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*Family is an important, yet challenging, target for dietary intervention. This article describes the implementation of Hi5+, a family fruit and vegetable (FV) promotion program. Complementing a fourth-grade school curriculum, the seven weekly Family Fun Nites were at-home family meal sharing and game evenings. A sample of families (*N = *575; 69% consented) from schools in a southeastern U.S. urban area received tailored intervention materials based on their FV attitudes and family interaction styles. A pyramidal organizational design, using peer leaders, facilitated 71% of families to complete all seven sessions, whereas 84% completed at least one session. Significant independent predictors of program completion were attending an introductory Kick-Off Nite, interactive family style, additional adults in the household, married parents, being African American, earning more than $60,000, and additional children in the household. Family-specific issues and initial program experience are important considerations for implementing a family intervention.*

Keywords: *family intervention; fruit and vegetable; implementation methods*

INTRODUCTION AND BACKGROUND

Diets high in fruits and vegetables (FV) are associated with reduced risk for strokes (relative risk [RR] = 0.73, 95% confidence interval [CI]: 0.57, 0.95) (Bazzano et al., 2002), cardiovascular disease (RR = 0.68, 95% CI: 0.51, 0.92) (Liu et al., 2000), and many cancers (Bailar & Gornik, 1997; Steinmetz & Potter, 1996), particularly breast cancer (RR = 0.75; 95% CI: 0.66, 0.85) (Gandini, Merzenich, Robertson, & Boyle, 2000) and lung cancer (RR = 0.68, 95% CI: 0.49, 0.94) (Michaud et al., 2000). Furthermore, a diet rich in cruciferous and yellow-orange vegetables has been shown to be protective for prostate cancer (odds ratio [OR] = 0.67, $p = .01$) (Kolonel et al., 2000). Despite this understanding, current FV intake levels for both children and adults are low, with only 20% of children eating the recommended five or more servings per day (Krebs-Smith et al., 1996). This alarming statistic augurs poorly for their future health because risk behaviors established in childhood often track into adulthood (Kelder, Perry, Klepp, & Lytle, 1994). Therefore, it is important to establish healthy eating behaviors in childhood to reduce the risk of future disease.

A school intervention study funded by the National Cancer Institute as part of the 5-A-Day initiative, Hi5 Alabama, focused on increasing children's intake of fruits and vegetables (Reynolds et al., 1998). As part of this study, parents were asked to do seven short homework assignments with their fourth-grade students, but only 43% of these assignments were completed (Reynolds, Franklin, Leviton, et al., 2000). This program increased children's intake initially but diminished over time, and it had little effect on parents' self-reported intake (Reynolds, Franklin, Binkley, et al., 2000). To sustain change, other researchers state that the family must have a high degree of involvement (Nader et al., 1989). Not only are children's health behaviors (Baranowski & Nader, 1985), especially their eating behaviors (Nicklas et al., 2001), strongly influenced by their families but their dietary habits are often learned from those controlling the eating environment (St. Jeor, Perumean-Chaney, Sigman-Grant, Williams, & Foreyt, 2002). Furthermore, the food intake of family members is often very similar (Patterson, Rupp, Sallis, Atkins, & Nader, 1988), with children often following parental modeling (Hursti, 1999).

Although the arguments for involving families are compelling, it is often difficult to persuade parents to

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participate in interventions (Nader et al., 1996; Perry et al., 1988). Indeed, nutrition interventions have had only mixed success in their attempts to involve families (Nader et al., 1989, 1996; Perry et al., 1989). CATCH, a multisite cardiovascular health intervention, included a minimal family at-home component and found that whereas 67% completed at least one session, only 34% of families completed all sessions (Nader et al., 1996). Other interventions have reported relatively low percentages of families willing to enroll, and either low or incomplete participation by those who did (Atkins et al., 1990; Nader et al., 1989; Reynolds, Franklin, Leviton, et al., 2000). Engaging families in intervention activities is essential for reducing the risk of Type III error (insufficient intervention implementation) (Basch, Sliepcevich, Gold, Duncan, & Kolbe, 1985), and maximizing the program's potential efficacy as more participation in intervention activities produces greater behavior change (Hunt et al., 2000). One strategy for promoting participant engagement is utilization of peer influence. Peers have been found to be effective for engaging participants in intervention activities as well as agents of change in HIV and STD prevention (DiClemente et al., 2004; Ross & Williams, 2002), heart health (Lefebvre, Lasater, Carleton, & Peterson, 1987), fruit and vegetable (Buller et al., 1999), and physical activity (Coday et al., 2002) interventions. In addition to promoting family commitment to this program, peers were used to instruct participants; help change norms; and cue, model, and reinforce desired behaviors.

Identifying family-specific characteristics that affect participation is essential for securing family involvement in dietary interventions to improve children's intake. This article describes and assesses the efficacy of a method used to engage families in a family intervention—the experimental condition in a large, randomized controlled intervention trial to increase FV consumption in fourth-grade students and their parents. This program seems to have been efficacious because analyses of preliminary outcomes indicate that both the parents and children involved increased their daily FV intake by half a serving ($p < .05$) compared to controls. In this article, we detail the hierarchical organizational design used for the management and implementation of the family FV intervention and identify predictors of program completion.

METHODS

Population

Families were recruited from 33 schools in the greater Birmingham, Alabama, area to participate in a randomized efficacy trial of an FV promotion program. A consent form was sent home with each third-grade student in January 2001. The program was described only generally to parents as annual assessments for the next 3 years in addition to randomization during the next school year to 1 of 3 conditions: assessment only, in-school curriculum for fourth-grade students, or the in-school and family do-at-home program. At the 11 schools assigned to the school-plus-family program, 69% of families ($N = 575$) participated, with 25% of participating families being African American and 72% White. Seventy-one percent of parents were married, and families averaged 4.1 members and had a mean income in the $40,000-$49,000 range. Family information was provided by the person most responsible for meal planning, shopping, and preparation, usually the mother (91%).

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Intervention Description

The do-at-home family intervention addressed issues related to families' FV intakes. Parent-derived issues related to FV (Shewchuk, Franklin, Harrington, Davies, & Windle, 2004) overlaid with Social Cognitive Theory (SCT) (Bandura, 1986) methods formed the basis for this program. Its content and development are described in depth elsewhere (Davies, Harrington, Franklin, & Shewchuk, 2003; Shewchuk et al., 2004). SCT postulates that individuals, their behavior, and the environment are reciprocally determinant, with each constantly influencing the others. The intervention, termed Family Fun Nites (FFN), consists of seven sessions centered around a family food-and-game experience, with each session offering a game, new recipe choices, intervention messages to parents, a kid's fun page that reinforces program themes, optional conversation topics, and menu suggestions for the week. This program was designed as a stand-alone complement to an existing school curriculum for fourth-grade students titled "High 5 Alabama" (Binkley et al., 1994). Program components were pilot tested in one school for feasibility and acceptability prior to full implementation.

Assessments were completed at baseline prior to program initiation and again 1 year later. Demographics, family variables, FV attitudes and practices, and parent

and child intake were collected. These data were used to test program efficacy and to identify families with common FV issues and family styles for intervention targeting. It has been suggested that family characteristics should be taken into account for dietary interventions (Nader et al., 1996). Family typologies have been used to identify common profiles across a spectrum of differing family domains and relevant variables and have been employed to segment populations (Fisher et al., 1998; Fisher & Ransom, 1995; Lavee & Olson, 1993). During our formative research, we developed our family typology by clustering parent-generated FV issues and family interaction scales (parental monitoring, family cohesion, and shared family activities) that were significantly related to parent FV intake (Shewchuk et al., 2004). Our typology identified four distinct family group profiles (see Figure 1) that differed significantly from each other on family interaction scales and endorsement of FV barriers and FV facilitators. These profiles are based on each group's score deviations from the entire study population's means on FV barriers, FV facilitators, and family interaction. Groups were given arbitrary numerical designations, which do not reflect ranking. Twenty-seven percent of the participant families clustered into Group 1, 25% into Group 2, 28% into Group 3, and 19% into Group 4. Families not completing a baseline survey (8%) were assigned randomly to one of the four groups to receive intervention materials. Each group received a specific set of seven sessions: four core sessions addressing widely shared issues, which all family groups received, and three sessions tailored to their group's most salient FV issues. All sessions were of similar intensity and format with differing content focus.

Intervention Delivery

Every effort was made to incorporate into this intervention the characteristics that, according to the Diffusion of Innovations theory (Rogers, 1995), make programs readily adoptable: compatibility, complexity, relative advantage, trialability, and observability. The Hi5+ FFNs format, eating and family time together, were designed to be compatible with the priority population's expressed value system and lifestyle. In addition, specific intervention components were simplified based on feedback from pilot families. Hi5+'s relative advantage was that the FFNs were superior to what they replaced (e.g., scrambling to put dinner on the table without easy, healthy, child-friendly recipes). Trialability was facilitated by demonstrating the main FFN components at a Kick-Off Nite (KON) and by providing families with all the necessary materials. Finally, the KON and FFNs allowed for immediately observable results: family fun, healthy eating, and quality time together. Finally, we used existing social systems and communication channels within each school by hiring parents as peer helpers and by sending program messages home through the school.

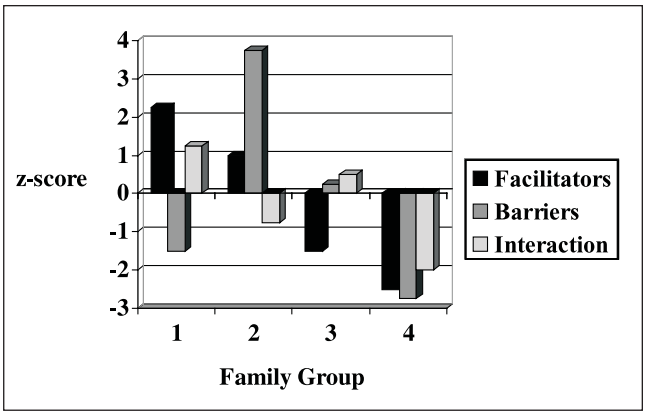

FIGURE 1 Family Group Comparisons
NOTE: The *z*-score is the deviation from the population mean adjusted for the standard error of the population mean.

Personnel

We considered personal contact essential for facilitating family engagement in the intervention. In light of the large number of families in the intervention condition and the limited number of full-time program staff, we decided that a tiered-pyramidal scheme would strengthen program implementation (see Figure 2). Two program staff members were assigned to supervise this effort. Parents from each school were hired as peers, called Hi5 guides, whose job it was to personally contact 10 to 20 assigned participant families to whom they were very similar. To monitor and support the large number of guides needed, a tier of liaison personnel, called Intervention Coordinators (IC), was created to supervise the guides directly.

Intervention Coordinators

The project staff recruited candidates for the IC positions via local newspaper ads, hiring those who met the program's criteria, that is, parents highly involved in their children's schools with some past supervisory experience and understanding of research. The project staff then trained the ICs at three evening and one half-day sessions. The training included staff modeling of FFNs, an opportunity for ICs to gain hands-on experience with FFN materials and to role play both guide and family contacts, and a workshop on Motivational Interviewing techniques (Rollnick & Miller, 1995). Additional training was provided at weekly staff meetings and during a mock KON the ICs piloted during guide training.

The six ICs were responsible for hiring, monitoring, and supporting the guides and conducting a KON at each assigned school. ICs were assigned one or two schools based on race, proximity to their home community, or other links with a school. The ICs assisted project staff with guide training. They also held weekly meetings with assigned guides to monitor their perfor-

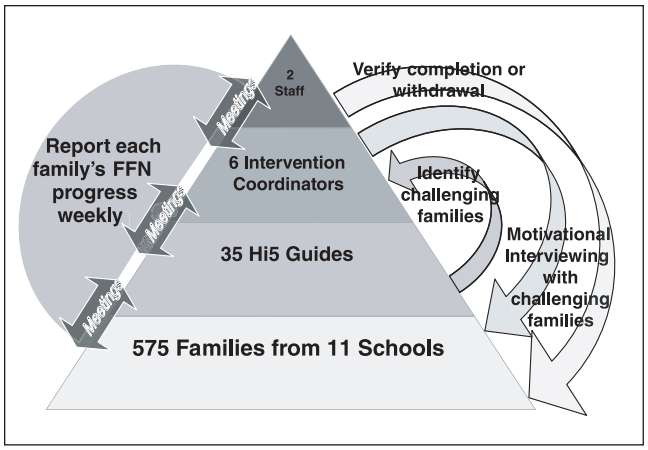

FIGURE 2 Intervention Implementation Pyramid Interactions
NOTE: FFN = Family Fun Nite.

mance and their allotted families' progress with program sessions. They contacted noncompliant families when identified by guides and used brief motivational interviewing techniques to encourage them to participate in FFNs. At weekly meetings with project staff, ICs reported on progress, brainstormed problems, and received support or supplemental training.

Hi5 Guides

Guides were recruited via flyers sent home with third- and fourth-grade students at the end of the prior school year, through a school mailing during the summer, or on the basis of referrals obtained from teachers and other parents at each school. Primary consideration was given to those who were enrolled in the program, were parents of rising fourth-grade students, or were identified by other parents or teachers as school opinion leaders. The number of guides required for each school was based on the number of participating families, with approximately 15 families initially assigned per guide. Each IC supervised between four and nine guides. Guide training, which was conducted at five half-day sessions and used SCT methods, attempted not only to build skills and increase self-efficacy through modeling and role-play practice using family contact scripts but also to increase outcome expectations by providing the opportunity to taste FFN recipes, to play FFN games, and to participate in a KON. Guides also were taught problem-solving techniques to resolve family contact issues and received additional training during meetings with ICs. Guides were responsible for engaging the interest of their assigned families in the program, inviting them to KON, maintaining weekly contacts to track program progress, cuing them to continue with the program, and identifying families in need of additional contact. In addition, they assisted with the KON and delivered program materials to assigned families.

Phase I of Intervention Delivery

Phase I saw the implementation of the intervention as originally planned, with 36 guides and 575 families, and coincided with the High 5 Alabama curriculum being taught in fourth-grade classrooms from September through November 2001.

Families were introduced to the program through the KON held at each school. It was believed that a group presentation would facilitate distribution of the materials, increase families' understanding of the program, and foster the perception that participation was the group norm. Dinner was served, both to make it easier for families to attend, by freeing them from meal preparation, and to allow them to experience a model FFN. Colorful postcards were sent to families, alerting them that an invitation would soon arrive to a special night at the school with dinner and door prizes. Printed invitations were later sent home with fourth-grade participants. Because these initial program events occurred almost 9 months after the families had consented, guides used a scripted introduction to remind families by telephone of their agreed participation. This precaution was taken due to a concern that families might not remember consenting; however, this time lag was unavoidable due to the necessity of completing baseline assessments and following the school calendar. Families had little information about the program and did not know the condition to which they were assigned. After giving a brief explanation of the program, guides invited the families to the KON at the school. The school's cafeteria staff, teachers, and administration also were invited to attend this event as our guests. Tickets could be purchased in advance from classroom teachers for $1 or at the door for $2. All monies collected were donated back to the school, with half earmarked to fund fourth-grade teachers' supplies.

Each KON, hosted by the IC, guides, and program staff, was held in the school cafeteria with families directed to sit with assigned guides. Veggie pizza, a sample FFN recipe made by a local pizza chain, was served with salad, fruit, 100% fruit juices, and sodas. Dinner was followed by an 8-min video that introduced, modeled, and explained FFN program components. In the video, two families from the pilot intervention endorsed the fun and value of the FFNs. Next, the IC led the families in playing "Freggie Bingo," the first FFN game. After door prizes were distributed, guides dispersed FFN materials and answered families' questions. Guides made arrangements to deliver FFN materials and a copy of the video to families unable to attend KON.

Guides contacted families on a weekly basis to check on progress, reminding them to plan their next FFN and answering questions. Because the guides had played all of the FFN games during training and completed FFNs with their own families, they were able to answer questions about the activities. This monitoring system facilitated the tracking of family progress in the program.

When families that completed or wished to withdraw from the program were identified by guides, project staff contacted them to verify the report of program completion or to encourage them to continue the program. Families completing the program could enter a cash prize drawing by completing a response card hidden in the final FFN session game envelope.

After the program began, a few guides left due to competing family issues or unreliability and several guides were unable to handle the number of families assigned to them. Therefore, some families had to be reassigned to other guides. The number of families a guide could accommodate varied greatly, with some guides handling 25 families comfortably, whereas others found 10 overwhelming. Task enjoyment and competing commitments appeared to be determining factors for guide success.

Phase II of Intervention Delivery

Phase II, January to February 2002, targeted the families (N = 218) who failed to complete the program in Phase I. This phase was added when Phase I achieved only a 50% completion rate, which was lower than desired. The lower-than-expected completion rate was due, in part, to some guides and ICs being less effective than others. Families targeted for this phase were either from schools where initial intervention delivery by both the IC and guides was insufficient and may have resulted in poor implementation or from one school that started late without a KON. Families also were included who did not "buy into" the program in the beginning or for whom fall was too busy a time to do FFNs and expressed more willingness to do the program "after the holidays." Four ICs and 10 guides with high rates of program completion in Phase I and good communication skills were selected to work with these families. Guides were assigned families from their original school or one similar to it. During a training session and then at weekly meetings with the staff, they brainstormed ways to reach and succeed with these more challenging families. One strategy suggested and implemented was to offer families four movie tickets if they would "restart" the program by doing the first FFN or one new FFN. This incentive stimulated interest in the FFNs and reminded families that they were easy and fun.

Statistical Methods

Logistic regression analysis with a backward selection process determined predictors of program completion. Program completion was dichotomous, seven FFNs being necessary for a "complete" rating and anything less rated as "not complete." The following variables were examined as predictors: (a) KON attendance; (b) data collected at baseline (prior to randomization), which included parent FV intake, frequency of family eating together (including suppers at home and at restaurants), satisfaction with frequency of family eating together, frequency of TV watching during meals, number of adults and children in the household, parent education level, employment status, martial status, income level, race/ethnicity, family group assignment; and (c) number of guides assigned (see Table 1). Variables stayed in the model if $p \leq .15$; significance in the final model was determined by $p \leq .05$.

t-tests were performed to identify differences between attendees and nonattendees at KON. Variables independently examined were number of children, marital status, education level, race/ethnicity, employment status, income level, parent FV intake, parent monitoring, family cohesion, and shared family activities scores. Significance was set at $p \leq .05$.

RESULTS

The overall program completion rate was 71%, with 76% of families completing more than half and 84% doing some part of the program. Twelve percent of families dropped out of the program, citing lack of interest or time. Fifty-three percent of families attended a KON (range = 41-83%) (see Table 3).

Significant independent predictors of program completion included attendance at KON; membership in Family Group 1 versus 2, 3, or 4; a higher number of adults in the household; married parents; African American race; an income greater than $60,000 versus $30,000 to $60,000 (but not < $30,000); and more children in the household. Those attending KON were almost 4 times as likely to complete the program as nonattending families. For each additional adult in the household, beyond the participating parent, the odds that the family would complete the program increased by more than two. Families with married parents and families in Group 1 were more than twice as likely to complete the program. Being African American or having an income of more than $60,000 (vs. $30K-$60K) each almost doubled the likelihood of completion. Each additional child increased the likelihood of completion by 27%. Odds ratios and confidence intervals are presented in Table 3; Table 4 has completion rates for each predictor. Variables not significantly associated with program completion include parent FV intake, education or employment status, frequency of family eating together, satisfaction with frequency of family eating together, frequency of TV watching during meals, and number of guides assigned.

In terms of demographics and variables determining family group, the only significant differences between attendees and nonattendees at KON were race and parental monitoring scores. Those attending KON were more likely to be White (52% vs. 42% for African Americans) and had higher monitoring scores than those who did not attend a KON.

TABLE 1
Variables Used for Predictors of Intervention Completion

Variable	*Instrument or Question and Response Options*	
Parent FV Intake	Based on seven-Item screener[a]	
Frequency of family eating together	In a usual week, the number of suppers . . . . . my family eats at home together AND . . . my family eats at a restaurant together	7 suppers; 5-6 suppers; 3-4 suppers; 1-2 suppers; Less than once a week
Satisfaction of family eating together	How do you feel about the number of dinners your family eats together each week?	Not as often as I like; Almost as often as I'd like; As often as I'd like
TV watching during meals	When your family eats supper at home together, how often do you watch TV while eating?	All of the time; A lot of the time; About half the time; Once in a while; Never
No. of adults in household	Including yourself, how many adults (21 and older) live in your house?	(Number)
No. of children in household	Write in the ages of the children (younger than 21) currently living in your home:	(up to 8 children listed)
Parent education level	Please circle the highest grade you have completed:	(Grades 1-17+ listed)
Family income	What is your total household's approximate yearly income?	< $30,000; $30,000-$59,999; > $60,000; Do not wish to answer
Parent employment status	What is your current employment status?	Not employed; Full-time homemaker; Employed full-time (≥ 30 hours); Employed part-time (< 30 hours)
Marital status	Marital status:	Married or not married but living with partner >1 year; Never married, divorced, separated, or widowed
Race/ethnicity	Race or ethnic background:	White; Native American; African American; Asian/Pacific Islander; Hispanic; Other, what?_____
Family group assignment	Based on similarity of clustering and weighting of 11 FV issues[b] and 3 family scales (cohesion,[c] shared family activities,[d] and parental monitoring[d])	
KON attendance	Attendance records	

SOURCE: (a) Reynolds et al. (1998); (b) Shewchuk, Franklin, Harrington, Davies, and Windle (2004); (c) Olson, Portner, and Lavee (1985); and (d) Jacob, Moser, Windle, Loeber, and Stouthamer-Loeber (2000).
NOTE: FV = fruit and vegetable, KON = Kick-Off Nite.

DISCUSSION

The rate of program completion achieved in this study is high compared to most family dietary intervention programs. It is comparable to the completion rate achieved by the Minnesota Home Team program (Perry et al., 1988), probably due in part to the similar design of the two programs, that is, both were do-at-home, game-oriented, and easy. Hi5+ was also likely successful because it drew on parents (guides) from the target population who were familiar with the community to implement delivery, thereby facilitating access to and building credibility with Hi5+ families. This tiered pyramidal approach allowed regular personal contact between program field staff and every family, something that would not have otherwise been feasible given the large number of participants. This personal contact permitted identification of families needing extra motivation as well as the development of strategies for hard-to-reach families. Finally, including a Phase II, with its emphasis on targeting lagging families with experienced guides, was an important component of this successful implementation.

By identifying and exploring some family-specific predictors of FFN completion, we may identify why some families completed the program (71%) while others chose not to complete all the sessions (16%) or withdrew from the program entirely (12%). Families rating highest on Family Cohesion and Shared Family Activities (Group 1) were more likely to complete the program than other families. This finding is consistent with Fors et al.'s finding that family interaction aided program diffusion (Fors, Owen, Hall, McLaughlin, & Levinson, 1989). This group's higher completion rates may be partially due to the program fitting into their current behaviors, that is, Group 1 families previously endorsed spending a lot of time together as a family and eating most meals together, activities similar to the FFNs. It may have been more difficult for families to do the FFNs if interactive family time was not usual.

KON attendance was the most significant indicator of program completion, a finding for which there are

TABLE 2
Implementation Results

	Phase 1 n *(%)*[a]	*Phase 2* n *(%)*[a]	*Combined* n *(%)*[a]
Completion of 7 FFN[b]	290 (50%)	121 (21%)	409 (71%)
Completion of ≥ 4 FFN	357 (62%)	80 (14%)	438 (76%)
Completion of ≥ 1 FFN	443 (77%)	40 (7%)	485 (84%)
Withdrew from program	67 (12%)	0	67 (12%)

a. Percentages are based on a total sample of 575.
b. Verified by staff.

TABLE 3
Predictors of Family Fun Nite Program Completion

	Completion	
	Odds Ratio (CI)	p *Value*
Each additional child in household	1.27 (1.02, 1.59)	.0322
Income > $60,000 (vs. $30-$60K)	1.83 (1.01, 3.29)	.0389
African American versus White	1.87 (1.07, 3.28)	.0291
Married parent household	2.11 (1.08, 4.13)	.0289
Each additional adult in house	2.26 (1.28, 4.02)	.0053
Family group 1 versus 2, 3, or 4	2.43 (1.43, 4.02)	.0010
Attended KON	3.95 (2.51, 6.22)	< .0001

NOTE: N = 524. CI = confidence interval, Kick-Off Nite (KON) attendance, based on 10 schools (1 did not have a KON), was 53% (range 41%-83%). FFN = Family Fun Nite.

TABLE 4
Completion Rates for Various Predictors

Predictor	n	*Completion Rate (%)*
Income		
Less than $30,000	121	72
$30,000-$60,000	192	68
More than $60,000	147	80*
Did not answer	108	70
Family group		
1	139	83*
2	120	73
3	153	68
4	99	67
Marital status		
Two-parent married	396	73*
Single parent	172	72
Race/ethnicity		
African American	127	76*
White	386	71
Attended KON		
Yes	271	85*
No	297	61
Attended KON by race		
African American	53	91
White	201	83

NOTE: n totals vary due to missing data. KON = Kick-Off Nite.
*$p < .05$.

several possible explanations. First, a positive early program experience at KON may have convinced some families of the benefits and ease of the program. Second, program commitment may have been viewed as support of school activities. Third, families at KON may have perceived that participation in FFNs was the social norm. Fourth, attendance at KON may reflect a rapport established between the family and the guide during the initial contact. Fifth, it is possible that these families are more willing to participate in a family activity than are others. However, because monitoring scores and race were the only significant differences between those attending and not attending KON, it seems less likely that KON attendance is linked solely to a willingness to participate in a family activity. Possibly, high-monitoring parents are more attentive to school activities and are more likely to attend KON. Because race tended to be similar within each school, timing, instead, may have determined differences in attendance, with KONs scheduled immediately after September 11, 2001, showing poorer attendance.

It is not surprising that households with more adults showed a higher rate of program completion. Additional adults may mean shared workload, possibly freeing up a parent to play games or prepare special meals. Households with children other than the fourth-grade student were also more likely to complete FFN, perhaps because larger families necessitate more organized mealtimes or are more likely to engage in family games. It is also possible that siblings had some unidentified effect on the household that made FFNs more compatible with current behaviors.

It is more difficult to understand how being African American or earning more than $60,000 (vs. $30K-$60K) would affect program completion. Consent rates among African Americans (55%) were lower than among Whites (75%) in this study, and so the African American participants in this program may have represented a self-selected group who were more willing to participate in program activities. The increased income effect has a variety of possible explanations but none of which is compelling in this context. It may represent some unmeasured aspect of family life. Further investigation of these predictors would be of interest to see if

these findings would be replicated in another family intervention study.

Several barriers to program completion were recognized during the implementation phases and had to be overcome. First, some families were largely unaware of the scope or specifics of the program. They had provided consent almost 9 months earlier for a nutrition program that included a possible, random inclusion in one of three programs. When contacted by the guides, many families said they did not remember what they had signed up for, explaining, at least in part, why some families chose to withdraw or not complete the program.

Second, all of the KONs were held during the 12 days following September 11, 2001, and this unfortunate timing may have negatively influenced attendance. These KONs had been scheduled weeks in advance with school principals. Because the highest attendance rate (83%) occurred at the KON held the day farthest away from this national tragedy, it is speculated that overall attendance was less at some schools due to some families' responses to the 9/11 attacks.

Third, some Hi5+ guides did not deliver materials, make initial family contact, or keep up contacts as well as others. This poor guide performance resulted in their assigned families being less likely to attend KON, understand the program well, receive materials in a timely manner, or receive verbal FFN reminders and consistent personal contact. Although many of these families were targeted in Phase II of this program, a poor initial program experience may have discouraged some of them from participating. Project staff felt that guide assignment had a predictive role in family completion, but we were unable to measure this effect adequately due to the variation in timing and frequency of reassigning guides and to the differences in frequency and intensity of IC-family interactions between ICs.

Several observations from this experience could be used to shape the implementation of a similar family program in the future. First, more selective recruitment and extensive training of guides might lead to fewer initial family contact problems, as well as fewer guide drop-outs. Second, ICs reported feeling insufficiently trained and experienced in Motivational Interviewing techniques and so felt uneasy using them. Those techniques might have proven more effective had they been better tailored to fit this study and more training and practice had been provided. Third, utilizing the predictors of completion enumerated here may allow early identification of families for whom implementation might be a challenge. An additional strategy tailored to these families may make them more likely to participate in the initial phase of the program. Finally, ICs with greater leadership and supervisory experience should be hired, because those with more experience were found to be more effective in their roles with the guides and families, requiring less staff support and supervision.

Limitations

The intervention delivery mechanisms described may be limited to family dietary programs. The family data presented here is limited by the bias inherent in all self-report data. Any conclusions are also limited to families living near an urban center in the southern United States and may not be representative of all such families because this was a voluntary sample. It is likely that some important issues in determining a family's program completion may not have been measured and their absence limits the predictive potential of this study.

CONCLUSIONS

Preliminary results indicate that this family intervention did increase FV intake, and additional planned analyses examining mediating variables may better illuminate the efficacious aspects of this program. In the meantime, a number of important lessons learned from this implementation may be applied to other family programs. A pyramidal, tiered approach makes a large intervention manageable and allows for quick identification of problems with program delivery. Field-supervised, nonprofessional peers can be successful in program implementation, especially when carefully selected and trained. A family dietary program's rate of implementation may be greater when the intervention mechanism fits into a family's current behaviors and when theoretically identified qualities of an adoptable program are addressed in its development. Identifying family-specific issues may allow more efficacious program design and delivery mechanisms of future family dietary programs. To fully test the applicability of the family typology approach used here, further research is needed as to its specification, generalizability, and stability across other populations. Finally, our experience has taught us that the initial program experience is key; holding a "come and see" experiential group meeting may establish the program as a peer norm and strengthen positive outcome expectations. It would be helpful for others to expand on this experience by attempting similar family interventions in other geographic areas or with families whose children are not in fourth grade, testing the application of diffusion theory within this framework. Finally, given the limited literature we found when reviewing implementation strategies for families, others should share the "nuts and bolts" of their methods to help future programs maximize their implementation and minimize costly mistakes.

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