

# A Pilot Study of the Effects of a Tailored Web-Based Intervention on Promoting Fruit and Vegetable Intake in African American Families

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## Abstract

**Background:** The current study examined the effects of a Web-based tailored parenting intervention on increasing fruit and vegetable intake in African American families.

**Methods:** Forty-seven African American parents (mean age,  $41.32 \pm 7.30$ ; 93.6% female) with an adolescent (mean age,  $13.32 \pm 1.46$ ; 59.6% female) participated in a Web-based autonomy-support parenting tailored intervention session to increase both parent and youth fruit and vegetable (F&V) intake. The session lasted 45–60 minutes and included three phases: a feedback phase; a Web-based information phase, and a goal-setting and action plan phase. Self-reported measures of parenting skills [based on autonomy (choice), support, and communication] and F&V intake (assessed as average daily intake) were assessed at baseline and at a 1-week follow-up session.

**Results:** There was a significant increase in parents' self-reports of daily fruit intake from pretest to the 1-week follow-up. Parent and adolescent combined F&V intake also significantly increased from pretest to 1-week follow-up. Overall, parents reported that the program was easy to navigate and that they enjoyed participating in the Web-based online program.

**Conclusions:** Current findings provide preliminary support for an autonomy-support parent tailored Web-based program for improving dietary intake in African American families.

## Introduction

The rate of adolescent obesity has tripled in the past three decades, with approximately 40% of African American adolescents now considered overweight or obese.<sup>1</sup> Previous research has demonstrated that family-based interventions that incorporated authoritative parenting styles (high levels of support and moderate levels of parental control) and positive parenting strategies (monitoring and positive family interactions) had greater success in producing weight-loss outcomes in youth.<sup>2</sup> Although previous studies have integrated parenting practices into their weight-loss interventions, few have targeted African American adolescents.<sup>2</sup> Further, previous studies have been relatively long in duration. Considering the multiple demands on time in underserved families with

children, developing shorter programs that require less time are essential.

The importance of eating a healthy diet that includes fruits and vegetables (F&Vs) has become increasingly relevant because obesity rates have increased along with other chronic illnesses, such as type 2 diabetes, in adolescents.<sup>1,3,4</sup> Although the evidence supporting the inverse relationship between F&V intake and obesity has been shown among adults, this relationship has not been documented in youth ages 2–19 years, in part because of methodological flaws.<sup>5–7</sup> Several Web-based studies in ethnic minority adolescents have demonstrated improvements in dietary intake of F&Vs in youth<sup>8–11</sup>; however, most youth are not meeting dietary guidelines for F&V consumption.<sup>12</sup> This is particularly relevant in underserved (low-income and ethnic minority) youth, who demonstrate higher levels of obesity, type 2

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diabetes, and who may have reduced access to healthy food options in their community.<sup>13–15</sup> Thus, the study evaluated the preliminary effects of a brief, tailored computer program on increasing F&V consumption (just one component of a comprehensive approach to weight loss) in African American youth and their parents.

There is increasing evidence that parents play a pivotal role in their children's eating habits through providing autonomy support, along with making healthy foods available in the home, and by role modeling healthy eating.<sup>16,17</sup> For example, weight management interventions that incorporate parenting and behavioral management training have been more successful than those that do not.<sup>18</sup> In particular, parenting practices that include shared decision making, positive support, and family interactions have been shown to be effective in improving dietary intake in youth.<sup>2,19</sup> Although the importance of parenting practices in youth dietary intake has been well documented, few programs have incorporated these variables into a tailored approach for improving dietary intake and obesity prevention programs.<sup>2</sup> The current study tested the feasibility of providing parents with tailored feedback to improve their positive parenting practices and autonomy support for increasing F&V intake.

The current study integrates constructs from social cognitive theory (self-monitoring, goal setting, and skill building),<sup>20</sup> self-determination theory (autonomy support),<sup>21</sup> and family systems theory (positive communication)<sup>22</sup> into a Web-based intervention. Components from each theoretical approach were integrated into a Web-based program that was tailored based on feedback on parents' ability (positive parenting practices) to provide their youth with choices and encouragement as well as monitoring and goal setting for increasing choices for eating F&Vs. The Web-based intervention was individually tailored for African American parents to promote positive parenting skills for increasing F&V intake for them and their adolescent. Tailored computer-based programs have been shown to be a promising strategy for improving dietary variables<sup>23</sup>; however, few studies have tested an autonomy-support parenting approach in African American families. Thus, this study provides a novel test of a tailored parenting intervention for increasing both parent and youth F&V intake.

## Methods

### *Study Design*

The present study utilized a quasiexperimental design to test the feasibility of using an individually tailored, Web-based program to increase F&V intake in African American parents and their adolescent children. Assessments were conducted at pretest and at a 1-week follow-up. The study was approved by the University of South Carolina (Columbia, SC). All parents provided informed consent and participated without their adolescent in the Web-based program.

### *Participant Recruitment*

African American parents were recruited through community events, local churches and schools, radio and newspaper advertisements, and passive consent obtained through partnerships with local health clinics. Recruitment took place from March 2011 to June 2012 in phases, given that other competing grant projects were being conducted during the same time frame. African American parents were recruited to pilot test the parent tailoring for a larger funded trial that began the following year. Participants were told that the study was designed to help parents learn about how to improve their dietary intake and that of their youth. Parents were eligible to participate if (1) they had an adolescent between the ages of 11 and 15 years, (2) the adolescent had at least three grandparents of African American descent, and (3) neither the parent nor the adolescent were on a restrictive diet. Of the approximately 150 parents contacted during recruitment, 47 consented to participate in data collection.

### *Procedures*

Data collection took place at a university-based clinical setting. Trained research staff collected parent consent and objective measures of height and weight. Next, the parent was asked to navigate through the online program. The online program included a pretest assessment, online tailored messages, and a post-test assessment. The pretest survey included measures of demographic characteristics, positive parenting practices, parent and adolescent F&V consumption, and questions on access to the Internet. Next, the parents navigated through the online tailored messages (described below). Finally, parents were directed by the research staff member to the post-test survey, which included an assessment of participants' satisfaction with the online program. Navigating the online program took approximately 45–60 minutes. A 1-week telephone follow-up with the parents assessed behavioral changes in F&V intake for both parents and their youth.

### *Tailoring Intervention Procedures*

The online program utilized an individual tailoring approach to engage and motivate parents to practice positive parenting strategies that have been theoretically and empirically associated with increases in healthy eating in adolescents. Program messages were customized based on pretest parent responses of self-report measures of communication, social support, and autonomy (choice), as well as parent and youth F&V eating behaviors (see Table 1 for tailoring examples). For example, if a parent rated high on autonomy (providing choices for their youth), they received the message, "Your child is really involved in helping choose which fruits and vegetables to have at home. That is great. Keep up the good work." Alternatively, if the parent rated low on autonomy, they received the following message: "Your child isn't that involved in picking which fruits and vegetables to have at home. One suggestion might be to

**Table 1. Example of Online Tailored Feedback Messages**

Tailoring variable	Example messages
Behavior-specific child autonomy, low vs. high	<b>Low:</b> Your child isn't that involved in picking which fruits and vegetables to have at home. One suggestion might be to try including your child when planning your grocery list, or encourage them to pick one fruit and vegetable for the grocery cart this coming week.
	<b>High:</b> Your child is really involved in helping choose which fruits and vegetables to have at home. That is great. Keep up the good work.
Behavior-specific communication, low vs. high	<b>Low:</b> Talking with your child in helpful ways about eating fruits and vegetables can help them eat healthier. One suggestion might be to set aside time each day to ask your child how their goal with eating more fruits and vegetables is going.
	<b>High:</b> It sounds like you spend a lot of time talking about fruits and vegetables with your child in helpful ways. Keep up the good work.
Behavior-specific social support, low vs. high	<b>Low:</b> Finding new ways to provide your child with fruits and vegetables might be important for you.
	<b>High:</b> You're doing a great job providing fruits and vegetables for your child to eat.

try including your child when planning your grocery list, or encourage them to pick one F&V for the grocery cart this coming week.” The customized approach enabled the program to target each parent’s unique needs related to developing positive parenting skills for increasing F&V intake.

Once the pretest survey was completed, parents viewed the online messages that consisted of three phases: a feedback phase; a Web-based information phase; and a goal-setting and action plan phase. The feedback page included tailored feedback that was based on the items selected from the pretest survey. Each parent received customized feedback on their F&V consumption, their adolescent’s F&V consumption, and communication, social support, and autonomy for increasing F&V intake with the youth. The purpose of the feedback was to provide the parent with information regarding what they are doing well and what they could try to improve. The tips page included links to external Web pages related to each of the selected constructs (F&V consumption, social support, autonomy, and communication related to increasing their youths’ F&V intake). Websites were selected through an extensive search of those designed to assist African American families to improve their dietary intake. Parents were given as much time as needed to explore as many or as few websites as they would like. Finally, the parent was directed to the

action plan page. Parents had the choice to select one of three goals to work on: “increase communication about fruits and vegetables”; “increase my child’s ability to provide input around fruits and vegetables”; or “increase the amount of support I give my child to increase fruits and vegetables.” Each goal was designed to target one of the positive parenting constructs, with the purpose of motivating parents to engage in the positive parenting practices over the next week. Once the parent selected a goal, they were asked to provide up to three strategies to help reach their goal. Parents generated their own strategies based on the feedback or tips provided and information they had received from the websites. Parents were given a copy of their action plan to work on their goals over the following week.

### Baseline Measurements

*Demographic and parent BMI.* Parents provided their age, sex, race and ethnicity, marital status, household yearly income, and educational level. Adolescent sex, age, and race and ethnicity were also collected through parent report. Weight and height were measured by a certified research assistant to calculate BMI [weight (kg)/height (m)<sup>2</sup>] using standardized protocols with a SECA 880 digital scale (North American East; SECA Corporation, Hanover, MD) and a Shorr height board. Parents also indicated whether they had Internet access at home or on a mobile device.

### Tailoring of Intervention Messages

Parents completed a brief set of questions about their parenting practices specific to F&V intake. Tailoring was executed using the Michigan Tailoring System (MTS).<sup>24</sup> MTS is an open-source software package that provides developers with a structure to link prewritten messages to individual level data using “tailoring logic.” Tailoring logic matches messages to user-level data; for example, for a parent who reported low support for increasing F&Vs on the “tailoring questionnaires” contained on the website, the MTS software would pull the appropriate “low support” message from the library. Feedback is considered one of the three primary mechanisms by which tailoring achieves its desired outcomes. Personal feedback comparing current consumption to existing recommendations is considered a persuasive, rather than purely informative, strategy.<sup>25</sup> The three parenting measures are described below. Given limited resources, we only tailored two of the three items in each section below and asked about frequency of communication, rather than quality, to reduce social desirability response bias.

*Autonomy (choice) of fruit and vegetable intake.* Three items were used to assess the amount of autonomy parents provided to their youth for helping them make choices for increasing F&V intake. Two items were used to tailor the online messages: (1) How often do you include (child’s

**Table 2. Participant Demographic and Parenting Characteristics**

Variable	Online only	Online and 1-week follow-up	Total
Sample size	6	41	47
Parent sex, <i>n</i> (%)			
Male	0	3 (7.3)	3 (6.4)
Female	6 (100)	38 (92.7)	44 (93.6)
Adolescent sex, <i>n</i> (%)			
Male	3 (50.0)	16 (39.0)	19 (40.4)
Female	3 (50.0)	25 (61.0)	28 (59.6)
African American, <i>n</i> (%)	6 (100)	41 (100)	47 (100)
Parent age, M (SD)	38.33 (5.20)	42.76 (7.50)	41.32 (7.30)
Adolescent age, M (SD)	12.67 (1.36)	13.41 (1.47)	13.32 (1.46)
Parent BMI, M (SD)	31.26 (10.96)	33.87 (8.56)	33.53 (8.81)
Education, <i>n</i> (%)			
Never attended/only kindergarten	0	1 (2.4)	1 (2.1)
Grades 1–8	0	0	0
Grades 9–11	0	3 (7.3)	3 (6.4)
High school graduate/GED	2 (33.3)	7 (17.1)	9 (19.1)
College 1–3 years/technical school	2 (33.3)	16 (39.0)	18 (38.3)
College graduate	2 (33.3)	6 (14.6)	8 (17.0)
Graduate training/professional degree	0	8 (19.5)	8 (17.0)
Household annual income, <i>n</i> (%)			
< \$10,000	1 (16.7)	14 (34.1)	15 (31.9)
\$10,000–\$24,000	1 (16.7)	12 (29.3)	13 (27.7)
\$25,000–\$39,000	3 (50.0)	6 (14.6)	9 (19.1)
\$40,000–\$54,000	0	3 (7.3)	3 (6.4)
\$55,000–\$69,000	1 (16.7)	2 (4.9)	3 (6.4)
\$70,000–\$84,000	0	1 (2.4)	1 (2.1)
> \$85,000	0	3 (7.3)	3 (6.4)
Marital status, <i>n</i> (%)			
Married	3 (50.0)	10 (24.4)	13 (27.7)
Separated	1 (16.7)	10 (24.4)	11 (23.4)
Divorced	1 (16.7)	6 (14.6)	7 (14.9)
In an unmarried couple	1 (16.7)	13 (31.7)	14 (29.8)
Missing	0	2 (4.9)	2 (4.3)

Independent-samples *t*-tests were conducted to examine whether there were significant differences between parents who completed and who did not complete the 1-week follow-up assessment on demographics. No significant differences were found.

M, mean; SD, standard deviation; GED, general educational development.

name) in deciding which F&Vs to purchase for your family? and (2) How often do you allow (child's name) to decide on which F&Vs they will eat?

*Communication about fruit and vegetable intake.* Four items designed for this study assessed parent and youth communication around F&V intake. Two items were used to tailor the online messages: (1) How often do you discuss the importance of eating F&Vs with (child's name)? and (2) How often do you give (child's name) helpful reminders about eating F&Vs?

*Social support for eating fruits and vegetables.* Four items assessed the amount of social support parents provided to their child for eating F&Vs. Two items were used to tailor the online messages: (1) How often do you encourage (child's name) to eat F&Vs? and (2) How often do you provide F&Vs for (child's name)?

#### *Program Feasibility and Utility of Measures*

Five items assessed parent satisfaction with the online program and were developed based on face validity. Items were designed to assess parent perceptions of program utility and functionality as well as how much they enjoyed the program. Example items included, "I felt the language used was easy to understand" and "How useful was the feedback page?"

#### *Outcome Measures*

*Parent and adolescent fruit and vegetable intake.* Parent and adolescent F&V intake was assessed using a previously validated F&V screening tool.<sup>26</sup> Parents self-reported their own and their youths' daily F&V consumption. Responses from the two items were combined to create a composite measure reflecting the total number of servings of F&Vs eaten on a typical day. Validity and reliability of the tool have been previously supported.<sup>26</sup> Combined F&V scores were used to tailor online messages around parent and youth F&V consumption.

#### *Data Analyses*

Data were analyzed using SPSS Statistics software (version 17.0; SPSS, Inc., Chicago, IL). The primary outcomes in this study were change in parent and youth F&V intake based on the composite measure. Changes in parenting skills were not assessed as part of this pilot study. Data were summarized using frequencies and percentages, means and standard deviations, and/or range according to the variable type. Independent-samples *t*-tests were conducted to examine differences on demographic and Internet accessibility variables for participants who did and did not complete the 1-week follow-up assessments. These analyses were conducted to verify whether meaningful differences existed between the two groups; such differences could be important when considering the feasibility of the online program. Paired-samples *t*-tests were used to

compare parent and adolescent F&V intake means at pre-test and 1-week follow-up.

## Results

### *Participant Characteristics*

Parent and adolescent demographic characteristics are presented in Table 2. Parents (age,  $41.32 \pm 7.30$ ; 93.6% female; 100% African American) were predominantly overweight or obese (BMI,  $33.53 \pm 8.81$ ) and had low annual household income (31.9% < \$10,000 per year; 27.7% \$10,000–\$24,000 per year). Adolescents (59.6% female) were  $13.32 \pm 1.46$  years old, on average. Independent-samples *t*-tests revealed no significant differences in demographic variables between participants who completed the online program only ( $n=6$ ) and who completed both the online program and 1-week follow-up assessment ( $n=41$ ).

### *Internet Accessibility*

Parent Internet accessibility is reported in Table 3. Results indicated that 93.6% of parents reported having Internet access by computer, 78.7% reported having Internet access on their phones, and 91.5% said they had a personal e-mail account.

### *Program Feasibility*

Program feasibility ratings are reported in Table 4. Overall, parents indicated that they found the program useful [mean (M),  $3.57 \pm 0.54$ ], enjoyable (M,  $3.98 \pm 0.15$ ), easy to navigate (M,  $3.96 \pm 0.20$ ), and easy to understand (M,  $4.00 \pm 0.00$ ). Most parents also reported that they were likely to use program materials in the future (M,  $3.38 \pm 0.90$ ).

**Table 3. Parent Internet Accessibility**

Variable	Online only	Online and 1-week follow-up	Total
Internet access by computer, <i>n</i> (%)			
Yes	6 (100)	38 (92.7)	44 (93.6)
No	0	3 (7.3)	3 (6.4)
Internet access by mobile phone, <i>n</i> (%)			
Yes	4 (66.7)	33 (80.5)	37 (78.7)
No	2 (33.3)	8 (19.5)	10 (21.3)
Personal e-mail account, <i>n</i> (%)			
Yes	6 (100)	37 (90.2)	43 (91.5)
No	0	4 (9.8)	4 (8.5)

Independent-samples *t*-tests were conducted to examine whether there were significant differences between parents who completed and who did not complete the 1-week follow-up assessment on Internet access. No significant differences were found.

**Table 4. Program Feasibility Ratings for Parents**

	<b>M (SD)</b>	<b>Range</b>
Found program useful <sup>a</sup>	3.57 (0.54)	2–4
Likelihood of using program materials in the future <sup>b</sup>	3.38 (0.90)	1–4
Found program enjoyable <sup>c</sup>	3.98 (0.15)	3–4
Felt the program was easy to navigate <sup>c</sup>	3.96 (0.20)	3–4
Found the language easy to understand <sup>c</sup>	4.00 (0.00)	NA

<sup>a</sup>Response options: 1 = not useful; 2 = somewhat useful; 3 = useful; 4 = very useful.

<sup>b</sup>Response options: 1 = very unlikely; 2 = unlikely; 3 = likely; 4 = very likely.

<sup>c</sup>Response options: 1 = disagree; 2 = slightly disagree; 3 = slightly agree; 4 = agree.

M, mean; SD, standard deviation; NA, not available.

### Parent Fruit and Vegetable Intake

Parent and adolescent F&V intake means are reported in Table 5. Paired-samples *t*-tests comparing means at pretest and 1-week follow-up demonstrated several significant differences. There was a significant difference [ $t(40) = -3.03$ ;  $p < 0.01$ ] in scores for parent daily fruit intake at pretest (M,  $1.76 \pm 1.02$ ) and follow-up (M,  $2.32 \pm 1.23$ ), indicating that parental fruit intake increased. Parent combined F&V intake was also significant [ $t(40) = -2.17$ ;  $p < 0.05$ ], indicating that parent combined scores increased from pretest (M,  $3.68 \pm 1.47$ ) to follow-up (M,  $4.39 \pm 2.07$ ). There was a significant mean difference between scores for adolescent fruit intake [ $t(40) = -2.60$ ;  $p < 0.05$ ], with an increase in fruit intake from pretest (M,  $1.71 \pm 0.93$ ) to follow-up (M,  $2.27 \pm 0.92$ ). Finally, adolescent combined F&V

scores increased as well [ $t(40) = -2.37$ ;  $p < 0.05$ ] from pretest (M,  $3.34 \pm 1.46$ ) to 1-week follow-up (M,  $4.07 \pm 1.47$ ).

### Discussion

The present study evaluated the initial feasibility of an online program tailored on parent communication, autonomy/choice, support, and F&V intake for African American parents and their adolescents. The results provide initial support for the feasibility of a Web-based intervention tailored on positive parenting skills for increasing F&V intake in their adolescents. Parents and adolescents showed an increase in fruit consumption from baseline to 1-week follow-up, and parents and adolescents both demonstrated a significant improvement in F&V intake from pretest to 1-week follow-up. Overall, parents indicated that they enjoyed using, and were highly satisfied with, the online program.

There is limited research evaluating online programs for parents to improve their youth's health habits. There is even less information on ethnic minority parents such as African Americans. Several previous Web-based studies have demonstrated initial improvement in health behaviors related to diet in African American adolescents.<sup>8–11</sup> However, to date, few previous randomized group trials have been conducted to test the efficacy of online Web-based interventions on reducing obesity in overweight African American adolescents and their parents.<sup>27,28</sup> Our results are consistent with a study of African American parents and their youth who showed improved fitness and diet outcomes after an 8-week Internet intervention.<sup>28</sup> There were no significant findings related to F&V intake; however, less than half of the sample logged into the online program, thus limiting dose and possible improvements in diet. The current study provides preliminary data for developing a Web-based intervention for a larger efficacy trial and demonstrates a model for engaging African American parents in online programing tailored on parent

**Table 5. Parent and Adolescent Fruit and Vegetable Intake Means for Pretest and 1-Week Follow-Up Assessments**

	<b>Assessment</b>		<b>t</b>	<b>df</b>
	<b>Pretest</b>	<b>Follow-up</b>		
Parent daily fruit intake	1.76 (1.02)	2.32 (1.23)	-3.03**	40
Parent daily vegetable intake	1.93 (0.76)	2.07 (1.06)	-0.75	40
Parent daily fruit and vegetable intake	3.68 (1.47)	4.39 (2.07)	-2.17*	40
Adolescent daily fruit intake	1.71 (0.93)	2.27 (0.92)	-2.60*	40
Adolescent daily vegetable intake	1.63 (0.80)	1.80 (0.81)	-1.13	40
Adolescent daily fruit and vegetable intake	3.34 (1.46)	4.07 (1.47)	-2.37*	40

Paired-samples *t*-tests were conducted to examine differences in parent and adolescent fruit and vegetable intake from pretest to follow-up assessments.

\* $p < 0.05$ ; \*\* $p < 0.01$ .

communication, autonomy/choice, support, and F&V intake. Tailored interventions have the potential to provide specific behavioral feedback based on individuals' response and can be culturally tailored for ethnic minority populations.<sup>29–31</sup> This preliminary study suggests that parents found enjoyment in using the tailored website for increasing F&V intake in their African American youth. More large-scale efficacy trials are needed, however, to determine whether this parental tailoring approach can improve health behavior outcomes over a longer follow-up.<sup>32</sup>

Considering the documented importance of including parents in obesity prevention programs,<sup>33,34</sup> this preliminary study provides a promising approach for reaching parents. This is even more relevant in ethnic minority parents who tend to attend fewer sessions and have higher rates of dropout.<sup>35,36</sup> To reduce participant dropout and fatigue, we argue that diet and weight-loss programs in African American youth and their families need to specifically address cultural issues and provide multiple modalities to heighten interest and ongoing engagement in healthy eating and weight-loss efforts. Although increasing attention has been given to developing and evaluating obesity-related interventions in youth, relatively little attention has been devoted to understanding approaches that may be culturally appropriate for affecting long-term behavior change among ethnically diverse children and adolescents.

This study was preliminary in nature and thus has several limitations. The single one-group pre/post design should be taken with caution because of the lack of control conditions, and, because of the small sample size, no conclusive statements can be made.<sup>37–41</sup> However, this study does provide preliminary support for the tailoring approach for improving parenting skills related to diet and provides the structure for a large-scale trial that is currently examining the effects of online tailoring interventions on weight loss in African American adolescents and their parents. Last, youth F&V intake was reported by the parent over a short duration, which may be less reliable in adolescents.

## Conclusion

Overall, this study provides preliminary evidence of the feasibility and acceptability of a tailored program on parenting skills to improve parent ability to increase their own and their child's F&V consumption. Tailored programs that are acceptable and easy to use in ethnic minority populations may provide an opportunity to reach parents and improve health behaviors in high-need, hard-to-reach populations.

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## Author Disclosure Statement

No competing financial interests exist.

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## References

- Ogden CL, Carroll MD, Kit BK, et al. Prevalence of obesity and trends in body mass index among US children and adolescents, 1999–2010. *JAMA* 2012;307:483–490.
- Kitzman-Ulrich H, Wilson DK, St George SM, et al. The integration of a family systems approach for understanding youth obesity, physical activity, and dietary programs. *Clin Child Fam Psychol Rev* 2010;1:231–253.
- Awa WL, Fach E, Krakow D, et al. Type 2 diabetes from pediatric to geriatric age: Analysis of gender and obesity among 120,183 patients from the German/Austrian DPV database. *Eur J Endocrinol* 2012;167:245–254.
- Lipman TH, Levitt Katz LE, Ratcliffe SJ, et al. Increasing incidence of type 1 diabetes in youth: Twenty years of the Philadelphia Pediatric Diabetes Registry. *Diabetes Care* 2013;36:1597–1603.
- Ledoux TA, Hingle MD, Baranowski T. Relationship of fruit and vegetable intake with adiposity: A systematic review. *Obes Rev* 2011;12:e143–e150.
- Newby PK. Are dietary intakes and eating behaviors related to childhood obesity? A comprehensive review of the evidence. *J Law Med Ethics* 2007;35:35–60.
- Newby PK. Plant foods and plant-based diets: Protective against childhood obesity? *Am J Clin Nutr* 2009;89:1572S–1587S.
- Di Noia J, Contento IR, Prochaska JO. Computer-mediated intervention tailored on transtheoretical model stages and processes of change increases fruit and vegetable consumption among urban African-American adolescents. *Am J Health Promot* 2008;22:336–341.
- Di Noia J, Schinke SP, Prochaska JO, et al. Application of the transtheoretical model to fruit and vegetable consumption among economically disadvantaged African-American adolescents: Preliminary findings. *Am J Health Promot* 2006;20:342–348.
- Williamson DA, Martin PD, White MA, et al. Efficacy of an internet-based behavioral weight loss program for overweight adolescent African-American girls. *Eat Weight Disord* 2005;10:193–203.
- Williamson DA, Walden HM, White MA, et al. Two-year internet-based randomized controlled trial for weight loss in African-American girls. *Obesity (Silver Spring)* 2006;14:1231–1243.
- Centers for Disease Control and Prevention. Fruit and vegetable consumption among high school students—United States, 2010. In: Division of Nutrition, Physical Activity, and Obesity, ed. Centers for Disease Control and Prevention: Atlanta, GA, 2011.
- Ogden CL, Carroll M, Curtin L, et al. Prevalence of high body mass index in US children and adolescents, 2007–2008. *JAMA* 2010;303:242–249.
- Copeland KC, Zeitler P, Geffner M, et al. Characteristics of adolescents and youth with recent-onset type 2 diabetes: The TODAY cohort at baseline. *J Clin Endocrinol Metab* 2011;96:159–167.
- Larson NI, Story MT, Nelson MC. Neighborhood environments: Disparities in access to healthy foods in the US. *Am J Prev Med* 2009;36:74–81.
- Haerens L, Craeynest M, Deforche B, et al. The contribution of psychosocial and home environmental factors in explaining eating behaviours in adolescents. *Eur J Clin Nutr* 2008;62:51–59.
- Ventura AK, Birch LL. Does parenting affect children's eating and weight status? *Int J Behav Nutr Phys Act* 2008;5:15.

18. Kitzmann KM, Dalton WT, Stanley CM, et al. Lifestyle interventions for youth who are overweight: A meta-analytic review. *Health Psychol* 2010;29:91–101.
19. Sleddens EF, Gerards SM, Thijs C, et al. General parenting, childhood overweight and obesity-inducing behaviors: A review. *Int J Pediatr Obes* 2011;6:e12–e27.
20. Bandura A. Health promotion by social cognitive means. *Health Educ Behav* 2004;31:143–164.
21. Ryan RM, Deci EL. Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *Am Psychol* 2000;55:68–78.
22. Broderick C. *Understanding Family Process: Basics of Family Systems Theory*. Sage Publications: Thousand Oaks, CA, 1993.
23. Kroeze W, Werkman A, Brug J. A systematic review of randomized trials on the effectiveness of computer-tailored education on physical activity and dietary behaviors. *Ann Behav Med* 2006;31:205–223.
24. Michigan Tailoring System. Available at <http://chr.umich.edu/mts>. Last accessed October 3, 2013.
25. Hawkins RP, Kreuter M, Resnicow K, et al. Understanding tailoring in communicating about health. *Health Educ Res* 2008;23:454–466.
26. Prochaska JJ, Sallis JF. Reliability and validity of a fruit and vegetable screening measure for adolescents. *J Adolesc Health* 2004;34:163–165.
27. White MA, Martin PD, Newton RL, et al. Mediators of weight loss in a family-based intervention presented over the Internet. *Obes Res* 2004;12:1050–1059.
28. Baranowski T, Baranowski JC, Cullen KW, et al. The Fun, Food, and Fitness Project (FFFP): The Baylor GEMS pilot study. *Ethn Dis* 2003;13:S30–S39.
29. Wilson DK. New perspectives on health disparities and obesity interventions in youth. *J Pediatr Psychol* 2009;34:231–244.
30. Resnicow K, Davis R, Zhang N, et al. Tailoring a fruit and vegetable intervention on ethnic identity: Results of a randomized study. *Health Psychol* 2009;28:394–403.
31. Resnicow K, Davis RE, Zhang G, et al. Tailoring a fruit and vegetable intervention on novel motivational constructs: Results of a randomized study. *Ann Behav Med* 2008;35:159–169.
32. Kennedy CM, Powell J, Payne TH, et al. Active assistance technology for health-related behavior change: An interdisciplinary review. *J Med Internet Res* 2012;14:e80.
33. St. George SM, Wilson DK, Schneider EM, et al. Project SHINE: Effects of parent-adolescent communication on sedentary behavior in African American adolescents. *J Pediatr Psychol* 2013;38:997–1009.
34. Kitzman-Ulrich H, Wilson DK, St. George S, et al. A preliminary test of a weight loss program integrating motivational and parenting factors for African American adolescents. *Child Obes* 2011;7:379–384.
35. Kumanyika SK, Obarzanek E. Pathways to obesity prevention: Report of a National Institutes of Health workshop. *Obes Res* 2003;11:1263–1274.
36. Zeller M, Kirk S, Claytor R, et al. Predictors of attrition from a pediatric weight management program. *J Pediatr* 2004;144:466–470.
37. Leon AC, Davis LL, Kraemer HC. The role and interpretation of pilot studies in clinical research. *J Psychiatr Res* 2011;45:626–629.
38. Arain M, Campbell MJ, Cooper CL, et al. What is a pilot or feasibility study? A review of current practice and editorial policy. *BMC Med Res Methodol* 2010;10:67.
39. Kraemer HC, Mintz J, Noda A, et al. Caution regarding the use of pilot studies to guide power calculations for study proposals. *Arch Gen Psychiatry* 2006;63:484–489.
40. Bowen DJ, Kreuter M, Spring B, et al. How we design feasibility studies. *Am J Prev Med* 2009;36:452–457.
41. Stevens J, Taber DR, Murray DM, et al. Advances and controversies in the design of obesity prevention trials. *Obesity (Silver Spring)* 2007;15:2163–2170.

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