Philip R. Nader
Cheryl Perry
Nathan Maccoby
Douglass Solomon
Joel Killen
Michael Telch
Janet K. Alexander

Adolescent Perceptions of Family Health Behavior: A Tenth Grade Educational Activity To Increase Family Awareness of a Community Cardiovascular Risk Reduction Program

The influence of the family on health and illness behavior has been demonstrated,[1-5] but few health education programs have made use of the potential force of child-parent interaction to accomplish the program's goals. This paper presents the results of a pilot project designed to investigate the effectiveness of such an approach with adolescents and their families. The high-school-based educational project was performed (1) to facilitate communication between adolescents and their parents in order to increase awareness of a community program to reduce cardiovascular risk; (2) to increase adolescents' judgment of their competence to act as a change agent in relation to family health behavior, and (3) to assess students' perceptions of their roles in family health behaviors.

The study questions were divided into a survey phase and a pilot intervention phase. The survey questions were: What are adolescents' perceptions of their own and their parents' current health practices and needs? What is their level of satisfaction with friends, school and personal health? How confident are high-school students that they could help their parents change or modify health behavior? The pilot intervention study question was: Can a high-school based educational activity increase family viewing of a community-wide health education media event?

SETTING, POPULATION AND MEASURES

Four high schools on the Monterey Peninsula in California (Monterey, North Salinas, Santa Cruz and Pacific Grove) were already involved in various aspects of a smoking cessation and smoking prevention program, conducted as part of the Stanford Five City Project.[6] The program attempts to modify five areas of cardiovascular risk (overweight, smoking, cholesterol intake, lack of exercise and stress) by using the media combined with community organization.[7] The present project was developed as an adjunct to the high school anti-smoking program.

An opportunistic sample was obtained of all 10th grade students in Monterey County currently taking health education or driver education. A precoded, pretested questionnaire was used to collect data on smoking and drug usage, demographic and family health variables and adolescents' perceptions of their own and their families' health behavior, twice during the second school semester in February and May 1981. The students were identified only by a code number constructed by the student from combining their initials and their telephone number. The code number was used to match student's questionnaires from pre- to post-measurement.

To maximize homogeneity of the population studied,

the data reported are based on a selection of 168 Anglo 10th graders who were present in school on the two days the questionnaires were administered. The students' socioeconomic status ranged from middle to upper-middle class and those studied did not differ from one school to another in age, proportion of boys and girls, frequency of those not living with father, frequency of reported smoking in the previous 24 hours or frequency of reported alcohol high or marijuana high in the previous 24 hours.

RESULTS

What Are 10th Graders' Perceptions of Their Own and Their Parents' Health Practices and Needs?

Smoking, alcohol and marijuana use Twenty-one of 168 (12.5%) 10th grade students reported they had smoked tobacco within 24 hours.* Thirty (17.9%) said they had been high from alcohol within the previous week and 14 (8.3%) reported they had been high from marijuana within the previous week. These figures increased slightly on the second administration of the questionnaire.

Adolescents' body weights Body weight reported by the students were in the ranges consistent with their sex and age. Forty-seven (28.7%) estimated themselves to be slightly or very overweight, 28 (17.0%) believed themselves to be slightly or very underweight and 89 (54.3%) felt their weight was average. Girls were more likely to rate themselves as overweight and boys were more likely to rate themselves as underweight.

Parental weight Fathers were perceived more often as being overweight than were mothers (54% compared to 42.3%).

Adolescents' assessment of health needs Respondents were asked to check those of the following health needs that applied to themselves, to their fathers and to their mothers: eating a better diet, getting more exercise, stopping smoking and handling stress better. The rank ordering of their top choices is shown in Table 1. Differences in perception of need for themselves vs. their parents are apparent: diet and exercise are more prominent as self-concerns; stress and smoking are more prominent for fathers; and exercise, stress and smoking for mothers. The need for improvements in diet, exercise and stress, however, appears to apply to all family members, in the opinion of 10th graders.

Adolescents' perception of stress and how they cope with it On a 12-point scale from (1) almost never to (12) almost always, 10th graders felt tense "occasionally" (means 4.3; mode 5.0) and felt pressed for time "half of the time to most of the time" (mean 6.8; mode 5.0).

Both boys and girls manage stress by mostly sedentary activities, such as watching TV or listening to music, by being alone or by being with friends (Table 2). Most types of behavior chosen from the list reflected common leisure-time activities, rather than behavior likely to harm their health (getting high, drinking or chain smoking). Their perceptions of how their parents deal with stress were not solicited.

Table 1
Tenth Graders Perceptions of Family Health Needs

	Self No. (%)		Father No. (%)		Mother No. (%)
Diet	58(22.6)	Stress	23(13.7)	Exercise	30(17.9)
Diet & Exercise	29(17.3)	Smoking	20(11.9)	Diet, Exercise & Stress	21(12.5)
Exercise	26(15.5)	Diet, Exercise & Stress	18(10.7)	Smoking	18(10.7)
Diet, Exercise & Stress	17(10.1)	Diet	13(7.7)	Stress	16(9.5)
Stress	15(8.9)	Diet & Exericse	12(7.1)	Diet	14(8.3)

Adolescents' report of own and parents' exercise and eating behavior Although 62 (37.6%) indicated that at least some family members exercised together, a proportion of 10th graders reported no vigorous or moderately vigorous physical activity in the past three months for themselves (3.6%), for their fathers (34%) or mothers (43%). The list of exercise included: jogging or racquet sports at a level of two hours per week, bicycle riding at least 25 miles per week, swimming at least one mile per week, walking at least 3 miles per week or other vigorous physical activity. The most common exercises the respondents reported were P.E. in school, racquet sports, bicycling and walking. About 10% of respondents reported that their fathers engaged in regular jogging or calisthenics and 4% to 6% estimated that their mothers jogged, played racquet sports or bicycled.

Fifty-three percent indicated that the family ate the main daily meal together 4-6 times per week and an additional 22% indicated that the family ate together all week. About one-third said they almost always helped to decide what the family would eat and another third indicated they almost never helped to decide what the family would eat nor assisted with grocery shopping.

When asked how often (almost never, about half of the time, almost always) salt was added at the table to foods before tasting, students believed that they tended to add salt slightly more often than their parents (almost always: self-40% father-38%, mother-32%).

Table 2
Tenth Graders Reported Way of Coping With Nervousness or Tension

BOYS	%	GIRLS	%
Watch TV	65	Listen to Music	79
Listen to Music	65	Spend Time with Friends	67
Spend Time with Friends	47	Spend Time Alone	46
Spend Time Alone	39	Watch TV	46
Change Surroundings	37	Change Surroundings	28
Jog	27	Jog	24
Participate in Organized Athletics	26	Participate in Organized Athletics	21
Work-Out	23	Eat Excessively	21
Eat Excessively	22	Read Nonacademic Materials	19
Get High	16	Work-Out	19
Read Nonacademic Materials	14	Swim	15
Swim	10	Get High	13
Drink Alcohol	10	Participate in Organized Religion	11
Participate in Organized Religion	8	Drink Alcohol	9
Chain Smoke	7	Meditate	9
Deep Muscle Relaxation	4	Chain-Smoke	6
		Deep Muscle Relaxation	4

What is the Level of Satisfaction with their Family Situation?

Adolescents' assessment of their satisfaction with their family situation is significant for any activity that utilizes communication within the family or diffuses information or awareness of a community-wide health education program. The level of satisfaction reported by 10th graders is listed in Table 3 (three categories based on an estimated one-third distribution for each of low, medium and high levels of satisfaction).

For areas of their health, friends and school, the proortion that reported high levels of satisfaction exceeds the proportion that reported low levels of satisfaction. This was reversed when they considered their family situation, however, with a slightly greater proportion (37.5%) indicating a low level of satisfaction with the family than indicating a high level of satisfaction (28.6%).

Table 3
Tenth Graders Estimation of their Level of Satisfaction with their Family, Friends, School, and Personal Health

Level of Satisfaction	Family (%)	Friends (%)	School (%)	Health (%)
Low	37.5	34.5	26.2	26.8
Medium	33.3	23.2	29.8	29.9
High	28.6	41.7	42.9	32.7

How Confident are 10th Graders that They Could Help Parents Change or Modify Health Behavior?

Several questions asked the 10th graders to rate on a 12-point scale- from 1-very little confidence (not a chance) to 12-a great deal of confidence (definitely)-that they could help a parent make some changes in exercise, smoking or dietary practices. Both boys and girls had less confidence that they could help their fathers make changes than their mothers (Table 4).

Table 4
Tenth Graders Confidence About Their Own Ability to Help a Parent Change Diet or Exercise

		Tenth Graders Reporting Confidence		
Level of Confidence		**Boys (%)**	**Girls (%)**	**Total (%)**
Ability to Change Mother	Low	32	24	28
	Med	35	38	36
	High	32	37	35
Ability to Change Father	Low	40	42	41
	Med	35	29	32
	High	24	28	26

Can a High-School Based Educational Activity Result in Increased Family Awareness of a Community-Wide Health Education Program?

An opportunity occurred to test the concept that an educational activity in high school could help increase family awarenss of the ongoing community-wide program in cardiovascular risk reduction. Specifically, we wanted the high school students to talk to their parents about heart disease risk factors; to encourage their families to watch a community media event, the county-wide Heart Health Telecast; to rehearse behavior change strategies designed to enable them to facilitate awareness of health behavior; and to report an increased ability to influence family health behavior as a result of the educational activity.

The pilot study was conducted in April 1980, approximately 10 days before the county-wide prime-test television of the Heart Health Test Telecast, in the 10th grade health education classes in Monterey County. A comparison group of 10th grade students was drawn from a nearby town, North Salinas High School. Only two class periods were made available for the educational intervention.

On the first class day, an open discussion was held on what constitutes healthy behavior regarding the heart, along with an explanation of the assessment of their own risk behavior. An edited videotape of the Heart Health Test (HHT), which was to be telecast 10 days later, was previewed by the class. Its format included multiple choice answers to questions concerning heart disease prevention. Finally, a homework assignment was given to assess the risk behavior of parents and siblings through discussion with family members and use of a risk assessment form.

During the second class (two days later), the results of the classroom and homework risk assessments were tallied. The numbers of fathers, mothers, self/sib "at risk" were placed on the blackboard and students discussed the similarities and differences. Finally, student-directed small-group brainstorming and reporting sessions dealt with ways the students could help influence the family to adopt healthier behaviors (such as decreasing salt intake, starting a regular form of exercise or decreasing fats in the diet). The time and date of the upcoming broadcast of the HHT was reinforced and students were encouraged to have their families watch.

Pre- and postprogram evaluation in treatment and comparison groups included student reports of their interaction and communication with their parents, their perception of themselves as change agents for family health behavior and their reports of their own and their parents' health behavior. Penetration of the Heart Health Telecast, and the attention given to it, was determined by a telephone survey of both the communities and the study populations on the evening of the Heart Health Test Telecast.

The majority of students were interested. Some recounted stories of their own experiences with heart disease and strokes in family members. Contrary to popular opinion, the nutritional aspects of the Heart Health Test seemed to evoke high interest, judging from attention to the TV monitor in class. Many students reported that their parents were interested and that a good family discussion resulted from the telecast. A few students reported resistance, hostility, denial and fear on the part of their parents regarding examining their own health behavior relating to heart disease prevention.

Effect on TV Viewing Of The Heart Health Test A telephone survey was conducted on the evening of the telecast (Friday, April 18 from 8:05 to 9:30 p.m.). The calls were made to numbers voluntarily supplied from four Monterey classes (N = 45 students) who had been given the two special heart health class periods and four North Salinas High School 10th grade Driver Education classes (N = 81 students) who had not. The response rates for giving telephone numbers were 78% and 67%, respectively, for the treatment (Monterey) and comparison school (North Salinas). A random sample of the data on television viewing in the Monterey and Salinas communities was obtained from standardized Nielsen telephone surveys also conducted at the time of the telecast. Table 5 shows that roughly the same proportion of households owning televisions were watching them during the showing of the Heart Health Test in each of the survey samples. The Nielsen rating (the percentage of all TV households watching the Heart Health Test) in Salinas and Monterey, respectively, was 11 and 7 percent. The share (the percentage of all households watching TV who were watching the Heart Health Test) was 20 and 13 percent, respectively. These figures are

Table 5
Heart Health Test Ratings and Shares for Neilsen Surveys of Two Cities and Telephone Surveys of Two High Schools

	Rating (%)	Share (%)	Households Using TV (%)
Monterey HS (Intervention)	16	29	63
Salinas HS (Comparison)	8	13	57
Nielsen Survey-Monterey	7	13	57
Nielsen Survey-Salinas	11	20	57

RATING: Percentage watching Heart Health Test over number of calls completed (All 'No Answers' were counted as **NOT** watching TV)

SHARE: Percentage of all watching TV that were watching the Heart Health Test

comparable to the usual share and rating that this particular time period achieves independent of the particular show and therefore indicates that the Heart Health Test was able to attract as large an audience for an educational broadcast as for the average entertainment show.

Chi-square tests of contrasts between treatment and comparison household groups did not reach statistically significant levels. Similarly, testing contrasts between Monterey High School families and Monterey com-

munity in general did not reach statistical significance. If there were real population differences, they were not discovered in the small samples used. The trend, however, is in the direction of an influence of the project to increase HHT viewing by households whose adolescent members had the in-school program. The number of people per household who were watching the HHT was greater in our intervention population than in the comparison group: Monterey High School, 3.5 people per household watching the Heart Health Test, compared to Salinas High School, 2.1 people per household.

Preintervention and postintervention questionnaires for Monterey High School were compared to those other county high school students who did not have the two special classes. No changes in reported exercise or dietary behavior of the 10th graders or their parents were detected between the Monterey High School and the other high school populations. Also, the 10th graders' perceptions of their ability to help influence their parents' health behavior did not increase as a result of the project.

DISCUSSION

It is intriguing to speculate about a treatment effect of the intervention because of the increased number of households who watched the Heart Health Test on television. Yet, it is unrealistic to expect family health behavior or attitudes to change as a result of such a brief classroom activity. The data derived from a pilot experience is most useful when applied to the original rationale for undertaking it. The lessons that were learned need to be clarified and the overall merit of the approach needs to be evaluated. The discussion to follow will consider each of these issues in turn: Why focus on the family as a target for health educational programs that hope to alter health behavior? Why consider the school to link community programs aimed at health behavior change to families? What lessons were learned from the experience? And what judgment can be made about the value of this approach?

Family The family is the major influence in establishing children's health behaviors, especially in the early stages of development. This has been documented best for dietary preferences[8-10] and exercise habits.[11-13] In older children and young adolescents, the influence of peers may reinforce or modify the influence of the parental health habits that the young child had observed.[14] The best example of this is smoking.[15-17] The family not only initiates health behaviors, it may maintain them.

The family system provides communication and support networks for its members. These could be utilized to promote or maintain healthful behavior. Pratt has described an open and flexible style of family communication[18] and mode of child rearing[19] that is associated with beneficial health habits for adults and children. Several recent programs for obesity now suggest that weight loss effects are maintained longer if family support is structured into the treatment program.[20]

In considering the adolescent as a family change agent or gatekeeper for health information, the reciprocal influence of the child on parents' behavior and attitudes is crucial. This influence has been demonstrated throughout the life cycle.[21-22] One study examined the role of adolescents in adult decision making. Adolescents were found to have a measurable influence on parents' routine daily activities, use of leisure time, choice of television shows and meal planning.[23] Such decisions are exactly those involved in health and life style improvement campaigns. This suggests that, with skill training, adolescents might, be helpful to families who were interested in engaging in health promotion programs.

School As is the case for families, schools operate as systems, and have been shown to influence student behavior apart from the family.[24] Mechanisms already exist in schools that are useful in influencing behavior change: resources and incentives among peer groups and systems for feedback and potential reward. The school offers unique advantages to a community health education program, because it cuts across all segments of the community and links many families in the community.

Lessons From this experience, we learned that adolescents are interested in health behavior and in the relationships that they detect within their families. The data suggest that adolescents have ideas already formed about family health behavior and needs. The data also suggest that many adolescents do not see themselves in the role of health advocate for other family members, and that the family may be one of the least satisfying parts of their life. Therefore, if family approaches are to be employed, then educational activities must be of longer duration, must be designed to increase the adolescents' skills and must involve parents directly. It may be better to initiate school-based family approaches at an earlier grade level, such as late elementary school, when family ties are not being strained by the tasks that are appropriate in adolescent development as they establish independence from the family unit.

Potential negative effects of health education programs need to be predicted and obviated. Approaches of the type piloted here have the potential danger of increasing resistance to a health message. This could occur if the offspring's challenge of long-held health habits or beliefs are perceived by the parent as an excessive threat.

This could be overcome by ensuring the teaching of good communication skills to the adolescents, by focusing on the family as a unit, and by actively involving parents early in the educational activities.

Value One purpose of a report of a pilot experience is to encourage others to report their experiences with similar projects. Much of what is learned from such early experiences can be useful in developing future techniques. The literature, although not complete, suggests that an approach directed to the family holds promise. We believe our experience supports the idea that school-based activities have the potential, at several levels, of enhancing family health: (1) the level of community program awareness; (2) the level of recruitment of families, teachers, and students to participate in various aspects of the community programs; and, with more resources than were utilized in this pilot project, (3) the level of direct involvement of families in health behavior change programs.

References

1. Litman TJ: The family as a basic unit in health and medical care: A socio-behavioral overview. *Soc Sci Med* 8:495-519, 1974.
2. Litman TJ, Venters M: Research on health care and the family: A methodological overview. *Soc Sci Med* 13A:379-385, 1979.
3. Anderson R: A Behavioral Model of Families Use of Health Services. Research Series No. 25. Chicago, University of Chicago Center for Health Administration Research, 1968.
4. Kaplan BH, Cassel J (eds): *Family and Health: An Epidemiologic Approach.* Durham, Institute for Research in Social Science, University of North Carolina, 1975.
5. Crawford CO: *Health and the Family: A Medical-Sociological Analysis.* New York, MacMillan Publishing Co., Inc., 1971, pp 121-122.
6. Farquhar J; The community-based model of life style intervention trials. *Am J Epidemiol* 108:103-111, 1978.
7. Maccoby N, Farquhar J, Wood P, Alexander J: Reducing the risk of cardiovascular disease: Effects of a community-based campaign on knowledge and behavior. *J Comm Health* 3:100-114, 1977.
8. Bryan MS, Lowenberg ME: The fathers' influence on young children's food preferences. *J Am Diet Assn* 34:30-35, 1958.
9. Eppright E, Fox H, Fryer B, Lamkin G, Vivian N: Eating behavior of preschool children. *J Nutr Educ* 1:16-19, 1969. Reprinted in *Preschool Nutrition Education Monograph,* pub. by Society for Nutrition Education, 2140 Shattuck Avenue, Berkeley, CA 94704.
10. Coates TJ, Perry C:Multifactor risk reductions with children and adolescents: Taking care of the heart in behavioral group therapy, in Upper D, and Ross S (eds): *Behavior Group Therapy: An Annual Review.* Champaign, IL, Research Press, 1979.
11. Pate R, Blair S: Exercise and the Prevention of Atherosclerosis: Pediatric Implications, in Strang WB (ed): *Atherosclerosis: Its Pediatric Aspects.* New York, Grune & Stratton, 1978, pp 251-286.
12. Hovell M, Bursick J, Sharkey R, McClure J: An evaluation of elementary students' voluntary physical activity during recess. *Research Quarterly* 49:460-474, 1978.
13. *Fitness in America, The Perrier Study.* Perrier Corp, Great Waters of France, 595 Madison, NY 10022, 1979.
14. Borland BL, Rudolph JP: Relative effects of low socioeconomic status parental smoking, and poor scholastic performance on smoking among high school students. *Soc Sci Med* 9:27-30, 1975.
15. *Smoking and Health: A report of the Surgeon General.* U.S. Department of Health Education and Welfare, Pub. No. 79-50066, 1979.
16. Evans R: Smoking in children: Developing a social psychological strategy of deterrence. *Prev Med* 5:122-127, 1976.
17. McAlister A, Perry C. Maccoby N: Adolescent smoking: Onset and prevention. *Pediatrics* 63:4, 650-658, 1979.
18. Pratt L: *Family Structure and Effective Health Behavior: The Energized Family.* Boston, Houghton-Mifflin, 1976.
19. Pratt L: Child rearing methods and children's health behavior. *J Health Soc Behav* 14:61-69, 1973.
20. Hickerman C, Zitter R: Long-term follow-up of couples treatment of obesity, in Upper D, Ross S (eds): *Ann Rev Behav Group Ther,* 1980.
21. Rapoport R, Rapoport R, Strelitz Z: *Fathers, Mothers, and Society: Towards New Alliances.* New York, Basic Books, Inc., 1977.
22. Rollins BC, Galligan R: The developing child and marital satisfaction of parents, in Lerner R, Spanier GB (eds): *Child Influences on Marital and Family Interaction.* A Life Span Perspective. New York, Academic Press, 1978, pp 71-105.
23. Baranowski M: Adolescents attempted influence on parental behaviors. *Adolescence* 13:, 585-604, 1978.
24. Rutter M: School influences on children's behavior and development. *Pediatrics* 65:208-220, 1980.

**These self-reports were validated by carbon monoxide samples from each student.*

Philip R. Nader, MD,[1] Cheryl Perry, PhD,[2] Nathan Maccoby, PhD, Douglass Solomon, PhD, Joel Killen, Michael Telch, MA, Janet K. Alexander,[3] from the Division of School Health & Community Pediatrics, Departments of Pediatrics and of Preventive Medicine & Community Health, The University of Texas Medical Branch at Galveston and The Institute for Communication Research, and The Stanford Heart Disease Prevention Program, Stanford University.

1. *Some of this work completed as a Visiting Scholar, Stanford Heart Disease Prevention Program, Stanford University.*
2. *Currently at the Laboratory of Physiological Hygiene, University of Minnesota.*
3. *Deceased.*

Supported in part by grants from: The W. T. Grant and The John D. & Catherine T. MacArthur Foundations, and The National Heart, Lung, Blood Institute, Grant HL 21906 and The National Institute of Child Health and Human Development, HD DA 128 13