Published in final edited form as:

Health Soc Work. 1986 ; 11(1): 59–65.

PREVENTING TOBACCO USE AMONG YOUNG PEOPLE

STEVEN PAUL SCHINKE, Ph.D. [Chairman and Professor] and **LEWAYNE D. GILCHRIST, Ph.D. [Research Scientist]**

Social Work Research, Child Development and Mental Retardation Center, University of Washington, Seattle.

Abstract

Preventing tobacco use in youths may be an easier task than helping adults break the habit of smoking and overcome its ill effects. Using experimental procedures based on social work techniques, this study suggests that social work efforts are an effective tool in programs and services that focus on primary prevention.

Prevention is a promising area for social work practice in the health field, but the concept of prevention is a difficult one to implement.¹ Unlike their counterparts in medicine, social workers do not have epidemiological techniques to focus their practice on prevention. That is, social work practice lacks the certainty of medical intervention. Whereas health care workers can predictably prevent major diseases, social workers remain tentative about their ability to prevent emotional and behavioral disorders.² Differing too is the potency of biomedical and social work methods. The use of immunization, drugs, and surgery commonly effect tangible outcomes. But discharge planning, counseling, and most social work functions often have subtle effects.³ Nevertheless, social workers in the health field have the means to narrow gaps between the promise and practice of prevention.

As stated by others, the means in question is “the shared mission of research and practice in furthering professional goals.”⁴ Research and practice to further goals related to prevention can proceed in four steps. Practitioners can begin by identifying health problems that are preventable with use of social work techniques. Next, social workers can adapt these methods for at-risk populations of clients. The methods can then be evaluated in the field. Last, workers can disseminate their results to inform prevention practice, policy, and research.⁵ The present authors applied these steps to the problem of tobacco use.

Need for Preventive Efforts

The use of tobacco is a major cause of death in this country. Tobacco smoking is linked with 30 percent of all cancer deaths and with 40 percent of all deaths from coronary heart disease.⁶ Every year 300,000 Americans die from causes related to smoking.⁷ Nationwide, one in three people habitually use tobacco.⁸ With adults who want to quit smoking, cessation has long been the treatment of choice for this health problem.⁹ However, growing evidence suggests that prevention with children who have not yet adopted the habit of smoking tobacco is far preferable than later antismoking efforts.¹⁰ The study to be reported here evaluated methods aimed at prevention with children at risk for tobacco use.

In their previous work, the authors developed methods of preventing tobacco use and promoting health among young people.¹¹ These methods include the use of information, problem solving,

self-instruction, communication, and media analysis, and they were used in the present study. The study was conducted in three public schools. The subjects were 214 consenting fifth and sixth graders, representing 96, 98, and 98 percent, respectively, of all the eligible students at the three schools. The subjects were from lower-class and middle-class backgrounds, and 18 percent were black or Hispanic or from other minority groups. At the time of the study, 3.4 percent of the sample smoked prior to the study's pretest.

After being pretested, the subjects were randomly divided by school into three conditions: experimental, comparison, and control. Those in the experimental and comparison groups met for eight 50-minute sessions with two group leaders who had master of social work degrees. The group leader training—through readings, experiential assignments, and guided practice—lasted 30 hours and concluded with competence tests on the techniques to be used in both conditions.

The same group leaders worked with the experimental and comparison groups. Both these conditions covered tobacco use information. In addition to receiving information on tobacco use, subjects in the experimental condition covered problem solving, self-instruction, communication skills, and media analyses. In addition to receiving information, comparison condition subjects participated in games, quizzes, and debates. These procedures were based on the best available techniques developed by researchers at other universities.¹² To ensure the integrity of both the conditions, leaders followed written protocols and were observed during and debriefed after group sessions. All subjects were posttested at the completion of the experimental and comparison groups and were followed for one year.

Techniques Used

Information

Subjects in the experimental and comparison conditions received the same information. Via films and testimonials from peers, subjects learned about smoking's prohibitive expense for teenagers and about such age-relevant effects of smoking as bad breath, unpleasant-smelling hair and clothes, and lowered athletic stamina. Subjects then estimated the proportion of adults and teenagers who smoke, and group leaders provided them with the actual statistics. In another exercise, subjects countered myths and positive statements about smoking by putting facts into their own words. These information-related exercises were a transition to the separate elements designed for the two conditions.

Problem Solving

As part of the experimental condition, subjects learned problem solving as a way to apply information on tobacco use. With cartoon graphics, the group leaders presented steps for defining problems, generating solutions to problems, evaluating the solutions, selecting the most meritorious solutions, and planning to implement selected solutions. Exercises such as the following then allowed experimental condition subjects to practice these steps:

You and your best friend had a fight. Your friend called you a “little baby.” The next day your friend is with someone else. They're smoking cigarettes. Your friend says, “Come on over, or are you still a little baby?”

- What is the problem?
- Who has the problem?
- How do you want the problem to end?
- Think of all the things you can do to make the problem end that way.

- Which of these things is best?
- What will you do to make that best thing happen?

Self-Instruction

Experimental condition subjects also learned self-instruction as a means of staying calm, reviewing their options, planning appropriate actions, and rewarding their healthy behavior. Leaders asked group members to describe for each other past, current, and anticipated situations in which the use of tobacco was involved. Subjects brainstormed ideas for handling these situations, then said their ideas aloud, whispered them, and silently thought them, as in the following example:

OK, I'll pretend it's after school, and we're all at McDonald's. Jenny has pulled out her cigarettes and is passing them around. Everybody's lighting up, but I don't want to. When the pack gets to me, I'll say, "Nah, not for me. I don't like to smoke." Then I'll hand the pack to someone else. If anyone hassles me, that's their problem. I'll remember the last time I smoked, when I had to eat a bunch of Certs to get the gross taste out of my mouth. When it's all over and I didn't smoke, I'll say to myself, "Hey, I'm pretty cool! I think for myself and don't smoke just because everybody else does."

Communication Skills

The group leaders introduced the area of communication skills by asking experimental condition subjects for interpersonal reasons explaining why people smoke. The most commonly given reasons were that young people smoke to look older and more sophisticated, to express independence, and to be part of a peer group. Group members learned to communicate their rights and opinions through eye contact, body posture, gestures, words, and voice intonation. Leaders modeled these skills and offered feedback and coaching while subjects practiced the skills in role plays, such as the following:

Sarah is new at your school, and she's real neat. You are at Sarah's house, and her parents are gone. Sarah smokes and wants you to smoke. But you don't want to smoke. When you talk to Sarah, use good communications like the leader showed you. The leader will kneel beside you to tell you how you're doing.

Sarah: Want a cigarette?

You:

Sarah: Go ahead, try one.

You:

Sarah: Everybody at my old school smoked.

You:

Sarah: Oh, come on. One won't kill you.

You:

Sarah: You don't even have to inhale. Just try one.

You:

Sarah: I won't tell anyone if that's what's bugging you.

You:

Sarah: All my best friends smoke.

You:

Media Analyses

In the last method used for the experimental condition, subjects were taught to analyze objectively media images of tobacco use. Group leaders presented slides of tobacco industry advertisements and of people smoking. Group members then judged whether the advertisements and pictures were realistic and appealing and if the advertisements were fair. Subjects also assessed the intended purpose of each image. For homework, they were asked to collect additional examples of tobacco use as shown in the media. The following instructions illustrate this part of the exercise:

Look through the magazines the leaders gave you and try to find ads and pictures of people who are smoking. Cut out three of these ads or pictures and bring them to Thursday's group. If you see people smoking cigarettes on TV, on billboards, or in the movies, use your notebooks to write down what you saw. Bring your notebooks to our Thursday group. Then we will talk about the pictures you cut out and about what you wrote in your notebooks.

Games, Quizzes, and Debates

The comparison condition was intended to isolate the placebo effects of individual attention given to subjects, positive expectations for change, group discussion, and vicarious learning. As already indicated, the content and methods used in this condition reflected the best available alternative smoking prevention curricula.

In general, in the comparison condition, the group leaders replaced the experimental condition methods of problem solving, self-instruction, communication skills, and media analyses with games, quizzes, and debates. Games involved subgroups of subjects who competed for points by identifying health risks related to tobacco use. Quizzes patterned after television programs engaged teams of subjects in answering questions on the consequences of smoking. Debates in this condition were also team efforts, as subjects argued the costs and benefits of tobacco use. Throughout the meetings of comparison condition groups, the leaders encouraged subjects to participate in every activity.

Measures of Outcome

All the subjects completed measurement instruments before and after participating in their respective groups. Pretests and posttests measured their knowledge of facts about smoking and their ability to see healthy alternatives and nonsmoking outcomes when tempted to smoke.¹³ At the time of pretest and posttest, subjects were also measured for accuracy, compliance, and reinforcement in smoking-related interactions. The concept of accuracy referred to the correspondence between subjects' responses concerning their use of tobacco and their actual behavior; compliance referred to subjects' willingness to succumb to pressure to use tobacco; and reinforcement referred to subjects' nonuse of tobacco, aided by self-reward and praise. The responses on this measure were scored blind by research assistants, and the measure used was drawn from previous research by the authors and others.¹⁴ Scoring reliability (r), computed from a 33 percent random subset of responses independently scored by different assistants, was .875 for the instrument.

Another pretest and posttest instrument measured subjects' ability to predict correctly, prepare for adequately, cope with positively, and act adaptively in smoking-related situations. This measure was also scored blind by research assistants. Reliability for a 33 percent randomly selected sample of responses separately scored by different assistants was $r = .924$. At pretest, posttest, and one-year follow-up, subjects received explanations of the biochemical process for detecting tobacco use from saliva samples.¹⁵ Subjects provided saliva samples for this purpose and then reported their recent episodes of smoking.

A one-way analysis of variance revealed no gender differences and no differences for parental smoking across the conditions. Weekly rates of subjects' reported smoking at pretest were 3.8, 2.9, and 3.4 percent, respectively, for the experimental, comparison, and control conditions ($F_{2,211} = 1.12$, not significant). Attrition rates did not differ at posttest ($F_{2,209} = .94$, not significant) and at follow-up ($F_{2,196} = 1.08$, not significant) in the three conditions.

Table 1 shows the means for pretest to posttest gains and posttest to follow-up gains on outcome measures for the three conditions in the study. Differences favoring experimental condition subjects were evident regarding a knowledge of smoking-related facts and the ability to see healthy options and nonsmoking outcomes in response to temptations. To a greater extent than subjects in the comparison and control conditions, subjects in the experimental condition had greater gains on three parameters of their smoking-related interactions and on four parameters of their ability to manage smoking-related situations.

Pretest to posttest rates of regular tobacco use decreased by 3.3 percent for experimental condition subjects, increased by 5.4 percent for comparison condition subjects, and stayed the same for control condition subjects. Posttest to follow-up rates of regular tobacco use did not change for experimental condition subjects and increased by 10.6 and 13.7 percent, respectively, for comparison and control condition subjects. Laboratory tests on samples of saliva taken from each subject revealed lower mean concentrations of thiocyanate—a nicotine derivative—in the experimental condition subjects than in comparison and control condition subjects at posttest and at follow-up.

Efficacy of Social Work

This study suggests that social workers can identify and influence problems relating to prevention in the health field. A sequence of four practice-research steps was found to be viable for adapting and evaluating social work methods to prevent smoking. The study reported here controlled major confounds and threats to internal and external value of the findings to document the effects of experimental methods vis-à-vis prevention. Other researchers have identified the benefit of the research controls used in this study.¹⁶ Experimental methods using problem solving, self-instruction, communication skills, and media analyses appeared responsible for postintervention improvements with female and male youths. Young people in an experimental condition had greater posttest gains in regard to smoking-related knowledge, abilities, and practices than those in comparison and control conditions. A year later, experimental condition youngsters had lower smoking rates than youngsters in comparison and control conditions. These data support the efficacy of social work efforts related to prevention in the health field.

Social work clients in health settings are well served by prevention-related efforts. For most clients, preventing the causes of health problems is better than treating the consequences. Various authors have observed that health problems caused by smoking are prevented more easily and effectively than they are treated.¹⁷ With smoking and with other causal agents, the consequences of disease avoided by prevention outweigh those ameliorated by treatment.¹⁸ Moreover, prevention with young clients may have serendipitous effects: youths who learn to

prevent smoking may apply their competence to avoid other substance abuse and to promote healthy lives.¹⁹

The use of methods of prevention has several advantages for practitioners in the health field. Social workers who develop and validate these techniques in practice will advance prevention's applied science. Practitioners who know the strengths and limits of preventive methods can teach them to colleagues. Fanshel has noted the agencywide benefits of these methods in the following observation: "Prevention programs are designed to help agencies break out of the constraint of dealing with a self-selected population—the proverbial tip of the iceberg."²⁰ It is also likely that social workers who prevent problems may increase their worth on the interdisciplinary health care team.²¹ Finally, but no less important, practitioners with a facility for prevention can raise social work's status in the health field.²²

Policymakers will profit from data in support of social work preventive practice. The economics of prevention are incontrovertible.²³ As shown in the present study, social workers can efficiently implement methods of prevention with at-risk clients, and it has been noted that workers' expertise in prevention fosters their capacity to create a better fit between the person and the environment.²⁴ Consequently, those who make decisions may wisely observe that effective social work programs aimed at prevention can reduce the need for formal, inpatient care. Berkman has suggested that the use of social work services can prevent recurring hospital admissions and thereby reduce health costs.²⁵ Perhaps the data and the practice-research sequence reported here will encourage social work colleagues to adapt, evaluate, and disseminate methods for preventing health problems.

Notes and References

1. Bloom, Martin. *Primary Prevention: The Possible Science*. Prentice-Hall; Englewood Cliffs, N.J.: 1981. Coulton, Claudia J. Factors Related to Preventive Health Behavior: Implications for Social Work Intervention. *Social Work in Health Care* Spring;1978 3:297–310. [PubMed: 754313] Fanshel, David. Research on Preventive Services. *Social Work Research and Abstracts* Fall;1981 17:2–3. Guest Editorial Gilbert, Neil. Policy Issues in Primary Prevention. *Social Work* July;1982 27:293.
2. Bloom, Martin. *Life Span Development*. Macmillan Publishing Co.; New York: 1980.
3. Austin, Carol D. Case Management in Long-Term Care: Options and Opportunities. *Health and Social Work* Winter;1983 8:16–30. Coulton, Claudia J., et al. Discharge Planning and Decision Making. *Health and Social Work* November;1982 7:253–261. Roy, Carrol A.; Atcherson, Esther. Peer Support for Renal Patients: The Patient Visitor Program. *Health and Social Work* Winter;1983 8:52–56.
4. Reinherz, Helen; Grob, Mollie C.; Berkman, Barbara. Health Agencies and a School of Social Work: Practice and Research in Partnership. *Health and Social Work* Winter;1983 8:40.
5. Coulton, Claudia J. The Need for Replication in Social Work Research. *Social Work Research and Abstracts* Summer;1982 18:2. Guest Editorial
6. Office on Smoking and Health. *The Health Consequences of Smoking: Cancer—A Report of the Surgeon General*. U.S. Government Printing Office; Washington, D.C.: 1982.
7. Office on Smoking and Health. *The Health Consequences of Smoking: Cardiovascular Disease—A Report of the Surgeon General*. U.S. Government Printing Office; Rockville, Md.: 1983.
8. Bureau of Alcohol, Tobacco, and Firearms. *Tobacco Products*. U.S. Government Printing Office; Washington, D.C.: 1982.
9. Lando, Harry A. Data Collection and Questionnaire Design: Smoking Cessation in Adults. In: Grabowski, John; Bell, Catherine S., editors. *Measurement in the Analysis and Treatment of Smoking Behavior*. National Institute on Drug Abuse; Rockville, Md.: 1983. p. 74-89. Research Monograph No. 48
10. Botvin, Gilbert J.; Eng, Anna. The Efficacy of a Multicomponent Approach to the Prevention of Cigarette Smoking. *Preventive Medicine* March;1982 11:199–211. [PubMed: 7088907] Cullen, Joseph W. Behavioral, Psychological, and Social Influences on Risk Factors, Prevention, and Early Detection. *Cancer* November;1982 50:1946–1961. [PubMed: 7127272] Flay, Brian R., et al. Cigarette

- Smoking: Why Young People Do It and Ways of Preventing It. In: McGrath, P.; Firestone, P., editors. *Pediatric and Adolescent Behavioral Medicine*. Springer-Verlag; New York: 1983. p. 132-183. McAlister, Alfred L.; Perry, Cheryl; Maccoby, Nathan. Adolescent Smoking: Onset and Prevention. *Pediatrics* April;1979 63:650-658. [PubMed: 440878]
11. Gilchrist, Lewayne D.; Schinke, Steven Paul. Self-Control Skills for Smoking Prevention. In: Engstrom, Paul F., editor. *Advances in Cancer Control: Proceedings 1983*. Alan R. Liss; New York: 1984. p. 125-130. Gilchrist, Lewayne D.; Schinke, Steven Paul; Blythe, Betty J. Primary Prevention Services for Children and Youth. *Children and Youth Services Review* 1979;1:379-391. Schinke, Steven Paul; Gilchrist, Lewayne D. Primary Prevention of Tobacco Smoking. *Journal of School Health* September;1983 53:416-418. [PubMed: 6556391]
 12. Bry, Brenna H. Reducing the Incidence of Adolescent Problems Through Preventive Intervention: One- and Five-Year Follow-up. *American Journal of Community Psychology* 1982;10:265-276. [PubMed: 7113990] Coates, Thomas J.; Petersen, Anne C.; Perry, Cheryl, editors. *Promoting Adolescent Health*. Academic Press; New York: 1982.
 13. Rose, Steven R. Promoting Social Competence in Children. *Child and Youth Services Fall-Winter*; 1982 5:43-59. Schinke, Steven Paul; Gilchrist, Lewayne D. *Life Skills Counseling with Adolescents*. University Park Press; Baltimore, Md.: 1984.
 14. Finn, Jerry; Rose, Sheldon. Development and Validation of the Interview Skills Role-Play Test. *Social Work Research and Abstracts Summer*;1982 18:21-27. [PubMed: 10256507] Hudson, Walter W. Development and Use of Indexes and Scales. In: Grinnell, Richard M., editor. *Social Work Research and Evaluation*. F. E. Peacock Publishers; Itasca, Ill.: 1981. p. 130-155. Nuehring, Elane M., et al. Evaluating the Impact of Prevention Programs Aimed at Children. *Social Work Research and Abstracts Summer*;1983 19:11-18. [PubMed: 10262253] Schinke, Steven Paul; Gilchrist, Lewayne D. Survey and Evaluation Methods: Smoking Prevention among Children and Adolescents. In: Grabowski, John; Bell, Catherine S., editors. *Measurement in the Analysis and Treatment of Smoking Behavior*. U.S. Government Printing Office; Washington, D.C.: 1983. p. 96-104. NIDA Research Monograph No. 48
 15. Luepker, Russell V., et al. Saliva Thiocyanate: A Chemical Indicator of Cigarette Smoking in Adolescents. *American Journal of Public Health* December;1981 71:1320-1324. [PubMed: 7315995]
 16. Bloom, Martin; Fischer, Joel. *Evaluating Practice: Guidelines for the Accounting Professional*. Prentice-Hall; Englewood Cliffs, N.J.: 1982.
 17. Lichtenstein, Edward. The Smoking Problem: A Behavioral Perspective. *Journal of Consulting and Clinical Psychology* December;1982 50:804-819. [PubMed: 7174974] Toseland, Ronald W.; Kabat, Douglas; Kemp, Katherine. Evaluation of a Smoking-Cessation Group Treatment Program. *Social Work Research and Abstracts Spring*;1983 19:12-19.
 18. Lorion, Raymond P. Research Issues in the Design and Evaluation of Preventive Interventions. In: Bowker, Joan P., editor. *Education for Primary Prevention in Social Work*. Council on Social Work Education; New York: 1983. p. 7-23. Wittman, Milton. Further Thoughts on Primary Prevention. *Social Work* November;1982 27:531-532.
 19. Botvin, Gilbert J. Coates, Petersen, Perry. Broadening the Focus of Smoking Prevention Strategies. *Promoting Adolescent Health* :137-148.
 20. Fanshel, David. Special Issue on Research in Prevention. *Social Work Research and Abstracts Fall*; 1982 18:2. Editorial
 21. Bernstein, Barton E. Legal Needs of the Ill: The Social Worker's Role on an Interdisciplinary Team. *Health and Social Work* August;1980 5:68-72. Miller, Thomas W. Professional Services Evaluation in a Medical Setting. In: Prokop, Charles K.; Bradley, Laurence A., editors. *Medical Psychology*. Academic Press; New York: 1981. p. 471-483.
 22. Kane, Rosalie A. Lessons for Social Work from the Medical Model: A Viewpoint for Practice. *Social Work* July;1982 27:315-321. [PubMed: 10257661]
 23. Schwartz, Sanford. Putting Primary Prevention to Work: Administrative Dilemmas. *Administration in Mental Health* Summer;1982 9:272-280.
 24. Coulton, Claudia J. Person-Environment Fit as the Focus in Health Care. *Social Work* January;1981 26:26-35. [PubMed: 10249851] Wodarski, John S. *Rural Community Mental Health Practice*. University Park Press; Baltimore, Md.: 1983.

25. Berkman, Barbara. Social Work and the Challenge of DRGs. *Health and Social Work* Winter;1984 9:2–3.Editorial

Table 1

Mean Gains Scored by Subjects in Experimental, Comparison, and Control Conditions^a

Variable Measured	Study Condition			<i>p</i>
	Experimental	Comparison	Control	
<i>Knowledge of smoking-related facts</i>				
<i>Reactions to temptations to smoke</i>	11.9	7.3	4.4	5.06 <.001
Selection of healthy options	1.6	0.5	0.2	4.92 <.001
Selection of nonsmoking outcomes	1.2	0.3	-0.4	3.38 <.05
<i>Characteristics of smoking-related interactions</i>				
Accuracy between responses and behavior	2.7	0.9	0.1	4.85 <.001
Noncompliance with pressure to smoke	1.4	0.0	-0.3	3.11 <.05
Reinforcement by self-reward and praise	2.5	1.2	0.8	5.90 <.001
<i>Reactions to smoking-related situations</i>				
Can predict correctly	1.1	0.5	0.6	5.88 <.001
Is prepared adequately	2.8	1.0	0.4	5.21 <.001
Can cope positively	1.9	1.1	0.3	4.76 <.01
Can act adaptively	3.5	1.7	1.1	5.09 <.001
<i>Instances of smoking in past week</i>				
Posttest	-3.3	1.4	0.2	4.73 <.01
Follow-up ^b	-0.1	8.6	9.7	5.12 <.001
<i>Saliva thiocyanate^c</i>				
Posttest	-2.4	6.2	4.3	4.96 <.01
Follow-up ^b	-1.6	10.5	9.8	5.13 <.001

^aUnless otherwise indicated, means are for pretest to posttest gains.^bMeans are for posttest to follow-up gains.^cDerived from inhaled tobacco smoke. Saliva thiocyanate has a half-life of 14 days.