A Process Evaluation of a Social Cognitive Theory–Based Childhood Obesity Prevention Intervention: The Comics for Health Program

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Process evaluations are an often overlooked yet essential component of health promotion interventions. This study reports the results of a comprehensive process evaluation for the "Comics for Health" program, a childhood obesity prevention intervention implemented at 12 after-school programs. Qualitative and quantitative process data were collected using surveys, field notes, and open-item questionnaires, which assessed program fidelity, dose delivered, dose received, reach, recruitment, and context. Triangulation of methods was also employed to better understand how the program was implemented and received by the facilitator, staff members, and children in the program. Results indicated that program implementation had an almost perfect rate of fidelity with most lessons recording 100% tasks completed. Lessons were implemented in their intended order and lasted approximately 30 minutes as planned. After-school staff members reported that the program was well received by children, and this program should be replicated in the future. Attendance records showed that a majority of the children attended each lesson on the initial day of delivery (70.4%) and informal make-up lessons were implemented to compensate for the other children. Finally, several known sources of contamination were found such as past and concurrent exposure to similar health promotion interventions, which could potentially influence study outcomes. These findings will be used to help explain the results of this intervention and make recommendations for future intervention efforts.

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INTRODUCTION

Early onset of obesity among children and adolescents is a major public health concern, and there is great interest in developing innovative and effective health promotion interventions that can favorably influence behaviors associated with its prevention. For such interventions, program outcomes, such as a decrease in overall body mass index (BMI) percentile or an increase in specific health-related behaviors such as physical activity, are typically used as barometers for defining success. It is important to note however, that process evaluations are also critical but not yet widely used or appreciated as such (Saunders, Evans, & Joshi, 2005). To illustrate, among five recently published literature reviews and meta-analyses evaluating 87 unique childhood obesity interventions spanning from 1966 to 2008 (Cook-Cottone, Casey, & Feeley, 2009; Gonzalez-Suarez, Worley, Grimmer-Somers, & Dones, 2009; Kanekar & Sharma, 2008-2009; Katz, O'Connell, Njike, Yeh, & Nawaz, 2008; Shaya, Flores, Gbarayor, & Wang, 2008), although BMI percentile was largely reported on as a means for defining study success or failure, no review

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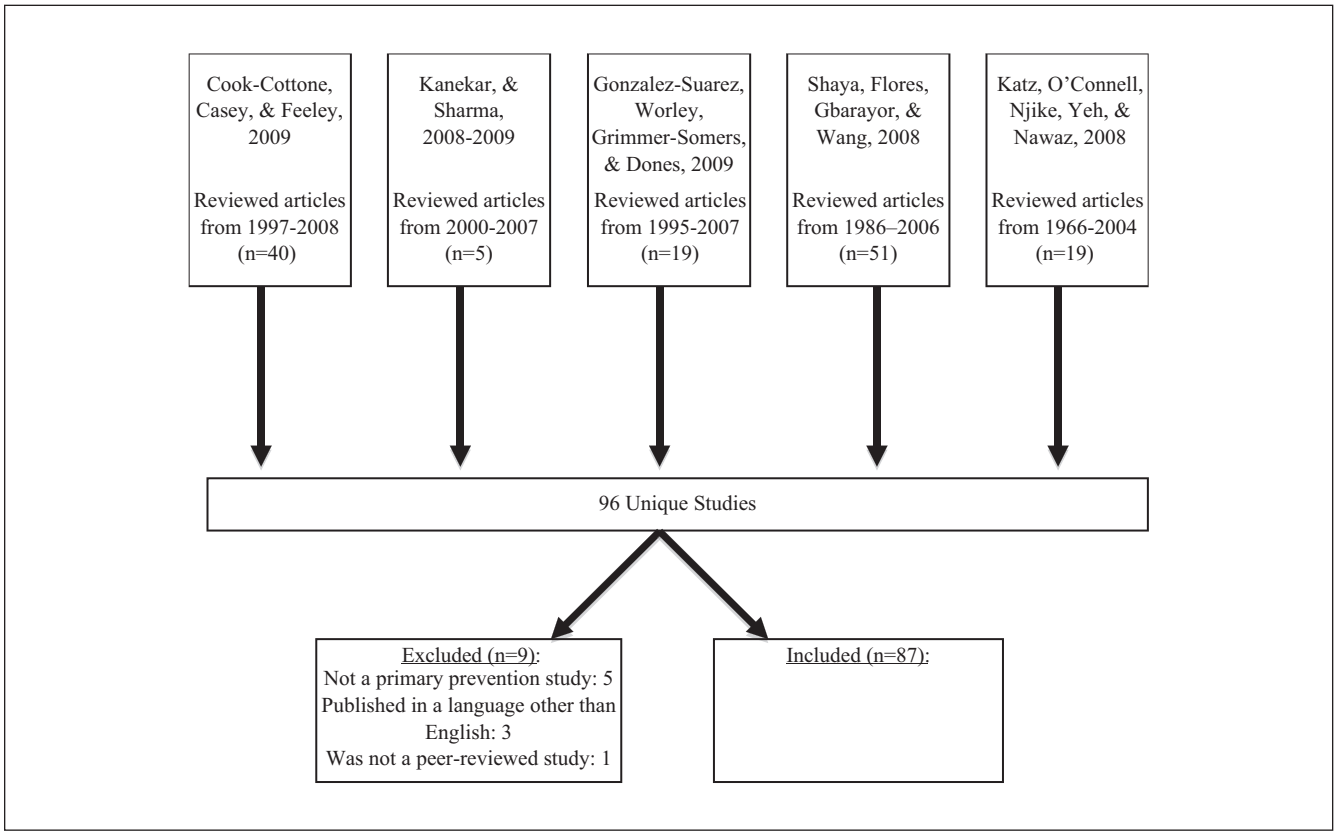

FIGURE 1 A Review of the Use of Process Evaluations From Childhood Obesity Prevention Programs

reported the number of studies that used process evaluations. To shed some light on this factor, the authors of this study reviewed the 87 studies and found that only 33 (or 40%) reported using at least one type of process evaluation for their study protocol (Figure 1).

There are many types of process evaluations health educators can use. When used together they can measure various aspects of program implementation, such as the *who* (who implemented and received the program), *what* (what intervention components were delivered), *when* (when were the intervention components delivered), *where* (where did the intervention take place), and *how much* (what was the length or duration of the intervention) of the intervention in question. In the line of research pertaining to the evaluation of interventions targeting childhood obesity prevention, it is often the case that interventions are implemented by different individuals across multiple locations, each of which could contribute bias or contamination to the overall outcomes of the study. By failing to monitor this and other program activities, researchers run the risk of making what is formally known as a Type III error, where weak or null results can be attributed to poorly executed or incorrectly implemented interventions (Windsor, Clark, Boyd, & Goodman, 2004). Therefore, it is critical to employ a standardized and comprehensive set of process evaluation methodologies to capture this variability, in order to describe these areas and assess whether the contamination appears to have an impact on study outcomes. Furthermore, monitoring the implementation of an intervention helps researchers by enhancing their ability to interpret findings and outcome measures reported in their studies. For example, when researchers are faced with negative or null outcomes for an intervention, process evaluations can help distinguish between an ineffective intervention (one that does not produce the desired changes in behavior) and a poorly executed intervention (one that incorrectly implemented, thus making the outcome evaluation spurious). Process evaluations can also help identify specific programmatic activities that may be effective or ineffective, which can provide guidance for future studies (Saunders et al., 2005). For example, through a process

evaluation an investigator may find that children enjoy taste-testing foods that they have previously never been exposed to, but they do not enjoy having group discussions about the pros and cons of engaging in health-related behaviors. Process evaluations are not only important from a methodological standpoint but some suggest that their underutilization may be one of the major contributors to why obesity prevention programs have produced mixed and modest results in recent years (Thomas, 2006).

Among the available frameworks for process evaluations, Saunders et al. (2005) outline a useful six-step process for developing and using six types of process evaluations that was deemed especially important for obesity prevention programs. The steps of this framework include fidelity (the extent to which the intervention was delivered as planned), dose delivered (assurance that program lessons were implemented in the intended order and for the amount of time planned), dose received (the extent to which the intervention was well received by the participants), reach (or attendance), recruitment (an assessment of what tasks were implemented to approach and invite participants to be involved with the study), and context (aspects of the environment that have the potential to influence the implementation of an intervention or study variables, or possible contamination the comparison group might have by being exposed to the experimental program). Using this framework, this study reports the results for a process evaluation for the "Comics for Health" program, in an attempt to build on what little work has been done in this area, and help researchers by sharing practical advice to overcome barriers they may face in their future studies. Triangulation of methods was also employed to better understand how the program was implemented, including vantage points from the program facilitator, after-school staff members, and children enrolled in the program. Results of the outcome evaluation have been discussed elsewhere (Branscum, 2011).

METHOD

The "Comics for Health" program is a social cognitive theory–based childhood obesity primary prevention program. The methods, details of the intervention, and outcome analyses have been detailed elsewhere (Branscum, 2011). To summarize, this intervention was tested against a knowledge-based obesity prevention program on the effects of BMI percentile, key obesity-related behaviors (fruit and vegetable consumption, sugar-sweetened beverage consumption, physical activity, and screen time engagement), and key constructs of social cognitive theory (self-efficacy, self-control, and expectations) related to each behavior. Both the theory- and knowledge-based programs consisted of four lessons targeting behavioral recommendations set forth by the American Medical Associations expert committee regarding the prevention, assessment, and treatment of child and adolescent overweight and obesity (Barlow, 2007; Rao, 2008). For both programs, one lesson focused on one specific lifestyle behavior. The knowledge-based intervention chose program activities to mediate behavior change solely based on building awareness and knowledge, such as being aware of the recommended number of servings of fruits and vegetables, and defining the term *physical activity*. The theory-based intervention used theory-oriented program activities to mediate behavior change such as taking small achievable steps for learning and mastering new skills, and participating in role-plays to practice new skills and behaviors in pretend setting with either a peer or parent. Both interventions also included aspects of making and reading comic books, and included activities to help children create their own original comic book or strip. "Comics for Health" was evaluated using a group randomized controlled design, whereby 12 YMCA-sponsored after-school programs were randomized to either the theory-based (n = 6 with 37 children) or knowledge-based (n = 6 with 34 children) group. Approval from the sponsoring university was obtained before data collection began.

Recruitment

Recruitment procedures were consistent at each site, as controlled by the program facilitator. The benefit of working with a licensed after-school care provider, such as the YMCA, was that parents were required to be physically present when picking up their children. Therefore, during first few weeks of the study the program facilitator was able to approach parents of potential participants and explain the details of the study in order to collect parent permission forms. This process was replicated and virtually identical at each site, making it apparent that the potential for bias in participation rates among the various sites was very low.

Program Fidelity

To evaluate the fidelity between the planned and actual implementation of the intervention for each of the eight sessions (four theory- and four knowledge based), structured tally sheets were first created. Each form listed the major objectives or tasks the program facilitator was to complete for the corresponding lesson, and in the instructions, the observer was asked to record each objective as either being *adequately completed* (scored as 1) or *not completed* (scored as 0).

Overall, lessons ranged from having 18 to 29 total tasks. The second step for creating the structured tally sheets was to establish their face and content validity, and readability. This was achieved by recruiting a panel of six experts (five university professors and one director from the after-school program) to simultaneously compare them to a detailed description of each lesson plan. This process included two rounds of review: In the first round, experts gave initial suggestions for improvements, and in the second round, they evaluated the revised tally sheets and gave any final suggestions. Once the tally sheets were created and validated, they were deemed appropriate for use in the intervention. In all, two tally sheets were completed for each lesson at each site, to assure program delivery was successful from two separate vantage points. For each lesson, an after-school staff member observed the program and completed the corresponding tally sheet, and concurrently the program facilitator completed a separate tally sheet as a self-check.

Program Dose

The intended dose for both the theory- and knowledge-based programs was four lessons, each lasting 30 minutes in length. Two separate elements of dose were evaluated for this study: dose delivered and dose received. To evaluate dose delivered, the program facilitator kept field notes to assure that each after-school program received each lesson in the appropriate order. The program facilitator also used a stopwatch to track the amount of time taken to implement each lesson at each after-school program, as a means of assuring program activities were delivered in a timely fashion. An analysis of variance (ANOVA) was then conducted to compare the amount of time between after-school sites (n = 12 sites), intervention conditions (n = 2 interventions), and an interaction between the sites and conditions, to assure equivalency among sites and treatment conditions. To evaluate the dose received, after-school staff members present during the implementation of the program completed a questionnaire containing open-ended items pertaining to the program's feasibility (e.g., What were your opinions about the timing of the program?) and acceptability by their children (What benefits do you perceive the children got from participating in the program?).

Program Reach

To evaluate program reach, attendance was recorded for each lesson at each site by an after-school staff member. Children who did not participate in the initial sessions were tracked and given informal make-up sessions to assure they participated in all program activities. To evaluate whether attendance was equivalent between both intervention groups a chi-square test was used. All data were analyzed using Predictive Analytical Software (PASW) version 18.

Context

The context of both programs was controlled and evaluated in a number of ways. First, we controlled the context by having the same program facilitator implement every lesson for both programs. This was done to give children from all 12 after-school sites an almost identical experience, given that there was no difference in teaching style, no variation in personalities, and no preexisting relationship between any of the children and the program facilitator. Additionally, the program facilitator was very familiar with the intervention, since he was the primary author. Therefore, there was no need for formal training of an implementation staff, which could have been another source of potential bias.

Context was further evaluated in two ways. First, the program facilitator, using field notes, documented the presence of any competing or similar programs implemented during the course of the study that could have introduced bias to any outcome measures. Second, during the pretesting of both interventions children were asked to report the number of times they were taught about healthy eating and the number of times they were taught about the importance of physical activity at home. This was hypothesized to be important since children who have repeated exposure to health promotion interventions are likely to be more susceptible to changing their behaviors. To assure equivalence between both groups for both variables, two separate ANOVAs were used.

RESULTS

Program Fidelity

Percentages of the amount of tasks completed for each lesson for both groups are shown in Table 1. From Table 1, it was evident that both programs were implemented near perfect (100%) at each site. There were four instances, however, when the program was not recorded as perfectly implemented (100%) by one or both program evaluators. For Site 6 in the experimental group, the program facilitator and the after-school staff member both reported that 89% of Lesson 3 and 88% of Lesson 4 was implemented. For Site 12 in the control group, there was a discrepancy between the program

TABLE 1
Degree of Program Fidelity for Afterschool Programs in the Experimental (Theory-Based) and Comparison (Knowledge-Based) Interventions

Group	*After-School Program*	*Observer*	*Lesson 1 (%)*	*Lesson 2 (%)*	*Lesson 3 (%)*	*Lesson 4 (%)*	*Average Exposure (%)*	*Performance Standard (%)*	*Program Implementation Index*
Experimental	1	After-school worker	100	100	100	100	100	95	1.05
		Program facilitator	100	100	100	100	100	95	1.05
	2	After-school worker	100	100	100	100	100	95	1.05
		Program facilitator	100	100	100	100	100	95	1.05
	3	After-school worker	100	100	100	100	100	95	1.05
		Program facilitator	100	100	100	100	100	95	1.05
	4	After-school worker	100	100	100	100	100	95	1.05
		Program facilitator	100	100	100	100	100	95	1.05
	5	After-school worker	100	100	100	100	100	95	1.05
		Program facilitator	100	100	100	100	100	95	1.05
	6	After-school worker	100	100	89	88	94.25	95	0.992
		Program facilitator	100	100	89	88	94.25	95	0.992
Comparison	7	After-school worker	100	100	100	100	100	95	1.05
		Program facilitator	100	100	100	100	100	95	1.05
	8	After-school worker	100	100	100	100	100	95	1.05
		Program facilitator	100	100	100	100	100	95	1.05
	9	After-school worker	100	100	100	100	100	95	1.05
		Program facilitator	100	100	100	100	100	95	1.05
	10	After-school worker	100	100	100	100	100	95	1.05
		Program facilitator	100	100	100	100	100	95	1.05
	11	After-school worker	100	100	100	100	100	95	1.05
		Program facilitator	100	100	100	100	100	95	1.05
	12	After-school worker	70	95	100	100	91.25	95	0.961
		Program facilitator	100	100	100	100	100	95	1.05

evaluators: Whereas the program facilitator reported that all lessons were perfectly implemented, the after-school staff member reported that only 70% of Lesson 1 was delivered and 95% of Lesson 2 was delivered. It was difficult to assess the reasoning behind this discrepancy, however, it was likely the case that the after-school staff member was distracted during the program and either missed some of the tasks, or they were unwilling to record the completion of the tasks. In all of these cases however, lessons were implemented close to 90%, indicating that only three or four tasks were not completed when less than perfect.

Program Dose

The amount of time taken to implement each lesson and a comparison between groups (theory based and knowledge based), sessions (Sessions 1 through 4), and the interaction between the two are presented in Table 2. From Table 2, it was evident that the actual amount of time taken to implement each lesson was very close to the planned 30 minutes, and there was no apparent difference between groups and sessions. The program facilitator also recorded that each of the 12 after-school sites received all four lessons of their program in their intended order.

Regarding the feasibility and acceptability of both programs, it is important to note that after-school staff members were initially blinded from knowing which program their site received. However, since both the theory- and knowledge-based programs were alike in several ways, feedback received from staff members was similar. For example, many stated that the length of each lesson (30 minutes) and the entire length of the

TABLE 2
Total Time for Implementing Each Lesson for Both Interventions

	After-School Program	*Session Mean (SD) (Minutes)*		*After-School Program*	*Session Mean (SD) (Minutes)*
Experimental[a,b] (knowledge based)	1	31.0 (1.41)	Comparison[a,b] (knowledge based)	7	30.25 (2.06)
	2	31.25 (0.95)		8	30.75 (0.96)
	3	31.25 (2.06)		9	31.0 (1.41)
	4	30.75 (0.96)		10	30.5 (1.73)
	5	31.25 (1.89)		11	31.0 (1.41)
	6	30.0 (1.83)		12	30.25 (0.96)
Group average[b,c]		30.92 (1.47)			30.63 (1.35)

a. p value for between sessions ($p > .473$).
b. p value for interaction for sessions and groups ($p > .316$).
c. p value for between groups ($p > .477$).

program (4 weeks) were both appropriate and desirable for their after-school programs. They also commented that the four behaviors targeted during the program were important and relevant to their children.

> This was a good legth because it wasn't too short or too long of a time period.

> I think it was a great length of four weeks that kept the children interested.

> I think the children were interested because they were topics the kids could relate with.

Staff members also reported that their children enjoyed the idea of designing and creating their own comic books, which was an overall goal for both programs. By having the opportunity to create an original comic book, staff members reported that this sparked the interest of some children who had no initial interest, and in some cases, enhanced those students' abilities who had an initial interest, but no experience with creating comic books. Given the brevity of the program, however, staff members also cited that many of their children did not have enough time to fully develop and finish their comic book, and if given additional time, they would have enjoyed more direction for this activity.

> I don't think they really got to explore the whole comic thing much.

Last, staff members commented on their perceived barriers for the implementation of the program. Namely, competing activities, such as sports teams, made it impossible for some children to attend everyday; surrounding children not enrolled in the program created an atmosphere that was disruptive at times; and although a majority of the children were interested and engaged in the program, not all of them wanted to make a comic book.

> In response to perceived barriers of the program:

> Not having a quiet enough area where the kids could focus.

> Weather and kids missing or leaving at varying times.

Reach

Table 3 shows the record for attendance on the initial day of program implementation. From Table 3, it was evident that a majority of children from both groups attended the entirety of the program as originally intended, and some required make-up sessions. Results from a chi-square test also suggested that there was no significant difference between groups for the amount of lessons attended.

Context

As documented using field notes by the program facilitator, it was apparent that many children were

TABLE 3
Attendance of Children for Both Intervention Groups

No. of Lessons Attended	*Experimental Group;* n *(%)*	*Comparison Group;* n *(%)*	*Overall;* n *(%)*	χ^2 *(df)*	p
4	27 (73.0)	23 (67.7)	50 (70.4)	0.305 (2)	.859
3	6 (16.2)	6 (17.6)	12 (16.9)		
2	4 (10.8)	5 (14.7)	9 (12.7)		
Total	37 (100)	34 (100)	71 (100)		

already familiar with messages and concepts presented by the program. For example, during the lesson pertaining to fruit and vegetable consumption, without cues from the facilitator many children were able to identify various types of fruits and vegetables, and recall the recommended daily amount for consumption. It was later found that their high level of preexisting knowledge could have come from a variety of sources. For example, parental influence was apparently high in this group. To illustrate, in the lesson targeting screen time, although the objective of the lesson was to promote the reduction of screen time to no more than 2 hours per day, many children from both programs reported that their parents already controlled the amount of screen time they were allowed to have each day, and in many cases, it was less than 2 hours. Also, during the lesson targeting the reduction of sugar-sweetened beverages, many children reported that their parents highly controlled the beverages that they were allowed to consume, and many reported that they were not permitted to consume any type of carbonated beverage. Children may also have been already familiar with the concepts presented during the intervention because of the number of times they reported participating in previous health promotion programs. To illustrate, at the time of pretesting children in the theory-based group reported 1.89 previous exposures (σ = 1.28) to programs promoting healthy eating whereas children in the knowledge-based group reported 2.43 previous exposures (σ = 0.97). For previous exposure to programs promoting physical activity, children in the theory-based group reported 2.17 previous exposures (σ = 1.08), and children in the knowledge-based group reported 2.35 previous exposures (σ = 0.1.05). Results from two separate ANOVAs indicated that there were no differences between groups for participation in either type of program (healthy eating, p = .06; physical activity, p = .55).

The program facilitator also observed and recorded two competing programs with similar goals and objectives that were implemented concurrently to this intervention. Half way through this intervention, the program *Jump Rope for Heart*, a fund-raising program sponsored by both the American Alliance for Health, Physical Education, Recreation and Dance and American Heart Association, which encourages children to be physically active by jumping rope, was initiated in all elementary schools used in this study. *Jump Rope for Heart* was implemented school-wide, and it was likely reinforced by school principals, teachers, and their own friends. Parents were also informed of the program and asked to help children raise money for the sponsoring organizations. Another competing program was the YMCA-created program *Y-Kids Are Fit.* This is not a standard program containing a series of lessons, however; instead, *Y-Kids Are Fit* consisted of various games and activities the after-school staff members were encouraged to use in order to increase the amount of physical activities children engage in while in the program. It was also not mandated by the YMCA, and after-school staff members implemented the program at their own discretion. Hence, the program was implemented differently at each site, making it extremely difficult to evaluate how much and to what extent children were exposed to the program.

Finally, toward the end of the intervention, the program facilitator found that there may have been contamination from after-school staff member at some sites, most notably from the comparison condition. Since the comparison intervention was a knowledge-based program, and staff members were unaware of which program children were receiving, they may have perceived the intervention as weak and attempted to reinforce the health messages in an attempt to further enhance the program. This was observed once during the study at a comparison site during the lesson

targeting sugar-sweetened beverages. The same after-school staff member reported, with regards to teaching the children about the health topics and comic books, that the program

> . . . could be much more extensive.

It was, however, unknown how much and to what extent reinforcement was given at each site by staff members, since this was not apparent until the end of the program.

DISCUSSION

The results in this article present an overview of the comprehensive process evaluation implemented for a social cognitive theory–based and a knowledge-based program for the prevention of childhood obesity. After reading this article, we hope we have made the case that including multiple aspects of process evaluations for health programs are needed because it gives researchers and others an opportunity to view program implementation from more than one vantage point. For example, if fidelity and dose were the only process evaluations implemented, it may have been uncertain for whether the program was acceptable by the after-school staff or well received by the target audience.

Although there appeared to be an overall high degree of fidelity for both programs, there was some discrepancy between the implementation for both groups. Whereas this may raise some concern, it is important to note that since this discrepancy was observed for two lessons in both treatment groups, and any potential bias this created was likely shared equally between both groups. As Durlak and DuPre (2008) note, it is unrealistic for health promotion interventions to expect perfect (100%) or even near-perfect implementation. Windsor and colleagues (2004), describe the computation of a Program Implementation Index (PII), by which actual implementation (A) of a program can be divided by an a priori–expected performance standard (D), which can help interpret the adequacy of the implementation for a program. Although no standard currently exists for an appropriate PII, they note that a PII of ≥90% would indicate an *excellent* level of implementation. Using these criteria, Table 1 presents the PII for every lesson for both programs. From Table 1, it was evident that all lessons yielded an acceptable PII level, regardless of observer. It is also important to note that this study used both observational and self-report measures for program fidelity. A potential weakness to using this method was that after-school staff members were not formally trained to complete such a task, and the use of trained research personnel would have been stronger. This was done largely because of financial constraints, in that there was no money available to hire additional personnel, and partially, for practical reasons, in that after-school staff members were required to be with their children at all times because of child care licensing laws. Staff members also did not report any difficulties implementing the process evaluations. For future studies, this may be an acceptable approach that other researchers can use if faced with similar financial and personnel constraints. This also may be an appropriate first step for having the after-school staff ultimately implement the lessons themselves. During the first year, they could observe the program, which in turn prepares them for implementation in the second year.

Another way the fidelity between the *perfectly implemented groups* and the *less than perfectly implemented groups* was evaluated was by measuring the differences between groups using an ANOVA for all study variables targeted in the lessons in question. For example, among the treatment group's Sites 1 through 5 were considered *perfect* for all lessons, and Site 6 was considered *less than perfect* for Lessons 3 and 4, which targeted physical activity and fruit and vegetable consumption, respectively. Using separate repeated measures ANOVAs, we found that there was no difference between these two groups for any study variables related to these behaviors. This was again repeated for the control sites: Sites 7 through 11 were considered *perfect*, and Site 12 was considered *less than perfect* for Lessons 1 and 2, which targeted screen time and sugar-sweetened beverage consumption, respectively. Separate repeated measures ANOVAs were used between groups for all study variables related to these behaviors, and again, no significant differences were found between groups.

Each lesson was implemented very closely to the planned 30-minute goal, and the program appeared to be well received by the after-school staff members and the children. In theory, if a difference was found in the amount of time between sites, a statistical comparison between the two groups (as previously mentioned with fidelity) would be warranted. The results presented in (Branscum, 2011) are strengthened since timing was constant among all sites. For dose received, while we evaluated the program from the after-school workers' vantage point, this would have been further enhanced by evaluating the children's beliefs and attitudes directly. In practice, this could have been done using either focus groups or questionnaires with closed- and open-ended items that were similar to those completed by the after-school staff. Parents were also a missing component to this process evaluation, which would have been extremely helpful in

determining their attitudes toward the program and ways they could have been included in the intervention.

With regard to reach, attendance was not perfect for both groups. This was expected, given the sporadic nature of after-school programming. However, to circumvent this problem, we did implement informal make-up sessions to children who were not present at all of the lessons to assure that they were all exposed to program in its entirety. On one hand, it would have been ideal to give formal make-up sessions to these children, however, we were not sure how practical this could have been. For example, at some sites, only one child missed one of the lessons, and we were not sure how effective it would have been to formally implement an entire lesson with one child. Additionally, the costs of doing this at multiple sites for multiple lessons would have also been high and likely prohibitive. In practice, it should be expected that unless under very controlled circumstances, when dealing with members of the community attendance would almost never be perfect. Therefore, this should be anticipated before the start of the intervention, and a protocol for dealing with attendance should be addressed. Given the brevity of the program, and relatively small sample size we were able to obtain, we decided to keep all of the children in the study regardless of initial attendance. Options that other researchers have include giving formal make-up sessions or retaining only participants who achieve a 100% attendance record. In theory, this could also be evaluated statistically, by either categorizing this variable, evaluating perfect attendees versus less than perfect attendees, or researchers could keep attendance as a continuous variable, and evaluate whether attendance predicts better health outcomes.

It was somewhat surprising to find so many potential areas for contamination. Childhood obesity is a pressing issue in today's society, and many interventions sponsored by various organizations are currently being implemented to address this problem. When designing efficacy trials such as those presented in this article, it may be important for researchers to evaluate the presence of additional programs currently being implemented and those scheduled in subsequent months at the selected venue. If programs with similar goals and objectives are to be implemented, in practice, researchers must decide to (a) find an alternative venue with no competing programs, (b) ask the venue to refrain from participating in outside programs, or (c) implement the program and report the possibility of contamination. This is a similar issue with regard to the after-school personnel who reinforced program messages to their children. Although this practice is ideal and ultimately needed to help enhance programs' effectiveness, if the reinforcement is different among intervention sites, then the potential for contamination is high, which may again contribute to biased outcomes. Similarly then, it may be important for researchers to address this issue before the intervention and ask personnel to either (a) refrain from any reinforcement or (b) follow a standardized reinforcement protocol. If the latter is chosen, then additional process evaluations should be used to assure the protocol is in full adherence. As previously mentioned, theoretically, if process evaluations find that some programs are affected differently than others, then this could serve as a potential covariate and should be tested as such to determine if the contamination made a significant impact on outcome measures. In this study, there was no need to test the significance of possible contaminators, since all programs were affected similarly by outside programs.

As Young et al. (2008) report, to move forward in this area of research, researchers should use lessons learned from previous studies. We have presented methods that other researchers can utilize in the planning and implementation of future process evaluations. The findings presented here bring into light important factors that researchers should consider when implementing evaluation methods.

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