, caregivers receive one challenge message and one support message. The daily challenges persuade caregivers to look at food decisions from a new perspective and prompt them to act accordingly. The support messages encourage caregivers to try the challenge and connect them to additional resources. Users of Feeding Your Kids can choose to activate up to four Changelets. Each optional Changelet offers users 5 additional days of daily challenges and support messages on a specific Feeding Your Kids topic, allowing caregivers to examine topics of particular interest in more detail.

Exhibit 1 Feeding Your Kids Logic Model



Feeding Your Kids' content topics include the following elements, listed with examples:

- Power of breakfast (eating breakfast daily and adding protein)
- Choosing healthful foods (reading food labels, understanding the challenging food environment, and selecting healthful foods for home preparation and when eating out)
- Food planning and preparation (making menus and shopping lists, incorporating fresh ingredients into meals, and involving children in food preparation)
- Food acceptance and variety (offering new foods, making food appealing, and understanding children's food acceptance mechanisms)
- Positive rewards (encouragement, affirmations to reinforce healthful eating)
- Modeling healthful eating (eliminating one's own unhealthy habits)
- Eating routines (eating meals together)
- Healthful snacks (reduction in prepackaged, high-fat, and sugary options)

As shown in the Interactions column of the logic model, the daily messages are intended to expose habits, make caregivers aware of their current behaviors, and help them identify desirable changes, one concrete step at a time. Feeding Your Kids was created specifically to help caregivers recognize and address negative habits and to work to replace them with more healthful behavior. The information that caregivers gain through the program is expected to affect their awareness, which in turn is thought to affect their behavior—and the cycle continues as a positive feedback process. Desired behavior changes include becoming a positive food role model for children, planning and preparing more healthful foods, adopting more healthful meal preparation practices and routines, involving children in food choices and preparation, and educating children about food and healthful eating.

The logic model also suggests that when caregivers gain awareness, knowledge, and skills, changes will also take place in their children. As a result of their caregivers' successful participation in Feeding Your Kids, children will make more informed food choices, eat a wider variety of more healthful foods, and will be on the road toward maintaining or achieving a healthful weight.

Research Design

Effective interventions that support children's nutrition and that can be inexpensively delivered to large number of caregivers so that they that can build a strong and healthful foundation for their children's lifelong eating habits are needed. Because the cost of administering Feeding Your Kids is low, the potential reach of the program is large, and the possible health benefits may be numerous, it is important to evaluate the effectiveness of Feeding Your Kids. We propose a multimethod evaluation approach that includes four consecutive phases, or options. Although not all four phases are required, we believe that implementing each phase sequentially will increase the strength of the program and study design, and thus, the probability of attaining a favorable outcome. Phase 1: Process Study (Option A) will provide information and feedback to potentially strengthen the program design. Phase 2: Usability Study (Option B) will gather feedback on users' reactions to data collection tools and allow for revision and improvement of tools. Phase 3: Pilot Study (Option C) will include a small-scale pilot study conducted before the

main research, to validate the feasibility of the design and to document preliminary outcomes. Phase 4: Outcomes Study (Option D) will include a randomized control trial that will provide information about the impact of the program on participating caregivers and their children (i.e., an outcomes study). In the sections below, we describe these four study phases. An overview of the four phases, in the form of a consolidated timeline, is provided at the end of the report in Exhibit 7.

Phase 1: Process Study (Option A)

Process studies often are overlooked when organizations believe that their programs are already running according to plan or when resources are limited. Experience suggests, however, that undergoing a process study helps to strengthen programs, improves program content, and builds a stronger foundation for later, more labor- and cost-intensive outcomes studies.

A process study provides useful information about the ways in which users of the program, in this case caregivers who participate in Feeding Your Kids, react to the program's content and design. A process study strengthens a program, improves content, and builds a stronger foundation for later outcomes studies. Depending on what is learned, process information can be used to validate assumptions about the program's operation, guide minor revisions to the content, direct larger redesign/development efforts, and support the development of marketing materials.

Using the Feeding Your Kids logic model as a guide, the research team will identify best practices and potential areas for strengthening Feeding Your Kids, using information from (1) interviews with recently enrolled current users about the utility and impact of the program, (2) interviews with non-completers about reasons why they did not complete the program, and (3) analysis of historical usage data (e.g., proportion of messages opened, rate of opening, and other patterns of usage). Individual interviews are preferable to focus groups when learning about individual experiences. The research team will maintain the confidentiality of all interview respondents; confidentiality will encourage respondents to be candid about their perceptions. Below, we describe the tasks to be completed during the process study, including obtaining Human Subjects approval, conducting interviews, analyzing data, and preparing the final deliverable. A timeline is also provided.

Human subjects approval

By federal mandate, all studies using human participants must be reviewed and approved by an Institutional Review Board (IRB), which evaluates the study protocol to determine whether it meets requirements for Human Subjects approval. All four phases of the study described in this document must be reviewed by an IRB prior to implementation.

It is likely that all four phases of this study will be considered exempt from the requirement for informed consent because each participant's identity will be anonymous to the researchers and will not be connected to the participant's responses, and the responses present no risk of harm to the participant. However, if informed consent is determined to be required, the investigators will follow established procedures for obtaining informed consent from study participants.

Interviews with current participants

The research team will conduct semi structured recorded telephone interviews with 10 recently enrolled current participants. Each participant consenting to the recorded interview will be

interviewed twice, once after completion of week 3 of the program, and once after 6 weeks or at completion of the program if he or she activated any of the optional Changelets. Interviewers will ask participants about the following: aspects of the program that they liked and disliked; participants' level of comfort using the online program, e-mail, and text messages; and participants' expectations, outcomes, and suggestions for improving the program. Interviewers also will ask caregivers how they experienced the Interactions as listed in the program logic model (Exhibit 1). Interviewees' usage data, if available, also will be discussed. These interviews will allow the research team to assess components of the logic model, including participants' reflections on Habit Changer, clarity and usefulness of content (including Changelets), interactions with the program, and outcomes. Participants will receive a \$10 stipend for each interview they complete.

Interviews with non-completing participants

The research team also will conduct a semi structured telephone interview with each of 10 participants who quit the program before completion and who consent to a recorded interview. An interviewer will ask these former participants about the following: aspects of the program that the former participants liked and disliked; their level of comfort using the online program, e-mail, and text messages; reasons for discontinuing use of their program (for example, information presented was too basic or too complex, or was not relevant for the age of their child); and how their expectations could have been met better. Interviewees' usage data, if available, will also be discussed. These interviews will allow the research team to identify potential improvements in Feeding Your Kids. Each participant interviewed will receive a \$10 stipend.

Analysis of usage data

The research team will work with Club One to conduct an analysis of historical usage data to identify patterns of past participants' engagement and disengagement with the program. The research team will request usage data on the number of challenge and support messages opened, number of web resource links clicked, and the number of Changelets activated for the most recent 200 users of the program. The research team will analyze the frequency and rate of opening e-mails to identify patterns of message usage. Information gleaned from the analysis of usage data will be used to identify common points of drop-off or disuse and areas that could benefit from program changes designed to keep participants engaged.

Process study deliverable

The research team will prepare a report on the process study findings. The report will include a summary of key findings and recommendations for strengthening the program based on interview data and analysis of historical usage data.

Process study timeline

Exhibit 2 presents the proposed timeline for the process study, assuming a start date of Time 0, when funding for the project is acquired.

**Exhibit 2
Process Study Timeline**

Tasks	Months				
	1	2	3	4	5
Kickoff meeting	•				
Obtain IRB approval	•				
Request usage data	•				
Draft, review and revise interview protocols	•	•			
Recruit participants		•	•		
Conduct interviews		•	•	•	
Analyze data				•	
Submit preliminary findings and meet with Club One to discuss					•
Revise and submit final report					•

Phase 2: Usability Study (Option B)

It is important to review data collection tools with a small sample of potential study respondents and analyze the usability of the data collection tools before fully implementing any study. The purpose of a usability study is to gather feedback on users' reactions to data collection tools and to use this information to make refinements. Most usability studies gather both subjective and objective information in the context of realistic scenarios-of-use, as well as descriptions of any problems that participants encounter as they use the data collection tools. Subjective information including participants' opinions or attitudes concerning the clarity and usability of the data collection tools will be gathered. Objective information including how long it took participants to complete the data collection tools and the number of items skipped also will be collected.

The usability study will include the following tasks: obtaining Human Subjects approval, conducting interviews, analyzing data, and preparing the final deliverable.

Human subjects approval

As stated previously, all studies using human participants must be reviewed and approved by an Institutional Review Board (IRB), which evaluates the study protocol to determine whether it meets requirements for Human Subjects approval.

It is likely that the usability study will be considered exempt from the requirement for informed consent because the researchers will not connect to the participant's identifying information to his or her responses, and the responses present no risk of harm to the participant. However, if informed consent is determined to be required, the investigators will follow established procedures for obtaining informed consent from study participants.

Interviews

To conduct the proposed usability study, we will ask 15 caregivers interested in participating in Feeding Your Kids to complete the draft screening and baseline/follow-up questionnaire data collection tools. To replicate the study scenario as closely as possible, caregivers will complete the tools in an online format. We will then follow up, by telephone, with each of the 15 caregivers to solicit feedback and discuss their experience using the tools. All caregivers will receive a \$15 stipend for their time.

The data collection tools will be modified as needed based on information from the usability study.

Usability study deliverable

The research team will use information gathered during the usability study to revise and refine the data collection tools. The revised tools will serve as the deliverable.

Usability study timeline

Exhibit 3 presents the proposed timeline for the usability study, assuming a start date of Time 0, when funding for the project is acquired.

Exhibit 3
Usability Study Timeline

Tasks	Months			
	1	2	3	4
Kickoff meeting	•			
Obtain IRB approval	•			
Program screening and data collection tools	•	•		
Recruit participants		•	•	•
Conduct interviews		•	•	•
Analyze data				•
Revise data collection tools				•

Phase 3: Pilot Study (Option C)

A pilot study is a small-scale study conducted before the main research as a way to pretest research instruments, validate measures and analysis methods, and generate preliminary outcomes. There are multiple benefits to conducting a pilot study before implementing the main study. One benefit is that a pilot study can help identify procedural problems before implementation of the larger study and can provide the researchers with ideas or approaches they may not have foreseen. This can increase the likelihood of obtaining clearer findings in a main study. For example, in the pilot study the researcher may try a number of alternative questions (measures) and then select the subset that produce the clearest results for use in the main study.

Additionally, working out procedural issues ahead of time can result in considerable time and cost savings.

We propose to conduct a pre-post pilot study to further test the proposed data collection tools and methods and to document preliminary outcomes. The sections below describe the proposed process for obtaining Human Subjects approval, recruiting participant caregivers, collecting and analyzing data, and delivering findings.

Human subjects approval

All studies using human participants must be reviewed and approved by an Institutional Review Board (IRB), which evaluates the study protocol to determine whether it meets requirements for Human Subjects approval. This pilot study will likely be considered exempt from the requirement for informed consent because each participant's identity will be anonymous to the researchers, research personnel will be able to link the participant's identity to actual responses, and the questions present no risk of harm to the participants. Additionally, the delivery of Feeding Your Kids and the evaluation will be completely automated and will not require any researcher involvement. However, if informed consent is determined to be required, the investigators will follow established procedures for informed consent.

Recruitment

The pilot study will be conducted on a national convenience sample of 100 caregivers. Caregivers will be recruited through national web and print advertisements (e.g., craigslist, *USA Today*). Advertisements will briefly describe the no-cost Feeding Your Kids program, but will not mention the research component. Caregivers who respond to the advertisement and express interest in participating in Feeding Your Kids will be directed to a web page that describes the program and will be asked to complete an online enrollment form that screens for eligibility.

On the basis of the screening, those respondents deemed eligible will be invited to participate in the pilot study. The pilot study invitation will include a description of the study and its purpose, participation requirements, and stipends participants will receive for completing study questionnaires. All caregivers who are deemed eligible will have the option of not participating in the pilot study but still participating in Feeding Your Kids. Respondents who are deemed ineligible for the pilot study will be granted access to Feeding Your Kids and will be excluded from the research.

Caregivers who consent to participate in the pilot study will be asked to complete a baseline questionnaire (described below). After completing it, caregivers will be given immediate access to Feeding Your Kids. Caregivers will be asked to complete a follow-up questionnaire when they complete the Feeding Your Kids program.

To increase response rates and avoid attrition, an incentive structure is imperative. During the pilot study, we will test the effectiveness of a lottery incentive structure. If this structure is found to maintain adequate levels of participation over time, cost saving may be incurred in the later outcomes study. In the case of a lottery structure, all caregivers who complete the baseline questionnaire will be entered into a lottery with a 1 in 25 chance to win \$50 while all caregivers who complete the follow-up questionnaire will be entered into a second lottery with a 1 in 25 chance to win \$100.

Sample size

Recruitment will continue on a rolling basis until 100 caregivers are enrolled in the study. We will attempt to enroll equal numbers of caregivers in three groups—caregivers with children ages 2 through 5, caregivers with children ages 6 through 8, and caregivers with children ages 9 through 12. Conducting a pilot study will provide useful information on the recruitment process and will allow us to make better estimates of recruitment timelines for the later outcomes study.

Data collection and analysis

The data collection methods used in the pilot study will mirror those described below for the treatment group in the outcomes study. The pilot study provides an opportunity to test and explore the proposed data collection methods and the analytical plan and to refine them as necessary before completing the outcomes study.

Pilot study deliverables

A report presenting findings from the pilot study will be prepared for Club One. The report will include outcomes attained by participant caregivers and suggested edits or revisions to the data collection tools and research design for later implementation of the outcomes study.

Pilot study timeline

Exhibit 4 presents a possible timeline for the pilot, assuming a start date of Time 0, when funding for the project is acquired or after completion of the process study. The rate of study recruitment may affect the duration of this phase of the project.

**Exhibit 4
Pilot Study Timeline**

Tasks	Months							
	1	2	3	4	5	6	7	8
Kickoff meeting	•							
Obtain IRB approval	•							
Program screening and data collection tools	•	•						
Develop recruitment materials	•	•						
Recruit participants	•	•	•	•	•			
Establish process for monitoring usage data	•	•	•					
Collect baseline questionnaires			•	•	•			
Collect follow-up questionnaires			•	•	•	•	•	
Analyze data						•	•	
Submit preliminary findings and meet with Club One to discuss								•
Revise and submit final report								•

Phase 4: Outcomes Study (Option D)

The outcomes study will assess the effectiveness of Feeding Your Kids in achieving desired results among participating caregivers and their children. The following questions will be addressed:

- Do caregivers who participate in Feeding Your Kids demonstrate greater increases in awareness and knowledge in targeted areas than caregivers who have not yet participated?
- Do caregivers who participate in Feeding Your Kids demonstrate greater increases in skills and behaviors in targeted areas than caregivers who have not yet participated?
- Do caregivers who participate in Feeding Your Kids report fostering more healthful habits in their children than do caregivers who have not yet participated?
- Are caregivers' demographic characteristics related to increased awareness, knowledge, skills, and behavior?
- Do caregivers of children in different age ranges experience different outcomes?
- Do caregivers who receive Feeding Your Kids information by different modes (i.e., e-mail only vs. e-mail plus text) experience different outcomes?
- Is a threshold (i.e., "dosage") of user participation necessary for caregivers to achieve desired results?

We propose a randomized wait-list control trial in which caregivers are randomly assigned to an immediate treatment condition or to a delayed treatment (control) condition. The following sections describe the proposed process for obtaining Human Subjects approval, recruiting participant caregivers, collecting and analyzing data, and delivering findings.

Human subjects approval

All studies using human participants must be reviewed and approved by an Institutional Review Board (IRB), which evaluates the study protocol to determine whether it meets requirements for Human Subjects approval. The outcomes study will likely be considered exempt from the requirement for informed consent because each participant's identity will be anonymous to the researchers, research personnel will be able to link the participant's identity to actual responses, and the questions present no risk of harm to the participants. Additionally, participants' responses will be encrypted when collected by the programming/hosting service administering the baseline and follow-up questionnaires. As stated previously, the delivery of Feeding Your Kids and the evaluation will be completely automated and will not require any researcher involvement. However, if informed consent is determined to be required, the investigators will follow established procedures for informed consent.

Recruitment

The research will be conducted on a national convenience sample. Caregivers will be recruited through national web and print advertisements (e.g., Craigslist, *USA Today*). Advertisements will briefly describe the no-cost Feeding Your Kids program, but will not mention the research component. Caregivers who respond to the advertisement and express interest in participating in Feeding Your Kids will be directed to a web page that describes the program and will be asked to complete an online enrollment form that screens for eligibility.

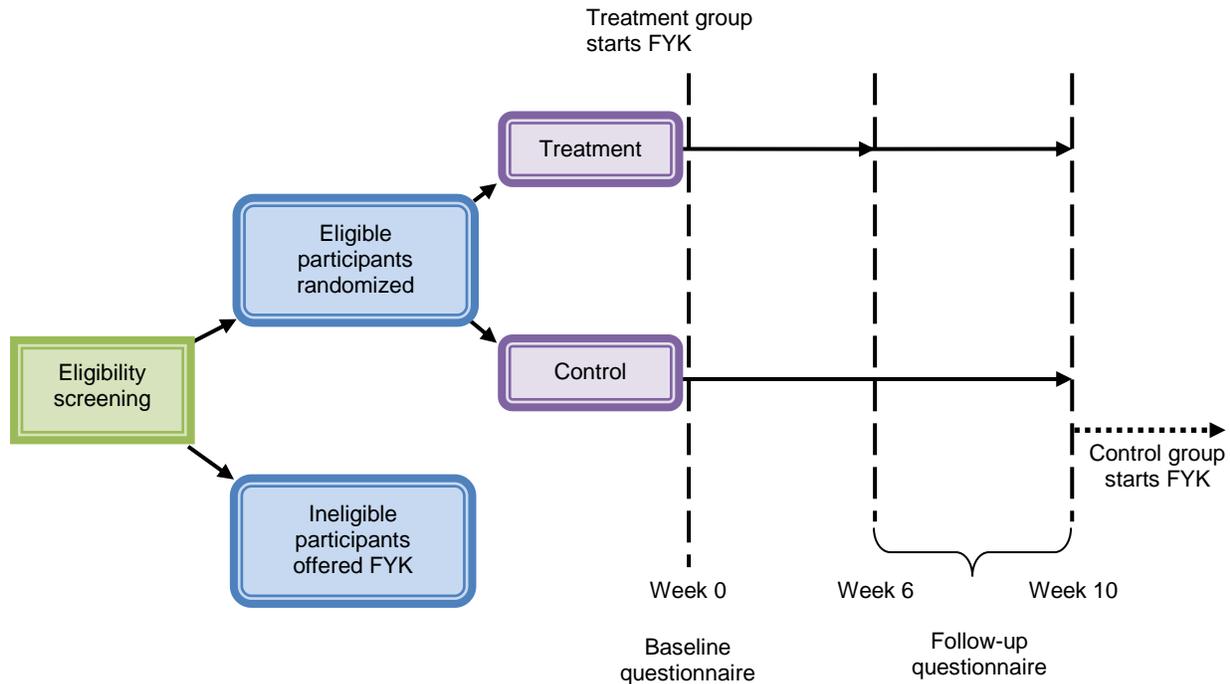
On the basis of the screening, those respondents deemed eligible will be invited to participate in the study. The study invitation will include a description of the study and its purpose, participation requirements, and stipends participants will receive for completing study questionnaires. All caregivers who are deemed eligible will have the option of not participating in the study but still participating in Feeding Your Kids. Respondents who are deemed ineligible for the study will be granted access to Feeding Your Kids and will be excluded from the study.

Caregivers who consent to participate in the study will be randomly assigned to the treatment or wait-list control group and will be asked to complete a baseline questionnaire (described below). After completing the baseline questionnaire, caregivers assigned to the treatment group will be given immediate access to Feeding Your Kids, whereas caregivers in the wait-list control group will be informed that they will be able to start the program in 6 to 10 weeks. At the time of random assignment, a unique research ID number will be assigned to each caregiver for use with all study-related questionnaires.

Each caregiver in the treatment group will be asked to complete an online follow-up questionnaire (described below) at program completion. For many caregivers, this may be at the end of the 6-week core program. For caregivers who elect to participate in one or more optional Changelets, completion of the program could be 5 to 20 days later. All caregivers in the control group will complete the same online follow-up questionnaire.

It will be important for the research team to match the distribution of time between baseline and follow-up questionnaires of the control group to that of the treatment group. This could be done in a number of ways. For example, one approach could be to request that one caregiver from the control group complete the follow-up questionnaire at the same time that each caregiver in the treatment group is requested to complete the follow-up questionnaire. Another approach is to estimate the distribution of time between treatment group baseline and follow-up questionnaires ahead of time and schedule control group questionnaire accordingly. For example, 65% of control group caregivers would be asked to complete the follow-up questionnaire after 6 weeks, 10% after 7 weeks, 10% after 8 weeks, 10% after 9 weeks, and 5% after 10 weeks. Estimations could be based on results from the pilot study. Regardless of approach adopted, caregivers in the control group will be given access to Feeding Your Kids after completion of the follow-up questionnaire. This research design process is illustrated in Exhibit 5.

Exhibit 5
Feeding Your Kids (FYK) Research Design Process



To increase response rates and avoid attrition, caregivers will receive incentives for completing questionnaires. We propose that caregivers receive \$15 for completing the baseline questionnaire and an additional \$20 if they complete a follow-up questionnaire at a later date. If pilot study results suggest that a lottery incentive structure is an effective means to avoid attrition and maintain high response rates, a lottery may be applied during the outcomes study.

Sample size

Recruitment and random assignment to research conditions will continue on a rolling basis until adequate sample sizes are obtained. For thorough evaluation of the effectiveness of the program on parents with children of different ages, the sample must have a sufficient number of caregivers in the treatment and delayed treatment groups with children of various ages. Sampling three groups of 600—600 caregivers with children ages 2 through 5, 600 caregivers with children ages 6 through 8, and 600 caregivers with children ages 9 through 12, for a total of 1,800 caregivers—should provide adequate statistical power to detect significant differences in outcomes between treatment and control groups, and to study interaction effects of having children in different age groups.

Data collection methods

Using the Feeding Your Kids logic model as a guide, the research team will collect information on caregivers' (1) demographics; (2) attitudes, knowledge, skills, and behaviors (i.e., desired outcomes in the logic model); and (3) program usage. Data on caregiver demographics and desired outcomes will be gathered through caregivers' self-administration of eligibility

screenings and questionnaires via a password controlled website. Caregivers will be able to suspend and resume the questionnaire at their convenience within a 1-week time period. Caregivers in both study conditions will complete the same questionnaires. All data will be encoded and collected on secure central servers and later decoded by the survey host. Investigators will have no access to the identity of caregivers. Usage data will be obtained from Club One, using participant ID codes rather than individual identities.

Demographic data. To determine whether attainment of outcomes is associated with particular caregiver characteristics, information on key demographic variables will be collected via the eligibility screening and baseline questionnaire.

The eligibility screening will include questions that will ask caregivers to identify the following:

- The county in which the caregiver lives (only U.S. residents will be eligible)
- Whether the caregiver is the person in the home who has primary responsibility for feeding children (only primary providers will be eligible)
- The age of the caregiver's children (only caregivers of children aged 2 through 12 will be eligible, and only one child per caregiver will be chosen as the target child for the study)
- The caregiver's preference for receiving Feeding Your Kids content (e-mail, e-mail plus text, or no preference)
- The type of e-mail provider the caregiver uses

The baseline questionnaire will collect additional demographic data, such as the following:

- Caregiver's and child's gender(s)
- Caregiver's and child's race/ethnicity
- Caregiver's and child's residence zip code
- Caregiver's and child's ages
- Caregiver's education levels
- Caregiver's employment status

Awareness, knowledge, skills, and behavior data. To determine the extent to which participation in Feeding Your Kids is associated with changes in caregivers' awareness, knowledge, skills, and behavior, as well as changes in their children's eating behaviors, information will be collected via the baseline and follow-up questionnaires.

A bank of possible screening and questionnaire items is included in Appendix A. Most items were adapted from extant instruments that have been psychometrically evaluated for reliability and validity. No single existing instrument covers the unique domains of Feeding Your Kids, although several instruments cover different aspects of the program. The Comprehensive Feeding Practices Questionnaire (based in part on the Child Feeding Questionnaire), for example, covers multiple areas included in Feeding Your Kids, including child control, encouraging balance and variety, environment, using food as a reward, child involvement, modeling healthful behaviors, food restrictions, and teaching about nutrition (Musher-Eizenman & Holub, 2007). The Child Feeding Questionnaire II includes questions measuring caregiver's concern and beliefs about the child's eating patterns and weight (Birch, et al., 2001). The Diet

Habits Questionnaire assesses specific food preparation and food choice practices, including items designed to measure the impact of some Feeding Your Kids program recommendations (Irvine, Ary, Grove, & Gilfillan-Morton, 2004). The Caregiver Feeding Styles Questionnaire covers the limited domain of making sure a child eats (Hughes, Power, Fisher, Mueller, & Nicklas, 2005). The Family Eating and Activity Habits Questionnaire-Revised examines family eating and activities patterns (Golan, et al., 1998).

Specific questions from these instruments were adapted to provide adequate coverage of the Feeding Your Kids domains and desired outcomes. Additionally, the research team drafted additional questions to measure domains and desired outcomes in the Feeding Your Kids logic model that are unique to the program and not included in preexisting surveys in the research literature. The research team also standardized response options wherever necessary for consistency, to make the final questionnaires easier for participants to use (for example, using a rating scale of 1 to 5 throughout, rather than a 1 to 5 scale for some questions and a 0 to 4 scale for others). Where feasible during administration, computerized survey features such as skip-logic will be employed to shorten the questionnaire administration time, and, where appropriate, response options will be randomized or rotated, with *don't know* or *not applicable* options anchored to reduce order effects and minimize bias.

Before conducting the outcomes study, it will be necessary to conduct a brief examination of the data collection tools as described in Phase 2: Usability Study (Option B). In the best-case scenario, the draft screening questions and questionnaires will be examined both through a usability study and a pilot study (Phase 3: Pilot Study (Option 3)), and any necessary modifications will be made *before* the questionnaires are implemented in full during the outcomes study. The final questionnaires should take caregivers no longer than 15 minutes to complete.

Possible items to be included in the Feeding Your Kids eligibility screening and questionnaires are included in Table 1 in the appendix.

Usage data. Feeding Your Kids usage data will be obtained from Club One and analyzed by the research team to identify any threshold (i.e., “dosage”) of effectiveness and to examine caregiver participation in relation to outcomes. The following usage data will be captured for caregivers in the treatment condition:

- Type of messages received (e-mail only or e-mail plus text combined)
- Number of e-mail messages opened
- Number of supplementary resource web links clicked
- Number of Changelets activated
- Percentage of total days the user opened messages

We may also adapt measures of participant engagement, or program usage data, from those incorporated in a study by Franklin et al. (2006) of an e-mail message campaign to promote healthful behaviors (Franklin, Rosenbaum, Carey, & Roizen, 2006).

Analytic strategy

The research team will examine the extent to which participation in Feeding Your Kids produces desired changes in caregivers and target children. First, the research team will determine whether

the treatment and control groups were equivalent at baseline, through comparison of demographic and baseline data. Following that, statistical regression methods will be applied to examine changes reported between baseline and follow-up in both study groups. Any differences between the treatment and the wait-list control group will be examined, controlling for any baseline differences. Measures of program usage will be included in the regression model so that the extent of participation can be considered in relation to outcomes.

Outcomes study deliverables

A report presenting findings from the outcomes study will be prepared for Club One, and a manuscript suitable for submission to a peer-reviewed journal will be prepared at Club One's discretion.

Outcomes study timeline

Exhibit 6 presents a possible timeline for the outcomes study, assuming a start date of Time 0, when funding for the project is acquired or after completion of the process study. The rate of study recruitment may affect the duration of this phase of the overall project.

**Exhibit 6
Outcomes Study Timeline**

Tasks	Months																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Kickoff meeting	•																	
Project updates			•			•			•			•			•			•
Obtain IRB approval	•	•																
Finalize questionnaires	•	•	•															
Program screening and data collection tools		•	•															
Develop recruitment materials		•	•	•														
Recruit participants				•	•	•	•	•	•	•	•	•						
Establish process for monitoring usage data		•	•	•														
Collect baseline questionnaires				•	•	•	•	•	•	•	•	•	•					
Collect follow-up questionnaires				•	•	•	•	•	•	•	•	•	•	•	•			
Analyze data														•	•	•	•	
Submit preliminary findings and discuss with Club One																		•
Revise and submit final report																		•

**Exhibit 7
Consecutive 4-Phase Study Timeline**

Tasks	Months																	
	1	2	3	4	5 ¹	6	7	8	9	10	11	12	13	14	15	16	17	
Kickoff meeting	×					✓				*								
Obtain IRB approval	×					✓				*								
Request usage data	×																	
Draft, review and revise interview protocols	×	×																
Recruit participants ²		×	×				✓	✓	✓		*	*	*	*				
Conduct interviews		×	×	×			✓	✓	✓									
Analyze data				×					✓							*	*	
Program screening and data collection tools						✓	✓			*	*							
Revise data collection tools									✓									
Develop recruitment materials										*	*							
Establish process for monitoring usage data										*	*	*						
Collect baseline questionnaires												*	*	*				
Collect follow-up questionnaires												*	*	*	*	*		
Submit preliminary findings and meet with Club one to discuss					×													*
Revise and submit final report					×													*

NOTE: × = process study; ✓ = usability study; * = pilot study; ● = outcomes study.

¹ Depending on findings from the process study, it may be necessary to put the evaluation on hold for a short bit while Club One responds to results and revises or modifies Feeding Your Kids program content as appropriate.

² Overall timeline will be affected by rate of recruitment.

**Exhibit 7
Consecutive 4-Phase Study Timeline (concluded)**

Tasks	Months																	
	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Kickoff meeting	•																	
Project updates			•			•			•			•			•			•
Obtain IRB approval	•	•																
Finalize questionnaires	•	•	•															
Program screening and data collection tools		•	•															
Develop recruitment materials		•	•	•														
Recruit participants				•	•	•	•	•	•	•	•	•						
Establish process for monitoring usage data		•	•	•														
Collect baseline questionnaires				•	•	•	•	•	•	•	•	•	•					
Collect follow-up questionnaires				•	•	•	•	•	•	•	•	•	•	•	•			
Analyze data														•	•	•	•	
Submit preliminary findings and discuss with Club One																	•	
Revise and submit final report																		•

NOTE: ✕ = process study; ✓ = usability study; * = pilot study; • = outcomes study.

¹ Depending on findings from the process study, it may be necessary to put the evaluation on hold for a short bit while Club One responds to results and revises or modifies Feeding Your Kids program content as appropriate.

² Overall timeline will be affected by rate of recruitment.

REFERENCES

- Barlow, S., & Dietz, W. (1998). Obesity evaluation and treatment: Expert committee recommendations. *Pediatrics*, *102*(3), 1-11.
- Birch, L., & Fisher, J. (1995). Appetite and eating behavior in children. In G. Gaull (Ed.), *The pediatric clinics of North America: Pediatric nutrition* (pp. 931-953). Philadelphia: W. B. Saunders Company.
- Birch, L., Fisher, J., Grimm-Thomas, C., Sawyer, R., & Johnson, S. (2001). Confirmatory factor analysis of the Child Feeding Questionnaire: A measure of parental attitudes, beliefs and practices about child feeding and obesity proneness. *Appetite*, *36*, 210-210.
- Centers for Disease Control and Prevention. (2009). Study Estimates Medical Cost of Obesity May Be As High as \$147 Billion Annually. Retrieved May 20, 2010, from <http://www.cdc.gov/media/pressrel/2009/r090727.htm>
- Centers for Disease Control and Prevention. (2010a). Childhood Overweight and Obesity. Retrieved May 20, 2010, from <http://www.cdc.gov/obesity/childhood/>
- Centers for Disease Control and Prevention. (2010b). Contributing Factors. Retrieved May 20, 2010, from <http://www.cdc.gov/obesity/childhood/causes.html>
- Centers for Disease Control and Prevention. (2010c). Tips for parents and Ideas to Help Children Maintain a Healthy Weight. Retrieved May 20, 2010, from <http://www.cdc.gov/healthyweight/children/index.html>
- Dehghan, M., Akhtar-Danesh, N., & Merchant, A. (2005). Childhood obesity, prevalence and prevention. *Nutrition Journal*, *4*(24), 1-8.
- Eng, L., & Burciaga, E. (2009). Habit Changer: First online source dedicated to creating good lifelong habits. Retrieved May 20, 2010, from <http://newsblaze.com/story/2009120205082300001.bw/topstory.html>
- Enns, CW., Mickle, S., & Goldman, J. (2003). Trends in food and nutrient intakes by children in the United States. *Family Economics and Nutrition Review*, *15*(2), 15-27.
- Faith, M., Scanlon, K., Birch, L., & Sherry, B. (2004). Parent-child feeding strategies and their relationships to child eating and weight status. *Obesity Research*, *12*(11), 1711-1722.
- Franklin, P., Rosenbaum, P., Carey, M., & Roizen, M. (2006). Using sequential email messages to promote health behaviors: Evidence of feasibility and reach in a worksite sample *Journal of Medical Internet Research*, *8*(1), e3.
- Golan, M., & Crow, S. (2004). Targeting parents exclusively in treatment of childhood obesity: long-term results. *Obesity Research*, *12*(2), 357-361.
- Golan, M., Weizman, A., Apter, A., & Fainaru, M. (1998). Parents as the exclusive agents of change in the treatment of childhood obesity. *American Journal of Clinical Nursing*, *67*(1130-1135).
- Hughes, S., Power, T., Fisher, J., Mueller, S., & Nicklas, T. (2005). Revisiting a neglected construct: Parenting styles in a child-feeding context. *Appetite*, *44*(1), 83-92.
- Irvine, B., Ary, D., Grove, D., & Gilfillan-Morton, L. (2004). The effectiveness of an interactive multimedia program to influence eating habits. *Health Education Research*, *19*(3), 290-305.
- Lindsay, A., Sussner, K., Kim, J., & Gortmaker, S. (2006). The role of parents in preventing childhood obesity. *The Future of Children*, *16*(1), 169-186.

- Lino, M., Basiotis, P., Gerrior, S., & Carlson, A. (2002). The quality of young children's diets. *Family Economics and Nutrition Review, 14*, 52-60.
- Lobstein, T., Baur, L., & Uauy, R. (2004). Obesity in children and young people: A crisis in public health. *Obesity Reviews, 5*(S1), 4-85.
- Musher-Eizenman, D., & Holub, S. (2007). Comprehensive feeding practices questionnaire: Validation of a new measure of parental feeding practices. *Journal of Pediatric Psychology, 32*(8), 960-972.
- National Research Council Committee on Diet and Health. (1998). *Diet and Health: Implications for Reducing Chronic Disease Risk*. Washington, DC: National Academy Press.
- Taylor, J., Evers, S., & Mc Kenna, M. (2005). Determinants of healthy eating in children and youth. *Canadian Journal of Public Health, 96*(S3), S20-S26.
- U.S. Department of Health and Human Services. (1988). The Surgeon General's report on nutrition and health. Washington, DC: U.S. Government Printing Office.
- Variyam, J., & Smith, T. (2010). Tracking changes in dietary awareness and food choices. *Amber Waves, 8*(2), 40-41. Retrieved from www.ers.usda.gov/amberwaves

APPENDIX

Table 1: Feeding Your Kids Questionnaire Item Bank.....	A-1 to A-12
Table 2: Sources for Questions in Item Bank.....	A-13
Table 3: Outcome Links to Logic for Questions in Item Bank.....	A-14

Table 1
Feeding Your Kids Questionnaire Item Bank

Screening Questions				
#	Domain	Item Text	Response options	Source
S1	Screening	In which country or continent do you currently live?	1 = United States 2 = Canada 3 = Europe 4 = Mexico 5 = Africa 6 = Other	6
S2	Screening	What age is each of your children? Note: Screening program will select one child as the “target” for the study.	Select from drop down list for each child	6
S3	Screening	When [target child] is at home, how often are you responsible for feeding them?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	1, item 1
S4	Screening	Does [target child] have any health issues that affect what he or she eats? Examples are diabetes, food allergies, digestive problem, or kidney problems.	1 = no 2 = yes 3 = unsure	6
S5	Screening	What e-mail provider do you use? Note: Mark all that apply.	1 = Yahoo 2 = Hotmail 3 = Gmail 4 = Comcast 5 = SBC Global 6 = ATT 7 = Other	6
S6	Screening	What is your preference for receiving Feeding Your Kids content?	1 = e-mail only 2 = e-mail and text 3 = no preference	6

Caregiver Awareness, Knowledge, Skills, and Behavior (Baseline and Follow-up)

Note: All questions will pertain to the target child.
Item numbers provided for reference only. Numbering does not reflect final questionnaire order.

#	Domain	ItemText	Response options	Source	Outcome link
1	Awareness of challenging food environment	Food advertisements and labeling are designed to help you make healthful choices.	1 = disagree 2 = disagree somewhat 3 = neutral 4 = agree somewhat 5 = agree	6	A1
2	Awareness of challenging food environment	Most grocery stores are organized to make it easy for you to make healthful choices.	1 = disagree 2 = disagree somewhat 3 = neutral 4 = agree somewhat 5 = agree	6	A1
3	Awareness of own eating and how it affects child	How and what you eat affects your child's eating habits.	1 = disagree 2 = disagree somewhat 3 = neutral 4 = agree somewhat 5 = agree	2, Attitudes	A2
4	Sense of control	You make healthy food choices for your child and family.	1 = disagree 2 = disagree somewhat 3 = neutral 4 = agree somewhat 5 = agree	6	A3
5	Sense of control	If you wanted to lower the fat in your child's diet, how confident are you that you could do it?	1 = not confident 2 = somewhat confident 3 = neutral 4 = fairly confident 5 = very confident	2, Behavioral self-efficacy	A3

Caregiver Awareness, Knowledge, Skills, and Behavior (Baseline and Follow-up)

Note: All questions will pertain to the target child.
Item numbers provided for reference only. Numbering does not reflect final questionnaire order.

#	Domain	ItemText	Response options	Source	Outcome link
6	Sense of control	If you wanted to lower the sugar in your child's diet, how confident are you that you could do it?	1 = not confident 2 = somewhat confident 3 = neutral 4 = fairly confident 5 = very confident	2, Behavioral self-efficacy	A3
7	Knowledge about nutrition	You can read and understand food labeling.	1 = disagree 2 = disagree somewhat 3 = neutral 4 = agree somewhat 5 = agree	6	A4
8	Knowledge of food acceptance mechanisms	How often do you encourage your child to eat by arranging the food to make it more interesting?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	3, item 8	A5
9	Knowledge of food acceptance mechanisms	How often do you encourage your child to try a new food?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	3, item 1	A5
10	Knowledge of food acceptance mechanisms	If your child does not like what is being served, how often do you ask your child to at least taste it?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	3, item 24 4, item 10	A5

Caregiver Awareness, Knowledge, Skills, and Behavior (Baseline and Follow-up)

Note: All questions will pertain to the target child.

Item numbers provided for reference only. Numbering does not reflect final questionnaire order.

#	Domain	ItemText	Response options	Source	Outcome link
11	Knowledge of food acceptance mechanisms	If your child says that he or she does not like a particular food, you make sure to offer it many more times on different days.	1 = disagree 2 = disagree somewhat 3 = neutral 4 = agree somewhat 5 = agree	6	A5
12	Sense that life has improved	How often does selecting and purchasing foods for your family cause stress in your life?	1 = never 2 = rarely 3 = sometimes 4 = often 5 = always	6	A6
13	Sense that life has improved	How often does preparing meals and feeding your family cause stress in your life?	1 = never 2 = rarely 3 = sometimes 4 = often 5 = always	6	A6
14	Modeling	Do you model healthy eating for your child by eating healthy foods yourself?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	4, item 44	B1
15	Modeling	Do you show your child how much you enjoy eating healthy foods?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	4, item 48	B1
16	Modeling	How often do you say something positive about healthy food your child eats?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	3, item 6	B1

Caregiver Awareness, Knowledge, Skills, and Behavior (Baseline and Follow-up)

Note: All questions will pertain to the target child.
Item numbers provided for reference only. Numbering does not reflect final questionnaire order.

#	Domain	ItemText	Response options	Source	Outcome link
17	Modeling	Do you encourage your child to eat healthy foods instead of unhealthy ones?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	4, item 13	B1
18	Plan meals	Do you make a grocery list before you go to the store?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	7	B2
19	Plan meals	Do plan what meals you will make each day?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	7	B2
20	Selection	In the past <month>, how often have you done the following: Tried to pick healthier foods while grocery shopping.	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	2, Program Recommended Behaviors	B3
21	Selection	Ordered the healthiest option when eating out?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	2, Program Recommended Behaviors	B3
22	Selection	Compared nutrition labels (e.g., Nutrition Facts) when making choices in the grocery store?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	6	B3

Caregiver Awareness, Knowledge, Skills, and Behavior (Baseline and Follow-up)

Note: All questions will pertain to the target child.
Item numbers provided for reference only. Numbering does not reflect final questionnaire order.

#	Domain	ItemText	Response options	Source	Outcome link
23	Selection	Is most of the food you keep in the house is healthy?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	4, item 14	B3
24	Snacks	How often does your child eat processed foods for a snack?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	6	B4
25	Snacks	How often does your child drink sweetened drinks?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	6	B4
26	Snacks	Do you intentionally keep some foods out of your child's reach?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	1, item 20	B4
27	Snacks	To what degree can your child eat snacks and/or sweets without your permission?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	5, item 11	B4
28	Preparing	In the past <month>, how often have you done the following: Included at least one fresh ingredient in the dinners you prepared?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	6	B5

Caregiver Awareness, Knowledge, Skills, and Behavior (Baseline and Follow-up)

Note: All questions will pertain to the target child.

Item numbers provided for reference only. Numbering does not reflect final questionnaire order.

#	Domain	ItemText	Response options	Source	Outcome link
29	Preparing	Adjusted recipes and menus to achieve nutrition goals for your family (e.g., lowered fat, added vegetables)?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	6	B5
30	Preparing	Do you create meals from scratch without convenience food ingredients?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	7	B5
31	Meal/food routines	In the past <month>, how often has your child: Eaten while sitting at a table?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	5, item 17	B6
32	Meal/food routines	Eaten while watching television?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	5, item 17	B6
33	Meal/food routines	Eaten while in the car?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	6	B6
34	Meal/food routines	Eaten processed prepackaged or processed frozen foods?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	6	B6

Caregiver Awareness, Knowledge, Skills, and Behavior (Baseline and Follow-up)

Note: All questions will pertain to the target child.

Item numbers provided for reference only. Numbering does not reflect final questionnaire order.

#	Domain	Item Text	Response options	Source	Outcome link
35	Meal/food routines	Eaten fast food?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	6	B6
36	Meal/food routines	How often do you and/or your partner eat with your child when you are eating a meal at home?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	5, item 21	B6
37	Meal/food routines	In the past week, about how often did your child have some protein (e.g., eggs, sausage, soy, peanut butter, bacon) with his or her breakfast?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	6	B6
38	Meal/food routines	In the past week, about how often did your child have sugared foods (e.g., sweetened cereal, syrup, pastries) with his or her breakfast?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	6	B6
39	Meal/food routines	How often do you encourage your child by promising a favorite food as a reward?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	3, item 33	B6
40	Meal/food routines	Do you offer your child his/her favorite foods in exchange for good behavior?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	4, item 19 1, item 22	B6

Caregiver Awareness, Knowledge, Skills, and Behavior (Baseline and Follow-up)

Note: All questions will pertain to the target child.
Item numbers provided for reference only. Numbering does not reflect final questionnaire order.

#	Domain	Item Text	Response options	Source	Outcome link
41	Meal/food routines	How often do you enjoy conversations with your family during dinner?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	6	B6
42	Involving child	Do you involve your child in planning family meals?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	4, item 15	B7
43	Involving child	Do you allow your child to help prepare family meals?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	4, item 20	B7
44	Involving child	Do you encourage your child to participate in grocery shopping with you?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	4, item 32	B7
45	Involving child	Do you discuss with your child why it's important to eat healthy foods?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	4, item 25	B7
46	Involving child	Do you tell your child what to eat and what not to eat without explanation?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	4, item 42	B7

Caregiver Awareness, Knowledge, Skills, and Behavior (Baseline and Follow-up)

Note: All questions will pertain to the target child.
Item numbers provided for reference only. Numbering does not reflect final questionnaire order.

#	Domain	Item Text	Response options	Source	Outcome link
48	Child choices	Can your child tell the difference between healthy and less healthy foods? Note: Age dependent.	1 = not at all 2 = somewhat 3 = neutral 4 = agree somewhat 5 = always	6	C1
49	Child choices	Would your child eat more unhealthy foods if you were not around stop him/her? Note: Age dependent.	1 = not at all 2 = somewhat 3 = neutral 4 = agree somewhat 5 = always	1, item 14	C1
50	Child choices	If you did not guide or regulate your child's eating, would he or she eat too much unhealthy food? Note: Age dependent.	1 = not at all 2 = somewhat 3 = neutral 4 = agree somewhat 5 = always	1, item 24	C1
51	Child healthier	Does your child eat healthy and well-balanced meals?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	6	C2
52	Child variety	Does your child eat a wide variety of foods?	1 = never 2 = rarely 3 = sometimes 4 = mostly 5 = always	4, item 38 4, item 22	C3
53	Child weight	Is your child a healthy weight?	1 = very underweight 2 = somewhat underweight 3 = health weight 4 = somewhat overweight 5 = very overweight	6	C4

Demographic Questions			
Note: All questions will pertain to the target child.			
#	Domain	Item Text	Response options
D1	Caregiver gender	Please indicate your gender.	1 = Female 2 = Male
D2	Child gender	Please indicate the gender of your child.	1 = Female 2 = Male
D2	Caregiver ethnicity	Please indicate your ethnic/racial background (select all that apply).	1 = White 2 = Black 3 = Hispanic 4 = Native American 5 = Asian/Pacific Islander 97 = Other 99 = Decline to state
D4	Child ethnicity	Please indicate your child's ethnic/racial background (select all that apply).	1 = White 2 = Black 3 = Hispanic 4 = Native American 5 = Asian/Pacific Islander 97 = Other 99 = Decline to state
D5	Home zip code	Please list your zip code. (Enter only 5 digits.)	
D6	Caregiver age	Please list the month and year of your birth.	
D7	Child age	Please list the month and year of your child's birth.	
D8	Caregiver education level	Please indicate your highest level of education.	1 = Grade school or elementary school 2 = Middle school or junior high school 3 = High school or equivalent 4 = Some college or trade school classes 5 = Associate degree or equivalent 6 = Bachelor's degree 7 = Master's or doctorate degree 9 = Decline to state
D9	Employment	Please indicate how many hours you work for pay each week, on average.	Number of hours:

D10	Employment	Please indicate whether you work for pay in your home or outside your home. Note: D10 only asked of those caregivers answering more than 1 hour in D9	1 = Work only at home 2 = Work only outside the home 3 = Work both at home and outside the home
D11	Time status	How many hours you do volunteer work each week, on average?	Number of hours:
D12	Time status	How many hours you spend doing housework/childcare each week, on average?	Number of hours:

Table 2
Sources for Questions in Item Bank

1. *The Child Feeding Questionnaire II*
Birch, L., Fisher, J., Grimm-Thomas, C., Sawyer, R., & Johnson, S. (2001). Confirmatory factor analysis of the Child Feeding Questionnaire: A measure of parental attitudes, beliefs and practices about child feeding and obesity proneness. *Appetite*, 36, 210-210.
2. *The Diet Habits Questionnaire*
Irvine, B., Ary, D., Grove, D., & Gilfillan-Morton, L. (2004). The effectiveness of an interactive multimedia program to influence eating habits. *Health Education Research*, 19(3), 290-305.
3. *The Caregiver Feeding Styles Questionnaire*
Hughes, S., Power, T., Fisher, J., Mueller, S., & Nicklas, T. (2005). Revisiting a neglected construct: Parenting styles in a child-feeding context. *Appetite*, 44(1), 83-92.
4. *The Comprehensive Feeding Practices Questionnaire*
Musher-Eizenman, D., & Holub, S. (2007). Comprehensive feeding practices questionnaire: Validation of a new measure of parental feeding practices. *Journal of Pediatric Psychology*, 32(8), 960-972.
5. *The Family Eating and Activity Habits Questionnaire-Revised*
Golan, M., & Weizman, A., (1998). Reliability and validity of the Family Eating and Activity Habits Questionnaire. *American Journal of Clinical Nutrition*, 52,771-777.
6. *Item developed/written by SRI specifically for Club One*
7. *Items cited in text*
Ternier, S. (2010) Available at <http://www.criticalimprov.com/index.php/surg/article/viewArticle/1122/1668>

Table 3
Outcome Links to Logic Model for Questions in Item Bank

<p>A. Caregivers gain awareness and knowledge including:</p> <ol style="list-style-type: none"> 1. Awareness of challenging food environment 2. Awareness of own eating behavior and how it affects child 3. Sense of control related to food and feeding 4. Knowledge about good nutrition 5. Knowledge about techniques to manage children's acceptance of foods 6. Sense that life has improved 	<p>B. Caregivers apply skills and change behavior including:</p> <ol style="list-style-type: none"> 1. Act as positive food role models to children 2. Plan meals 3. Are skillful in selection of healthier foods 4. Provide healthier snacks 5. Adopt healthier meal preparation practices 6. Adopt healthier meal routines 7. Involve child in food choices and preparation 8. Educate child about food and healthier eating 	<p>C. Caregivers apply skills and change behavior including:</p> <ol style="list-style-type: none"> 1. Make more informed food choices 2. Eat in a more healthful way 3. Eat a wider variety 4. Are of healthy weight (i.e., healthy BMI)
---	---	--