

Health Education & Behavior

<http://heb.sagepub.com>

Coaching Process Outcomes of a Family Visit Nutrition and Physical Activity Intervention

Jerianne Heimendinger, Terry Uyeki, Aurielle Andhara, Julie A. Marshall, Sharon Scarbro, Elaine Belansky and Lori Crane

Health Educ Behav 2007; 34; 71 originally published online May 31, 2006;
DOI: 10.1177/1090198105285620

The online version of this article can be found at:
<http://heb.sagepub.com/cgi/content/abstract/34/1/71>

Published by:

 SAGE Publications

<http://www.sagepublications.com>

On behalf of:



Society for Public Health Education

Additional services and information for *Health Education & Behavior* can be found at:

Email Alerts: <http://heb.sagepub.com/cgi/alerts>

Subscriptions: <http://heb.sagepub.com/subscriptions>

Reprints: <http://www.sagepub.com/journalsReprints.nav>

Permissions: <http://www.sagepub.com/journalsPermissions.nav>

Citations (this article cites 45 articles hosted on the SAGE Journals Online and HighWire Press platforms):
<http://heb.sagepub.com/cgi/content/abstract/34/1/71#BIBL>

Coaching Process Outcomes of a Family Visit Nutrition and Physical Activity Intervention

Jerianne Heimendinger, ScD, MPH, RD
Terry Uyeki, MSED
Aurielle Andhara, MBA
Julie A. Marshall, PhD
Sharon Scarbro, MS
Elaine Belansky, PhD
Lori Crane, PhD

The purpose of this article is to report the process outcomes of a coaching methodology used in a study designed to increase fruit and vegetable consumption and physical activity in families. Eighty-eight families with second graders were recruited from a rural, biethnic community in Colorado and randomized to intervention and delayed intervention conditions. This article reports on the 27 families in the delayed intervention group. Families received up to 10 home visits over 10 months from a family advisor and completed activities to improve their dietary and physical activity behaviors. Coaching conversations took place during each home visit. Coaching process outcomes were evaluated by analysis of visit documentation, participant survey, and qualitative interviews. Results indicated that coaching, in conjunction with family activities, engaged families in the process of change and facilitated movement toward the achievement of their weekly nutrition or physical activity goals. Coaching methodology may be particularly useful for participatory research.

Keywords: *coaching; nutrition; physical activity; family advisors; family-based intervention; Hispanic population; participatory research; fruits and vegetables*

There has been a dramatic increase in the prevalence of obesity among adults and children over the past 25 years, with the highest risks occurring in minority populations including Hispanics (Kuczmarski, Flegal, Campbell, & Johnson, 1994; Troiano, Flegal, Kuczmarski, Campbell, & Johnson, 1995). Therefore, a greater proportion of the population is at higher risk of obesity-related morbidity, such as hypertension, cardiovascular

Jerianne Heimendinger, Consultant, Manitou Springs, Colorado. Terry Uyeki, Rocky Mountain Prevention Research Center, Alamosa, Colorado. Aurielle Andhara, Coaching Consultant, Colorado Springs, Colorado. Julie A. Marshall, Sharon Scarbro, Elaine Belansky, and Lori Crane, University of Colorado Health Sciences Center, Denver.

Address correspondence to Jerianne Heimendinger, 24 Sandra Lane, Manitou Springs, CO 80829; phone and fax: (719) 685-4136; e-mail: Jerianneb@earthlink.net.

This article was supported by Cooperative Agreement U48/CCU 815787 and SIP 22-99 from the Centers for Disease Control and Prevention. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention.

Health Education & Behavior, Vol. 34 (1): 71-89 (February 2007)
DOI: 10.1177/1090198105285620
© 2007 by SOPHE

disease, insulin resistance, type 2 diabetes, and some types of cancer (Burton, Foster, Hirsch, & Van Itallie, 1985). Regular physical activity and maintaining a diet high in fruits and vegetables have been associated with reduced risk of obesity and chronic disease (Blair et al., 1995; Farquhar et al., 1990; Farquhar et al., 1977; Knowler et al., 2002; Lee, Sesso, & Paffenbarger, 1999; Pietinen, Lahti-Koski, Vartiainen, & Puska, 2001; Puska, Vartiainen, Tuomilehto, Salomaa, & Nissinen, 1998; Sesso, Paffenbarger, & Lee, 2000; Ursin et al., 1993; World Cancer Research Fund, 1997). Because both dietary habits and physical activity patterns are formed early in life and excess weight gain is occurring at early ages, primary prevention efforts should include children as well as adults. Family-based interventions in the home setting are a potentially effective way of reaching these target populations.

Definitions of family-based interventions vary greatly. The family intervention may be the major focus of the study or it may be an added component of an intervention designed for another channel, such as schools. For example, the family component of a school-based intervention may include assignments sent home to be done collaboratively by parent and child, or family events held at the school (Crockett, Mullis, Perry, & Luepker, 1989; Hopper, Gruber, Munoz, & Herb, 1992; Luepker et al., 1996; Nader et al., 1996; Perry et al., 1989). Interventions vary in mode of delivery (some are delivered face-to-face, others via phone or written materials), location (most face-to-face interventions are delivered in a classroom setting outside the home), and dose. Few to date, with the exception of maternal and child health interventions and a few obesity prevention studies, have been delivered in the home setting (Gomby, Culross, & Behrman, 1999; Harvey-Berino & Rourke, 2003; Olds et al., 1997; Robinson et al., 2003). Home delivery provides several advantages, including insights into family dynamics, capacities, and resources, enabling appropriate adjustments in the intervention for maximum effect.

Family-based interventions have been designed to address many issues, such as maternal and child health (Gomby et al., 1999; Kendrick et al., 2000; Olds et al., 1997), mental health (Diamond & Siqueland, 2001; Harrington et al., 1998), obesity (Harvey-Berino & Rourke, 2003; McLean, Griffin, Toney, & Hardeman, 2003; Robinson et al., 2003; Stolley & Fitzgibbon, 1997), nutrition (Crockett et al., 1989; Fitzgibbon, Stolley, Chavez, Avellone, & Sugeran, 1996; Perry et al., 1989; Worobey, Pisuk, & Decker, 2004), physical activity (Adkins, Sherwood, Story, & Davis, 2004; Hopper et al., 1992; Williams et al., 2004), and various chronic diseases (Fisher & Weihs, 2000; Johnson et al., 1991; McLean et al., 2003; Nader et al., 1989; Worobey et al., 2004). The majority of interventions cited above reported some level of success in changing knowledge, attitudes, and/or behaviors.

Although researchers have invested significant effort in evaluating behavioral outcomes related to family-based interventions, less attention has been given to systematically evaluating the manner in which interventions were delivered (Madsen et al., 1993; McGraw et al., 1996). Several authors have indicated that more information on process variables would be beneficial (Madsen et al., 1993; Philips, 1989). Primavera (2004) recently stated that reports of community-based research are often presented in a "decontextualized fashion, focused more on the content of what was done than on the process of how the work was done and why." The author suggests that if researchers want their work available for replication, "communication regarding process must shift from the anecdotal to a position of central importance" (Primavera, 2004).

This article focuses on the intervention process, with the understanding that process data are valuable for other investigators, especially when new approaches such as coaching are tried and even when overall project outcomes may be marginal or insignificant

(Steckler & Linnan, 2002). Such information is especially salient as more researchers *partner* with study participants, instead of viewing them as research “subjects.” When participants are able to create their own path through intervention offerings, researchers are challenged to find delivery methods that are flexible, set a consistent tone of collaboration, and yet provide a protocol that can be replicated in other settings. We chose coaching to be this method.

Our program is unique in several ways: It is a family-based intervention of equal importance to, not adjunct to, the school-based intervention it complements; it is delivered in the home; the family is asked to partner interactively with the advisor; and finally, conversations with the family are conducted using a five-stage coaching process, which is a new delivery method for health interventions.

Very few health behavior studies have attempted to use coaching techniques or to analyze dialogue content between client and coach/family advisor (Hovell et al., 2002; Hovell et al., 2003; Tidwell et al., 2004; Whittemore, Melkus, Sullivan, & Grey, 2004).

Coaching Background

Because coaching is a newly emergent and rapidly expanding field of intervention expertise, variations in practice and definition abound. Over the past 5 years, however, professional associations and accrediting bodies have begun to distill common critical aims and attributes that uniquely distinguish coaching from other intervention approaches. Thus, coaching may be broadly defined as a structured, process-driven professional relationship between a qualified coach and a client designed to foster the achievement of extraordinary results based on specific aspirations and goals set by the client to reach higher levels of performance, learning, growth, or satisfaction/fulfillment in any aspect of work or life (Flaherty, 1999; Hargrove, 2003; International Coach Federation, 2004). It is a wholistic and systematic conversational approach designed to increase clients' competency and confidence by creating an empowering and appreciative context (based on what's working, existing strengths, and aspirations) for clients to clarify their values; assess discrepancies between their ideal state and their current situation; identify what they want to change; discover their internal motivations and hidden obstacles to success; expand their thinking to include new and intriguing possibilities not imagined before; and identify the strategies, action steps, and accountability measures they will implement to produce and sustain their desired outcomes.

Coaching incorporates a variety of concepts and principles drawn from the behavioral sciences, organizational development, learning theory, spiritual traditions, the arts and humanities, personal development techniques, appreciative inquiry, and sports training to increase self-awareness and awareness of others (International Coach Federation, 2004; Skiffington & Zeus, 2003).

Coaching was first introduced as a distinctive approach to personal and professional development in 1982 by Thomas Leonard and was commonly known as *personal or life coaching* (Leonard & Laursen, 1998). By the mid-1990s, *business coaching* took root in the corporate arena, where it uses similar approaches for leadership, team, business, and human resource development. In recent years, *niche* or what might be called *applied coaching* (Andhara, 2000) has expanded coaching into a wide variety of fields, including health. In applied coaching, the principles and signature approaches of coaching are followed, but certain aspects of the implementation are adapted to fit within the constraints and purposes of the specific application. The use of coaching in the family intervention component of this research study is an example of applied coaching.

METHOD

Overview of the PACT Program

The study from which this article is drawn was implemented by the Rocky Mountain Prevention Research Center (RMPRC), partnering with a rural community in the San Luis Valley of Colorado. This community has a large Hispanic population (47%) at high risk for diabetes, obesity, high-fat, low-nutrient dense diets, and physical inactivity (Baxter et al., 1993; Lopez, Marshall, Shetterly, Baxter, & Hamman, 1995; Marshall et al., 1993; Marshall, Lopez, Shetterly, Baxter, & Hamman, 1995; Marshall et al., 1999; Mayer et al., 1991). The full study had three components: the school component, made up of a 28-week nutrition and physical activity program integrated into the second-grade curriculum; the family component, made up of home visits designed to complement the school-based intervention; and a community component to support the development of community resources for healthy activity and nutrition. The family component was entitled Parents, Advisors, and Children Together (PACT). Its purpose was to promote the adoption and maintenance of healthy habits in diet and physical activity in families with second-grade children through a family visitation program and to understand how families worked on changing their habits. The primary outcomes were levels of consumption of fruits and vegetables and physical activity, which will be reported in a separate article.

The PACT family visit program was tailored to each family's issues and concerns, so that families set their own goals in nutrition and physical activity, which might fall below or exceed PACT's target goals. The target goals were to help individuals eat at least five servings of fruits and vegetables each day and engage in at least 30 minutes of moderate activity 5 or more days per week. Family advisors integrated coaching with hands-on activities to assist each family in understanding its current behaviors, underlying motivation for change, and perceived barriers to and facilitators of nutrition or activity goals. The advisors also worked with families to develop an action plan to reach its goals and provided information about relevant community resources.

Study Design

Eighty-eight families were recruited for the study from the cohort of second-grade students receiving the integrated curriculum described above, representing 51% of those students' families. After completing baseline assessments, families were randomly assigned to either an intervention or a delayed-intervention control condition. Families in the intervention condition received up to 10 home visits from a family advisor, over a 10-month period, and completed activities to improve their diet and increase their physical activity. Family members who participated in these visits were the adult caregiver(s), the second-grade student, and other siblings. The control families received the intervention over a 10-month period during the second school year. Because the PACT visit protocol was modified frequently during Year 1 to better serve the families, process measures reported in this article are for Year 2 families who received visits.

Partnering with families, by coaching them to surface their own motivation and to create their own goals, meant that the first year of the PACT program was largely developmental. Ongoing feedback from families and family advisors was reviewed by an intervention committee of investigators, who decided when it was appropriate to revise the visit protocol, training, and tracking instruments. For example, the way in which information was obtained about a typical day in the family was modified to keep children more

actively engaged in the process. Because there is a steep learning curve in a collaborative project of this nature, wait-listed controls may benefit from an improved intervention design, rather than being deprived by the delay in receipt of the intervention.

Participants

Of the 44 families randomized to receive visits in Year 2, 27 families had at least one PACT home visit. The other 17 families declined visits for reasons such as moving out of the study area and time constraints. The primary caregiver in the family was defined as the adult living with the second-grade student who took the most responsibility for preparing food for the family and knew the most about the child's dietary and activity behaviors. The secondary caregiver was the other adult in the home, if there was one.

Coaching Stages and Outcomes

We used a model for coaching based on the assumptions that clients are naturally creative, resourceful, and whole; they have the best answers for meeting the challenges they face; and they engage with a coach for the purpose of helping them to access those answers and bring them to fruition. The model is shaped by the following principles: coaching is a solutions-based (versus problem-driven) activity; it is a collaborative alliance that engages clients as partners and operates on their behalf; it uses a systems approach to change that addresses all aspects of the client's world; it focuses on inquiry versus advocacy (giving advice); and it starts by meeting people where they are and appreciating what is of value to them (Andhara, 2000; Whitworth, Kimsey-House, & Sandahl, 1998).

The coaching model, developed by a consultant, uniquely delineates five stages that guide the coaching conversation and was applied within the context and purposes of the PACT program (Andhara, 2000). The purpose, method, and outcome for each coaching stage is as follows.

The Connect Stage. The family advisor sought to establish an interpersonal connection with the family that encouraged open communication and trust in the relationship. This was accomplished by building rapport and establishing the shared context for the meetings (e.g., the description and purposes of PACT; what the family wanted to gain from the program; how the family and advisor would proceed). The outcome of this stage, the *intersection of interests*, was accomplished when the family and advisor jointly defined the common ground that would simultaneously make the most of the family's interests and the program's objectives. On every home visit, the family advisor reestablished this intersection of interests by reinforcing the rapport that had been established and continuing to clarify new developments in the shared context.

The Discover Stage. Adopting an attitude of genuine interest and appreciation, the family advisor used open-ended questions and other forms of "collaborative inquiry" to help the family identify and understand the underlying factors (e.g., beliefs, cultural influences) that affected their diet and physical activity behaviors. The family advisor sought to recognize or elicit the stage outcome of a *coachable opening*, which can be thought of as a specific pathway to change—an "Aha" or the recognition of a significant element (e.g., 30 minutes "found" in a busy day for exercise) influencing the family's behaviors that they were ready, willing, and able to explore at a deeper level.

The Create Stage. When the family identified an area of interest they wished to explore, the family advisor asked coaching questions to help the family identify an *actionable insight* (i.e., some action they could take, based on what they discovered in their exploration of the coachable opening) that would help them move forward toward the goals they set for themselves. The actionable insight emerged from brainstorming a broad list of possible courses of action and then identifying a particular action that seemed to be most helpful, doable, and inspiring.

The Design Stage. During this stage, the family designed a specific and doable *plan of action* for accomplishing their goal or actionable insight. It was important to help the family anticipate the likely consequences of taking this new action and to plan how they would address potential barriers to and make use of facilitators of their desired behavior that might appear along the way. This information formed a roadmap for the family that previewed the journey ahead, helping them avoid “potholes” that might impede progress.

The Activate Stage. The family advisor helped the family identify the specific benefits to be gained by adopting or maintaining a healthy habit and particular sources of inspiration to stay committed to the action. Using collaborative inquiry, the advisor and family also established a mechanism for accountability. The outcome of this stage was the family’s *commitment to action*. The action they committed to might have been a learning activity or forwarding action that deepened their understanding about themselves or their motivations or helped them gain more knowledge about how to make desired changes. Or the commitment might have been to take action on a specific task, referred to as a “weekly goal” (a small step that helped the family move toward their ultimate change goal).

These coaching stages make sequential sense and provide navigational guidance throughout the coaching conversation. They help the advisor know where he or she is at any point in the conversation, what to focus on (the purpose of the stage), how to do it (the methods of that stage), and when that stage is complete (the outcome). In practice, however, any conversation may touch on any of the stages in varying order. It is common to start each visit with the connect stage, but past visits and the current conversation may elicit any of the other stages.

Training of Family Advisors and Quality Assurance

Three family advisors with varying degrees of home-visiting experience were hired from the local community and participated in an extensive training process. Trainers included the coaching consultant who designed the coaching model, study investigators, and content experts from the local community. Family advisors conducted four monitored visits with “practice” families not participating in the program prior to the beginning of the intervention. Additional coaching training was provided intermittently throughout the intervention by the consultant, who also occasionally shadowed advisors on family visits, reviewed audiotapes of family visits, and provided individual and group coaching to the family advisors.

For quality assurance purposes, supervising staff listened to audiotapes of 10% of the family visits to assess the quality of the family advisors’ preparation for and interactions with the families relative to established visit protocols and appropriate use of hands-on activities and coaching strategies. If necessary, a supervisor worked collaboratively with a family advisor to design a plan for improvement.

Family advisors were trained to complete the visit documentation form for each visit, using standardized criteria. Quality control included 100% “chart review” of each documentation form by either the supervising family advisor coordinator or the study evaluation coordinator. They assessed timely completion of documentation, completeness, and consistency in the information recorded. Ten percent of the forms were reviewed while listening to a tape of the corresponding visit to assess accuracy and consistency of information documented.

Description of PACT Family Visits

Typically, PACT visits took place in the family’s home, but family visit activities sometimes took place in a different location (e.g., a planned nature walk at a park). At a minimum, the visits involved the primary caregiver and the second grader, although all interested family members were encouraged to participate, including the secondary caregiver, siblings, and other relatives such as grandparents or cousins.

Intended outcomes for family visits were based on the coaching stages, allowing families to first discover their current interests, concerns, priorities, and values about nutrition and physical activity before moving into action to change behaviors. At the end of each visit, the family advisor would initiate conversation about the next visit’s focus or activity and discuss with the family what steps they were willing to take to help them move forward in their area of interest (i.e., a forwarding action or weekly goal).

At most visits, the family advisor would facilitate a fun, hands-on activity chosen by the family at the previous visit. Depending on the nature of the activity, a family advisor might engage the family in a coaching conversation during the activity or might wait until the activity was completed. For example, if the activity were playing basketball with the family, the physical effort and concentration required by the game might prevent a conversation until after the game ended.

Measures

Process measures of the family visits were obtained from three sources: (a) the Visit Documentation Form, which each family advisor completed following each family visit; (b) the Family Satisfaction Survey, conducted by trained telephone interviewers with primary caregivers 6 to 8 months following their last completed family visit; and (c) the qualitative study, made up of in-depth semistructured interviews of a sample of family members and their family advisors.

Visit Documentation Measures. To document visits, family advisors noted time, date, and location of the visit, family member attendance, individual degree of involvement, and family dynamics (e.g., shared or dominated conversation and any observed conflict between members). Prior to the visit, family advisors documented the planned hands-on activity, the appropriateness of the activity within the context of the caregivers’ stage of change, and their barriers to and mediators (e.g., self-efficacy) of behavior change related to nutrition or physical activity. Following the visit, family advisors assessed the family’s level of engagement and time spent in each of the coaching stages, whether the outcome for each coaching stage was obtained, and the family’s reaction to the planned activity.

Setting formal, long-term goals can be intimidating to individuals. As an alternative, families were coached toward setting small weekly goals or forwarding actions to enable the family to experiment with a new behavior. A forwarding action might be to obtain

more information about health clubs in the area. A weekly goal might be to add a fruit at breakfast. Family advisors recorded weekly goals and forwarding actions and how family members fared on those goals or actions on their next contact with the family. A summing of these outcomes resulted in a composite measure for “achievement outcome.”

Family Satisfaction Survey. Six to 8 months after completion of the family visits, 20 of 27 (74%) caregivers who had at least one family visit completed a telephone survey to determine their satisfaction with the PACT program. This survey included a series of questions related to coaching stages and outcomes and perception of personal behavior change. The participants were also asked to assess how well they had maintained their goals.

Qualitative Interviews. The study evaluator conducted interviews with four families about their experience with the program following completion of the intervention. A total of six caregivers, four second-grade children (who were third graders by the time they were interviewed), and five siblings were interviewed. In addition, the supervising community project director and three family advisors were interviewed to reflect on the visit intervention and the process of coaching.

Participants were selected for the interviews based on ethnicity of the caregiver, family type, and amount of behavior change using a mixture of purposive sampling types described by Patton (1980). Sampling for qualitative methodology differs from conventional quantitative sampling methods. Purposive sampling seeks to maximize information, not facilitate generalization. Thus, maximum variation sampling was used to document variations that may have emerged as a result of different conditions, such as the ethnicity of the caregivers and family type (i.e., single- or two-parent family). Extreme cases sampling seeks to obtain information about cases at the extreme ends of a spectrum—in this case, whether PACT participants were perceived by their family advisors to have made “no changes in healthy habits” versus “marked improvements in healthy habits.” Determination of extreme cases was based on review of family visit documentation and brief interviews with family advisors about their documentation.

Semistructured interviews were used, beginning with a set of open-ended questions asking adults about their expectations for PACT; what they did and did not like about the program; types of changes, if any, made in their diet or physical activity and to what they attributed their making those changes; and the likelihood of maintaining new diet/physical activity behaviors. Children were asked about what they liked or didn’t like about the program. Interviews were typically conducted in the family’s home, and family members were interviewed as a group. At the close of the interview, the inquirer checked with the family for clarity of understanding.

Analysis of Visit Documentation and Family Satisfaction Survey

Scores for time spent in coaching conversation and level of family engagement were averaged over visits for each family. Means and standard deviations for achievement outcomes were computed for each family. Correlations were calculated to examine the relationships among the four process variables: time spent in coaching conversation, level of family engagement in coaching stage, attainment of outcome for coaching stage, and goal/forwarding action achievement outcomes. Because of differences among advisors in the amount of time spent in coaching stages, partial correlations were also computed, taking family advisors into account. These partial correlations were calculated by first

running linear regression models of the process variables on family advisor. Pearson correlations were then calculated on the residuals from these models. For family satisfaction survey items, frequency distributions of responses were determined.

Analysis of Qualitative Interviews

Qualitative data analysis was conducted in two ways: Information about each family was analyzed and described, and then information across families was analyzed and described. Analysis of information for each family was based on a modified method of constant comparison (Glaser & Strauss, 1967, as adapted by Lincoln & Guba, 1985, and Skrtic, 1985). Interview transcripts were analyzed for repetitious patterns of ideas generated from participant thoughts on how PACT influenced their nutrition and physical activity attitudes and/or behaviors. Analysis was carried out in two tasks: unitizing and categorizing.

Unitizing is the step of identifying and recording essential information units from the data that are relevant to the focus of the inquiry. Each unit focused on an understanding or action.

The process of categorizing began with the first interview with a Year 1 PACT family that was unitized. Using the modified method of constant comparison, categories that describe the nature of groupings of units were developed, then codes for these categories were assigned to the units. With each successive family interview, from 10 Year 1 and 4 Year 2 families, the appropriateness of each category was reevaluated as more units were added. A final set of categories was developed that could reasonably handle the units. For example, units of data that pertained to having an increased awareness (e.g., increased awareness of one's own behavior) were coded under the larger category of "awareness." All data were coded and retrieved via ATLAS/ti software (Muhr, 1997), using the final category set.

RESULTS

Visit Information

In the second year of the PACT intervention, 27 families received home visits by one of three advisors. The mean number of visits for a family was 7 (range = 1 to 11), averaging 1 hour per visit. The total number of visits across the 27 families was 190: 28% ($n = 54$) of visits focused on nutrition and 58% ($n = 110$) focused on physical activity. The remaining 14% ($n = 26$) of visits did not have a specific focus area because they were usually the initial home visit. Sixty percent of primary and secondary caregivers were Hispanic and the remainder was White, non-Hispanic, with the exception of 1 Native American and 2 Guatemalans.

Time, Level of Engagement, and Coaching Stage Outcome

Table 1 shows, by coaching stage, the mean rating for amount of time spent in a coaching conversation, the level of engagement, and percentage of visits in which the outcome for the coaching stage was achieved. More time was spent in the Connect stage than in other coaching stages. Advisors reported spending the least amount of time in the Create and Design coaching stages. In most cases, the more time spent in conversation at a stage,

Table 1. Descriptive Coaching Variables for 190 Home Visits

Coaching Stage	Mean (+/- SD) Rating for Amount of Time Spent in Conversation ^a	Mean (+/- SD) Rating for Level of Engagement ^a	% of Visits in Which Outcome for the Stage Was Achieved
Connect	3.4 ± 0.72	3.0 ± 0.73	86.8 [intersection of interests]
Discover	2.8 ± 0.79	2.9 ± 0.85	63.7 [coachable opening]
Create	1.9 ± 0.78	2.1 ± 1.03	36.8 [actionable insight]
Design	1.6 ± 0.74	1.8 ± 0.96	22.1 [plan of action]
Activate	2.4 ± 0.76	2.6 ± 0.82	82.1 [commitment to action]

a. 1 = not tried, 2 = a little, 3 = some, and 4 = a lot.

Table 2. Correlation of Time Spent on Coaching Stage Versus Family Engagement, by Type of Visit (Correlation Coefficients)

Coaching Stage	Time Spent Versus Level of Engagement Nutrition Visits (<i>n</i> = 54)	Time Spent Versus Level of Engagement Physical Activity Visits (<i>n</i> = 110)	Time Spent Versus Level of Engagement for All Visits, Adjusted for Family Advisors (<i>N</i> = 164)
Connect	0.62 (<i>p</i> < .001)	0.18 (<i>p</i> = .06)	0.51 (<i>p</i> < .01)
Discover	0.77 (<i>p</i> < .001)	0.63 (<i>p</i> < .001)	0.81 (<i>p</i> < .0001)
Create	0.36 (<i>p</i> < .001)	0.42 (<i>p</i> < .001)	0.21 (<i>p</i> = .35)
Design	0.49 (<i>p</i> < .001)	0.45 (<i>p</i> < .001)	0.31 (<i>p</i> = .20)
Activate	0.67 (<i>p</i> < .001)	0.73 (<i>p</i> < .001)	0.69 (<i>p</i> < .0001)

the greater the mean level of family engagement and the greater percentage of visits in which the outcome for the stage was achieved. An exception to this was the Activate stage in which the amount of time spent and level of engagement were moderate, but there was a high percentage of visits in which the outcome for the stage was achieved. These relationships held whether the visit was focused on nutrition or physical activity (data not shown).

The level of engagement of family members was positively and significantly associated with time spent in a coaching stage in both nutrition and physical activity visits, with the exception of the Connect stage for physical activity visits (see Table 2). In the last column of Table 2, all visits were averaged together to provide an overall description of the coaching process over time. Estimates are adjusted for family advisor, because amount of time spent in coaching stages varied by advisor. Across all visits, the partial correlations (adjusting for family advisors) between time spent in each coaching stage and level of engagement are significant for the Connect, Discover, and Activate stages. Adjusting for advisor, we found the following correlations when data were pooled across all coaching stages: 0.54 (*p* < .001) for time spent in coaching conversation versus level of engagement; 0.69 (*p* < .001) for time spent versus attainment of coaching outcome; and 0.61 (*p* < .001) for level of engagement versus attainment of coaching outcome.

Table 3. Frequency Distribution of Achievement Outcomes

	Achievement Outcome				Total
	1 = No	2 = No, Something Learned	3 = Partial	4 = Yes	
Forwarding action	22 (21%)	13 (13%)	23 (22%)	45 (44%)	103 (100%)
Total	29 (18%)	31 (19%)	41 (25%)	62 (38%)	163 (100%)

Achievement Outcome

There were 21 families that committed to at least one forwarding action or weekly goal. The mean number of actions or goals per family was 7.8. The proportion of actions and goals achieved are presented in Table 3. For only 18% of follow-up queries by the family advisors was the goal or forwarding action not achieved. For 63% of these queries, the goal or forwarding action was completely or partially achieved.

For these same 21 families, the mean engagement score was 2.8, ranging from 2.4 to 3.6. The average number of visits per family was 8.6. The correlation between average achievement outcome and average engagement was 0.34 ($p = .13$). After adjusting for family advisor, there was a statistically significant positive relationship (correlation = 0.51, $p = .02$) between outcome and engagement.

Family Satisfaction Survey

Table 4 displays the results of the family satisfaction survey for nutrition and physical activity. The table indicates that a higher proportion of caregivers perceived that PACT assisted with physical activity than with nutrition, although numbers are small. This perception may reflect the fact that visits focused on physical activity ($n = 110$) were twice as numerous as those focused on nutrition ($n = 54$), which in turn may indicate a higher level of interest in making changes in physical activity.

Despite the family advisors' perceptions that for the Create and Design stages, there was less time spent, lower family engagement, and less attainment of coaching stage outcome, adults in the family had very positive perceptions of outcomes related to those stages. For example, for both nutrition and physical activity, 55% strongly agreed that "meeting with your family advisor helped you think of new ways to get more [physical activity/fruits and vegetables into your diet]," which largely relates to the Create stage outcome of arriving at an actionable insight.

Just one overall question was asked about the Connect stage. All families who had set goals reported that they had chosen their own goals for the program, suggesting that the intersection of interests between the program and the families was achieved. In addition, the perceptions of behavior change attributed to the PACT program were strong: 56% and 50% "strongly agreed" and 44% and 39% "somewhat agreed" that being in the PACT program had helped them change their physical activity and nutrition behaviors, respectively.

Similarly, when asked if PACT had increased their motivation to eat more fruits and vegetables or to increase their physical activity, 100% of participants said yes. When asked whether they had been able to stick with the goals they set for themselves, 53% answered "very well" or "somewhat."

Table 4. Caregiver Perceptions of Nutrition and Physical Activity Coaching Outcomes

Coaching Stage: Coaching Outcome	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree
Connect: Intersection of interests				
Your family advisor let your family members decide what their goals would be for the program.	93.3% (n = 14)	6.7% (n = 1)	—	—
Discover: Coachable opening				
Being in the PACT program helped you to understand what makes you eat the way you do.	22.2% (n = 4)	55.6% (n = 10)	16.7% (n = 3)	5.6% (n = 1)
Being in the PACT program helped you to understand why you get the amount of physical activity you get.	44.4% (n = 8)	44.4% (n = 8)	5.6% (n = 1)	5.6% (n = 1)
Create: Actionable insight				
Meeting with your family advisor helped you think of new ways to get more fruits and vegetables into your diet.	55% (n = 11)	30% (n = 6)	10% (n = 2)	5% (n = 1)
Meeting with your family advisor helped you think of new ways to get more physical activity.	55% (n = 11)	40% (n = 8)	5% (n = 1)	—
Design: Plan of action				
Meeting with your family advisor helped you make a plan for how to eat more fruits and vegetables.	40% (n = 8)	45% (n = 9)	10% (n = 2)	5% (n = 1)
Meeting with your family advisor helped you make a plan for how to get more physical activity.	60% (n = 12)	35% (n = 7)	5% (n = 1)	—
Activate: Commitment to action				
Meeting with your family advisor inspired you to carry through with your nutrition goals.	45% (n = 9)	45% (n = 9)	10% (n = 2)	—
Meeting with your family advisor inspired you to carry through with your physical activity goals.	50% (n = 10)	45% (n = 9)	5% (n = 1)	—

Qualitative Interviews

All four Year 2 families described program aspects found to be effective in facilitating behavior change. These included hands-on activities, described as “eye-opening and educational;” the encouragement of and social support from the family advisor; the family group activities; and increased awareness of their dietary or physical activity habits or cholesterol levels from clinic lab results, interviews, and monitoring. Parents liked the social networking they enjoyed from participating in the Family Fun Nights (hosted by PACT at the school). One parent said, “We liked the games and meeting other families. It was fun learning—we learned with others and learned with our family advisor.” Her husband added, “It was a good way to meet people from the community. Everybody shared. . . . Sometimes you’re so busy, you don’t get to meet other parents.”

Awareness of cholesterol values, coupled with working with their family advisor, was noted by several parents. One caregiver stated, “My first year in PACT—I had my blood test taken. Results showed my cholesterol was high. I did menu planning with the help of the family advisor. We went to the store and did comparative shopping.”

PACT participants found several types of social support from the family advisor to be helpful. Caregivers appreciated the emotional support of family advisors who were perceived as caring, encouraging, and nonjudgmental, as well as informational support provided in the form of discussing helpful ways to improve in order to keep forwarding the action toward desired outcomes. In addition, caregivers particularly appreciated the value of appraisal support in receiving constructive feedback and affirmation for their own behavior. One caregiver talked about breaking out of denial about his lifestyle habits and how his thinking shifted after his family advisor asked him a simple question.

I stuck with my personal goal of losing weight and changing eating habits. I found out I had diabetes six to seven years ago. PACT helped me to address [changes]. I don't know if I was in denial, but *I've changed how I think about it*. I realized that by eating better, it will help me to get better—this happened after the PACT program.
[My family advisor] asked me “What’s the difference between getting a candy bar and a piece of fruit? They cost the same.” *That made me think . . .* she [family advisor] would have you think about your choices every day.

This is an example of how the family advisor used collaborative inquiry to coach the parent toward greater self-awareness, making a shift in perspective, which led to new insights and a new framework for looking at opportunities.

Family advisors and the supervising community project director discussed how improvement in visit protocol and refinement of their coaching skills affected program delivery in the second year of PACT. Specifically, the following intervention aspects were cited as being weaker in the first year of the program, due to training and protocol development issues: the use of coaching techniques to more clearly establish a mutually beneficial intersection of interests between the program and families, and to help precontemplative persons resolve ambivalence; appropriate use of intervention strategies that are tailored to the person’s stage of change; and providing a more concise description of the purpose of the PACT program, research, and the family advisor’s role.

All four families interviewed in the qualitative study reported that at least one family member in each family made positive behavior changes in diet and/or physical activity. (This was true even though half the sample was chosen because they were perceived by their family advisor as less successful in making behavior changes than the other half of the sample. Thus, the qualitative study revealed positive effects perceived by participants that were not measured in the quantitative outcome survey. Even families that family advisors thought were not so successful could describe behavior changes they made.) Caregivers described changes in dietary behavior in broader terms than just increasing fruit and vegetable intake (e.g., trying new foods and packing healthy lunches). Although two caregivers described making dramatic increases in their physical activity, the remainder either felt that they were already physically active or that they were not as successful in making changes in physical activity as they were in making dietary changes. All but one caregiver reported an increased awareness of their own habits in diet and physical activity.

DISCUSSION

For the subset of 21 families that had committed to at least one forwarding action or weekly goal, the average number of visits was 8.6 (vs. 7 for the whole sample). The increased average number of visits for these families may have contributed to both the opportunity for more achievement of outcomes, as well as more time and engagement in coaching. The data for these 21 families indicated that there is a significant positive relationship between family engagement and achievement outcomes.

The correlation for time spent in Connect and the level of engagement was low for physical activity, most likely because these visits usually engaged the family in a physical activity (such as playing basketball), often leaving less time for conducting a coaching conversation. The emphasis on activities at the visits may also partially account for the high percentage of visits in which the outcome for the Activate stage (a weekly goal or a commitment to take action) was achieved. Because the coaching process was integrated into the use of family activities, the two effects cannot be separated in this study.

In summary, the process data support the conclusion that the coaching model was implemented as planned, using the coaching stages. The correlational analyses indicate a positive association among time spent in a coaching stage, level of family engagement in the process, and attainment of coaching outcomes when data were pooled across all coaching stages. We conclude that coaching used in conjunction with hands-on activities assisted families to take action through the processes of establishing an intersection of interests, surfacing their internal motivation, deciding what action they were ready, willing, and able to take, and moving toward their weekly goals. Furthermore, this conclusion is supported by the caregivers' perspectives obtained in the family satisfaction survey and the qualitative interviews.

Strengths of the Study

The use of the family visit enabled personal tailoring of the intervention to the family's situation or dynamics, increasing the program's relevance to each family. This project provided many opportunities for families to experience healthy activities together. Such experiences should help achieve sustainability in families for whom spending family time together was a mediator of diet or physical activity behaviors. The use of an applied coaching model was valuable in providing a structured way to interact with families and a consistent methodology to connect with families on each visit; help families identify their internal motivation for change; and ensure that the family, rather than the family advisor, take the lead in identifying their own change goals and path for achieving change.

Weaknesses of the Study

The coaching protocol was added to the project after a series of planned activities for families had been designed around the stages of change model. Because activities were introduced to families early and were used frequently, families may have moved toward the Activate Stage before some of the more exploratory coaching stages could be implemented as fully as might have been desirable (especially the Create and Design stages). The learning curve for family advisors was fairly steep, because coaching interactions are less proscriptive than most programs in which these advisors had previously participated. This was reflected in the numerous changes that needed to be made in Year 1. In addition, it was difficult for advisors to apply conversational techniques they had practiced in one-

on-one situations to whole family units that included very young children and during visits subject to the disruptions of family life. There were sometimes chaotic and/or authoritarian family dynamics, making coaching conversations difficult and affecting outcomes. In addition, coaching encounters may not have been frequent enough to create adequate momentum to reach project target outcomes.

Preliminary outcome results of the study indicate improvements in dietary and physical activity behaviors that did not reach statistical significance. Small sample size may be a major limitation, highlighting some of the difficulties of conducting behavioral research in rural communities. In addition, quantitative instruments may miss project effects that fall short of the target outcomes, and our qualitative data suggest that some behavior changes occurred subsequent to follow-up data collection.

IMPLICATIONS FOR RESEARCH AND PRACTICE

Community competence and empowerment are built through the empowerment of the individuals within the community. It was the intent of this project to first empower individuals to experience dietary and physical activity lifestyle changes and then to leverage their experiences into leadership for empowering the larger community. One of the strategies chosen to help empower individuals was coaching, which was successful in moving families toward more healthful outcomes, even though they may not have attained the project target goals by the end of the study.

There were numerous advantages of using coaching in this health behavior intervention, which may be applicable to other studies, especially those interested in participatory methods.

- Coaching provided a methodology supportive of the change processes addressed by the transtheoretical model for stages of change. For example, family advisors used coaching techniques to explore the decisional balance or the person's relative weighing of the pros and cons of eating fruits and vegetables and getting regular physical activity.
- Coaching provided a method of collaborative and appreciative inquiry, versus investigative inquiry. The appreciative style of inquiry helped create a sense of partnership between the participants and the project staff.
- Coaching provided a methodology to standardize the manner in which family advisors communicated with families, while still enabling a tailoring of the intervention to the families' interests and concerns. This systematic approach to conversational interactions engaged participants to access their current thinking and experience; test their underlying beliefs and assumptions against new knowledge and insight; and realign internal motivating structures toward the achievement of new and attractive possibilities (Andhara, 2000).

This project piloted the use of coaching techniques in a family-based health behavior intervention. More research needs to be done on tracking the coaching process and coaching stage outcomes and relating these effects to behavioral outcomes. However, the detail provided in this study should be helpful to other investigators seeking a method of partnering with research participants.

References

- Adkins, S., Sherwood, N. E., Story, M., & Davis, M. (2004). Physical activity among African American girls: The role of parents and the home environment. *Obesity Research, 12*(Suppl. 1), 38S-45S.
- Andhara, A. (2000). *PACT program coaching development program, training manual*. (Available from the PACT office, RMPRC, 204 Carson Avenue, Alamosa, CO 81101)
- Baxter, J., Hamman, R. F., Lopez, T. K., Marshall, J. A., Hoag, S., & Swenson, C. L. (1993). Excess incidence of known non-insulin-dependent diabetes mellitus (NIDDM) in Hispanics compared to non-Hispanic Whites in the San Luis Valley, Colorado. *Ethnicity and Disease, 3*, 11-21.
- Blair, S. N., Kohl, S. W., III, Barlow, C. E., Paffenbarger, R. S., Jr., Gibbons, L. W., & Macera, C. A. (1995). Changes in physical fitness and all-cause mortality. A prospective study of healthy and unhealthy men. *Journal of the American Medical Association, 273*(14), 1093-1098.
- Burton, B. T., Foster, W. R., Hirsch, J., & Van Itallie, T. B. (1985). Health implications of obesity: An NIH consensus development conference. *International Journal of Obesity, 9*(3), 155-170.
- Crockett, S. J., Mullis, R., Perry, C. L., & Luepker, R. V. (1989). Parent education in youth-directed nutrition interventions. *Preventive Medicine, 18*, 475-491.
- Diamond, G., & Siqueland, L. (2001). Current status of family intervention science. *Child and Adolescent Psychiatric Clinics of North America, 10*(3), 641-661.
- Farquhar, J. W., Fortmann, S. P., Flora, J. A., Taylor, C. B., Haskell, W. L., Williams, P. T., et al. (1990). Effects of community-wide education on cardiovascular disease risk factors: The Stanford five-city project. *Journal of the American Medical Association, 264*(3), 359-365.
- Farquhar, J. W., Maccoby, N., Wood, P. D., Alexander, J. K., et al. (1977). Community education for cardiovascular health. *Lancet, 1*(8023), 1192-1195.
- Fisher, L., & Weihs, K. L. (2000). Can addressing family relationships improve outcomes in chronic disease? Report of the Working Group on Family-Based Interventions in Chronic Disease. *Journal of Family Practice, 49*(6), 561-566.
- Fitzgibbon, M. L., Stolley, M. R., Chavez, N., Avellone, M. E., & Sugerman, S. (1996). Involving parents in cancer risk reduction: A program for Hispanic American families. *Health Psychology, 15*(6), 413-422.
- Flaherty, J. (1999). *Coaching: Evoking excellence in others*. Burlington, MA: Butterworth-Heinemann.
- Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory*. Chicago, IL: Aldine.
- Gomby, D. S., Culross, P. L., & Behrman, R. E. (1999). Home visiting: Recent program evaluation—analysis and recommendations. *Future Child, 9*(1), 4-26, 195-223.
- Hargrove, R. (2003). *Masterful coaching: Inspire an "impossible future" while producing extraordinary leaders and extraordinary results* (Rev. ed.). San Francisco: Jossey-Bass/Pfeiffer.
- Harrington, R., Kerfoot, M., Dyer, E., McNiven, F., Gill, J., Harrington, V., et al. (1998). Randomized trial of a home-based family intervention for children who have deliberately poisoned themselves. *Journal of the American Academy of Child and Adolescent Psychiatry, 37*(5), 512-518.
- Harvey-Berino, J., & Rourke, J. (2003). Obesity prevention in preschool Native-American children: A pilot study using home visiting. *Obesity Research, 11*, 606-611.
- Hopper, C. A., Gruber, M. B., Munoz, K. D., & Herb, R. A. (1992). Effect of including parents in a school-based exercise and nutrition program for children. *Research Quarterly for Exercise and Sport, 63*(3), 315-321.
- Hovell, M. F., Meltzer, S. B., Wahlgren, D. R., Matt, G. E., Hofstetter, C. R., Jones, J. A., et al. (2002). Asthma management and environmental tobacco smoke exposure reductions in Latino children: A controlled trial. *Pediatrics, 110*(5), 946-956.
- Hovell, M. F., Sipan, C. L., Blumberg, E. J., Hofstetter, C. R., Slymen, D., Friedman, L., et al. (2003). Increasing Latino adolescents' adherence to treatment for latent tuberculosis infection: A controlled trial. *American Journal of Public Health, 93*(11), 1871-1877.
- International Coach Federation. (2004). Retrieved from <http://www.coachfederation.org>

- Johnson, C. C., Nicklas, T. A., Arbeit, M. L., Harsha, D. W., Mott, D. S., Hunter, S. M., et al. (1991). Cardiovascular intervention for high-risk families: The Heart Smart Program. *Southern Medical Journal*, 84(11), 1305-1312.
- Kendrick, D., Elkan, R., Hewitt, M., Dewey, M., Blair, M., Robinson, J., et al. (2000). Does home visiting improve parenting and the quality of the home environment? A systematic review and meta analysis. *Archives of Disease in Childhood*, 82, 443-451.
- Knowler, W. C., Barrett-Connor, E., Fowler, S. F., Hamman, R. F., Lachin, J. M., Walker, E. A., & Nathan, D. M. (Diabetes Prevention Program Research Group). (2002). Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. *New England Journal of Medicine*, 346, 393-403.
- Kuczmarski, R. J., Flegal, K., Campbell, S. M., & Johnson, C. L. (1994). Increasing prevalence of overweight among U.S. adults. *Journal of the American Medical Association*, 272, 205-211.
- Lee, I. M., Sesso, H. D., & Paffenbarger, R. S., Jr. (1999). Physical activity and risk of lung cancer. *International Journal of Epidemiology*, 28(4), 620-625.
- Leonard, T. J., & Laursen, B. (1998). *The portable coach: 28 surefire strategies for business and personal success*. New York: Scribner.
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Newbury Park, CA: Sage.
- Lopez, T. K., Marshall, J. A., Shetterly, S. M., Baxter, J., & Hamman, R. F. (1995). Ethnic differences in micronutrient intakes in a rural biethnic population. *American Journal of Preventive Medicine*, 11, 301-305.
- Luepker, R. V., Perry, C. L., McKinlay, S. M., Nader, P. R., Parcel, G. S., Stone, E. J., et al. (1996). Outcomes of a field trial to improve children's dietary patterns and physical activity: The Child and Adolescent Trial for Cardiovascular Health (CATCH). *Journal of the American Medical Association*, 275(10), 768-776.
- Madsen, J., Sallis, J. F., Rupp, J. W., Senn, K. L., Patterson, T. L., Atkins, C. J., & Nader, P. R. (1993). Process variables as predictors of risk factor changes in a family health behavior change program. *Health Education Research*, 8, 193-204.
- Marshall, J. A., Hamman, R. F., Baxter, J., Mayer, E. J., Fulton, D. L., Orleans, M., et al. (1993). Ethnic differences in risk factors associated with prevalence of NIDDM: The San Luis Valley Diabetes Study. *American Journal of Epidemiology*, 137, 706-718.
- Marshall, J. A., Lopez, T. K., Shetterly, S. M., Baxter, J., & Hamman, R. F. (1995). Association of education level with atherogenic diets in a rural biethnic population. *American Journal of Preventive Medicine*, 11, 294-300.
- Marshall, J. A., Lopez, T. K., Shetterly, S. M., Morgenstern, N. E., Baer, K., Swenson, C., et al. (1999). Indicators of nutritional risk in a rural elderly Hispanic and non-Hispanic White population: The San Luis Valley Health and Aging Study. *Journal of the American Dietetic Association*, 99, 315-322.
- Mayer, E. J., Alderman, B. W., Regensteiner, J. G., Marshall, J. A., Haskell, W. L., Baxter, J., & Hamman, R. F. (1991). Physical activity assessment measures compared in a biethnic rural population: The San Luis Valley Diabetes Study. *American Journal of Clinical Nutrition*, 53(4), 812-820.
- McGraw, S. A., Sellers, D. E., Stone, E. J., Bebchuk, J., Edmundson, E. W., Johnson, C. C., et al. (1996). Using process data to explain outcomes. An illustration from the Child and Adolescent Trail for Cardiovascular Health (CATCH). *Evaluation Review*, 20(3), 291-312.
- McLean, N., Griffin, S., Toney, K., & Hardeman, W. (2003). Family involvement in weight control, weight maintenance and weight-loss interventions: A systematic review of randomised trials. *International Journal of Obesity*, 27, 987-1005.
- Muhr, T. (1997). *ATLAS/ti for Windows* [Computer software]. Berlin: Scientific Software Development.
- Nader, P. R., Sallis, J. F., Patterson, T. L., Abramson, I. S., Rupp, J. W., Senn, K. L., et al. (1989). A family approach to cardiovascular risk reduction: Results from the San Diego Family Health Project. *Health Education Quarterly*, 16(2), 230-244.

- Nader, P. R., Sellers, D. E., Johnson, C. C., Perry, C. L., Stone, E. J., Cook, K. C., et al. (1996). The effect of adult participation in a school-based family intervention to improve children's diet and physical activity: The Child and Adolescent Trial for Cardiovascular Health. *Preventive Medicine, 25*, 455-464.
- Olds, D. L., Eckenrode, J., Henderson, C. R., Jr., Kitzman, H., Powers, J., Cole, R., et al. (1997). Long-term effects of home visitation on maternal life course and child abuse and neglect. Fifteen-year follow-up of a randomized trial. *Journal of the American Medical Association, 278*(8), 637-643.
- Patton, M. Q. (1980). *Qualitative evaluation methods*. Beverly Hills, CA: Sage.
- Perry, C. L., Luepker, R. V., Murray, D. M., Hearn, M. D., Halper, A., Dudovitz, B., et al. (1989). Parent involvement with children's health promotion: A one year follow-up of the Minnesota Home Team. *Health Education Quarterly, 16*(2), 171-180.
- Philips, B. U. (1989). The forgotten family: An untapped resource in cancer prevention. *Family & Community Health, 11*(4), 17-31.
- Pietinen, P., Lahti-Koski, M., Vartiainen, E., & Puska, P. (2001). Nutrition and cardiovascular disease in Finland since the early 1970s: A success story. *Journal of Nutrition, Health & Aging, 5*(3), 150-154.
- Primavera, J. (2004). You can't get there from here: Identifying process routes to replications. *American Journal of Community Psychology, 33*, 181-191.
- Puska, P., Vartiainen, E., Tuomilehto, J., Salomaa, V., & Nissinen, A. (1998). Changes in premature deaths in Finland: Successful long-term prevention of cardiovascular diseases. *Bulletin of the World Health Organization, 76*(4), 419-425.
- Robinson, T., Killen, J., Kraemer, H., Wilson, D., Matheson, D., Haskell, W., et al. (2003). Dance and reducing television viewing to prevent weight gain in African-American girls: The Stanford GEMS Pilot Study. *Ethnicity & Disease, 13*(1 Suppl. 1), S65-S77.
- Sesso, H. D., Paffenbarger, R. S., Jr., & Lee, I. M. (2000). Physical activity and coronary heart disease in men: The Harvard Alumni Health Study. *Circulation, 102*(9), 975-980.
- Skiffington, S., & Zeus, P. (2003). *Behavioral coaching: How to build sustainable personal and organizational strength*. Australia: McGraw-Hill Australia Pty Ltd.
- Skrkt, T. M. (1985). Doing naturalistic research into educational organizations. In Y. S. Lincoln (Ed.), *Organizational theory and inquiry* (pp. 185-220). Beverly Hills, CA: Sage.
- Steckler, A., & Linnan, L. (Eds.). (2002). *Process evaluation for public health interventions and research*. San Francisco: Jossey-Bass.
- Stolley, M. R., & Fitzgibbon, M. L. (1997). Effects of an obesity prevention program on the eating behavior of African American mothers and daughters. *Health Education & Behavior, 24*(2), 152-164.
- Tidwell, L., Holland, S. K., Greenberg, J., Malone, J., Mullan, J., & Newcomer, R. (2004). Community-based nurse health coaching and its effect on fitness participation. *Lippincott's Case Management, 9*(6), 267-279.
- Troiano, R. P., Flegal, K. M., Kuczmarski, R. J., Campbell, S. M., & Johnson, C. L. (1995). Overweight prevalence and trends for children and adolescents. The National Health and Nutrition Examination Surveys, 1963 to 1991. *Archives of Pediatrics & Adolescent Medicine, 149*(10), 1085-1091.
- Ursin, G., Ziegler, R. G., Subar, A. F., Graubard, B. I., Haile, R. W., & Hoover, R. (1993). Dietary patterns associated with a low-fat diet in the National Health and Examination Follow-up Study: Identification of potential confounders for epidemiologic analyses. *American Journal of Epidemiology, 137*(8), 916-927.
- Whitmore, R., Melkus, G. D., Sullivan, A., & Grey, M. (2004). A nurse-coaching intervention for women with type 2 diabetes. *Diabetes Education, 30*(5), 795-804.
- Whitworth, L., Kimsey-House, H., & Sandahl, P. (1998). *Co-active coaching: New skills for coaching people toward success in work and life*. Palo Alto, CA: Davies-Black.
- Williams, K., Prevost, A. T., Griffin, S., Hardeman, W., Hollingworth, W., Spiegelhalter, D., et al. (2004). The ProActive Trial Protocol—A randomised controlled trial of the efficacy of a

- family-based, domiciliary intervention programme to increase physical activity among individuals at high risk of diabetes. *BMC Public Health*, 4(1), 48.
- World Cancer Research Fund. (1997). *Food, nutrition and the prevention of cancer: A global perspective*. Washington, DC: American Institute for Cancer Research.
- Worobey, J., Pisuk, J., & Decker, K. (2004). Diet and behavior in at-risk children: Evaluation of an early intervention program. *Public Health Nursing*, 21(2), 122-127.