Prevention of Cigarette Smoking: Effect of Information about the Negative Social Effects of Smoking

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ABSTRACT. Adolescents who are contemplating beginning to smoke may not be aware of the social disadvantages of being a smoker. It was hypothesized that adolescents, given the opportunity to learn about and experience the negative social effects of smoking, would be less likely to intend to begin smoking. Middle school students participated in a smoking prevention program using role playing of scripts dealing with the negative social effects of smoking. These intervention-group students were compared with a control group of students before the intervention, immediately following the intervention, and 5 weeks following the intervention. The students in the intervention group showed more negative beliefs about the social consequences of smoking and were less likely to plan to start smoking than the students in the control group at both immediate posttest and at the 5-week follow-up.

SMOKING IS THE MOST important preventable cause of illness and death in the United States (U.S. Department of Health, Education and Welfare, 1979). Smoking prevention programs tend to focus on young adolescents (Oei & Fea, 1987) because individuals tend to begin smoking just as they leave childhood (Barton, Chassin, Presson, & Sherman, 1982).

Smoking prevention programs with some evidence of effectiveness include health education approaches (e.g., Andrews & Hearne, 1984; Murray, Swan, & Clark, 1984) and approaches involving training in decision making and peer-pressure resistance (e.g., Schinke & Gilchrist, 1983; Worden, Flynn, Brisson, Secker-Walker, McAuliffe, & Jones, 1987). After reviewing published etiology and prevention studies, Oei and Fea (1987) concluded that anti-smoking attitudes and beliefs are important

factors in the onset of smoking, that these generally remain constant over many years, and that encouraging stronger anti-smoking attitudes among youngsters is an important part of primary prevention of smoking.

Beliefs about the social effects of smoking have rarely, if ever, been addressed in smoking prevention programs. These consequences include being less liked (Polivy, Hackett, & Bycio, 1979), being perceived as not "socially OK" (O'Rourke, Smith, & Nolte, 1984), being less desired as a friend (Barton et al., 1982), being disfavored for dating and marriage (Malouff, Schutte, & Kenyon, 1988), and being less likely to be hired to work (Weis & Fleenor, 1981).

Malouff et al. (1988) found that college students rated their own social preference for nonsmokers significantly higher than the preference they thought people generally have. Hence, they appeared to underrate the actual social disadvantage of being a smoker. Young people who are considering whether to start smoking may be even less knowledgeable about the social disadvantages of being a smoker. In fact, Pederson and Lefcoe (1985) and Bloom and Greenwald (1984) found that young smokers tend to believe that smoking helps them socially.

We therefore hypothesized that attitudes against beginning to smoke could be strengthened by providing young adolescents with information about the negative social consequences of smoking. We chose young adolescents because they are at a prime age for beginning to smoke and because they appear to be very socially conscious (Barton et al., 1982).

The intervention included discussion and didactic psychodrama (Moreno, 1969) in the form of role-playing scripts dealing with the negative social effects of smoking. Role playing was included because it is unusual and arousing for children and should therefore tend to be remembered (Deffenbacher, 1983; Pillemer, 1984) and because it has been shown to lead to changes in cognitions and behavior (Irwin, Levy, & Shapiro, 1973; Janis & King, 1969), including smoking behavior (Mann, 1967; Mann & Janis, 1968).

Method

Subjects

The 102 subjects included 16 fifth graders, 24 sixth graders, 33 seventh graders, and 29 eighth graders. The 45 male and 57 female subjects had a total mean age of 12.27 years, $SD = 1.17$.

Procedure

Subjects in the four grades were randomly assigned by class to either an intervention group or a control group. Subjects in Grades 5 and 8 were as-

signed to the intervention condition; subjects in Grades 6 and 7 were assigned to the control group.

Subjects in both conditions completed all four measures just before the intervention began and 6 weeks later. At the end of the intervention, all subjects also completed three scales: the social consequences of smoking, personal preference for smokers, and the intention to smoke.

Intervention

Subjects in the intervention condition participated in discussion and a brief psychodrama regarding the social effects of smoking. The usual classroom teacher led the intervention according to a manual provided by the researchers.

The teacher began the intervention by reading a description of the negative social effects one smoker experienced before he quit. The teacher then stated some of the negative social consequences found by prior research: smokers tend to be liked less and to be disfavored for friendship, dating, marriage, and employment for a variety of reasons. Next, the teacher passed out three-person role-playing scripts relating to the social effects of smoking. The students took about 15 minutes to rehearse their roles. The scripts were designed to capture the interest of young teen-agers; they focused on the possible negative effects of smoking on friendship, dating, and employment. The entire session took 45 minutes.

On the following day, the subjects acted out the scripts in front of the class. The subjects then discussed the role plays and the social effects of smoking. This session lasted 45 minutes.

Subjects in the control group did not participate in any intervention regarding smoking. It is possible, however, that they learned from intervention-group subjects some of the material covered in the intervention.

Measures

The Social Consequences of Smoking Scale was developed by the researchers on the basis of prior research findings, mentioned previously, which showed that nonsmokers tend to be liked more and to be favored with regard to dating, marriage, and employee selection. The scale contains 10 items about the extent to which the respondent perceives a preference by others in these regards. The scale consists of items such as "Most people want to date smokers." Subjects used a 5-point scale ranging from 1 (*strongly agree*) to 5 (*strongly disagree*) to express how much they agreed with the items. Scores can range from 10 to 50, with high scores indicating the strong view that smoking has negative social consequences. The scale

had adequate reliability for research purposes, as shown by Cronbach's alpha, which was .85 (N = 98) at pretest.

The six-item intention to smoke scale was previously found by Barton, Chassin, Presson, and Sherman (1982) to have adequate reliability for research purposes. For each of the six items, respondents express how much they agree with a statement of whether they intend to smoke at a certain time in the future. Scale scores can range from 6 to 30, with higher scale scores indicating a stronger disinclination to smoke in the future. The smoking-behavior item, based on an item developed by Barton et al. (1982), asks respondents to state whether they smoke more than once a week.

Results

An analysis of variance showed that there were no significant differences between the two conditions with regard to sex, age, or pre-intervention scores on any of the three outcome measures.

Pearson correlation coefficients showed a significant correlation between beliefs about smoking and intention to smoke at all three assessment times. At pre-assessment, it was $r(96) = .35$, $p < .0001$; at posttest, it was $r(84) = .31$, $p < .002$; and at follow-up, it was $r(84) = .54$, $p < .0001$.

Examination of subject responses on the smoking behavior item at pretest showed that only one of the subjects was smoking at the time. Because of the statistical impossibility of showing a significant group decrease in smoking after the intervention, this variable was abandoned. The other two variables, beliefs about smoking and intention to start smoking, showed adequate variance at pretest, although there was somewhat of a ceiling effect with regard to intentions in that the subjects generally expressed a strong inclination not to start smoking.

In order to determine whether the intervention changed beliefs about the social effects of smoking, the two conditions were compared with regard to changes in their beliefs. A 2 × 3 (Condition × Test: pre-, post-, and 5-week follow-up) repeated measures ANOVA on social consequences of smoking scores showed a significant interaction between conditions and repeated measures, $F(2, 66) = 6.18$, $p < .003$, suggesting that the intervention changed beliefs about the social effects of smoking.

The mean scores for the intervention and control groups showed that the intervention subjects, relative to the control subjects, came to believe more strongly in the negative social effects of smoking after the intervention and maintained their stronger beliefs throughout the 5-week follow-up. The means for the intervention group were 38.91, SD = 5.79, (N = 45) at pretest; 42.19, SD = 5.85 (N = 39) at posttest; and 41.23, SD =

6.19 (N = 39) at 5-week follow-up. The means for the control group were 39.06, SD = 6.00 (N = 53) at pretest; 39.40, SD = 7.03 (N = 42) at posttest; and 36.40, SD = 8.72 (N = 47) at 5-week follow-up.

In order to determine whether the intervention affected intention to smoke, a 2 × 3 (Condition × Test) repeated measures ANOVA was done on intention to smoke scores. The analysis showed a significant interaction between conditions and repeated measures, $F(2, 69) = 3.59$, $p < .03$.

The mean scores for the intervention and control groups showed that the intervention subjects maintained their initially high disinclination to start smoking throughout the 5-week follow-up. The control subjects, however, showed a decrease in their initially high disinclination to start smoking. The means for the intervention group were 25.82, SD = 4.59 (N = 44) at pretest; 25.15, SD = 5.68 (N = 44) at posttest; and 25.82, SD = 4.76 (N = 39) at 5-week follow-up. The means for the control group were 26.55, SD = 5.09 (N = 51) at pretest; 24.05, SD = 6.00 (N = 43) at posttest; and 23.09, SD = 6.77 (N = 6.77) at follow-up.

Unbeknownst to the researchers, the fifth-grade class also participated during the time of the intervention in a presentation by the American Lung Association that included information on the physiological effects of smoking. In order to assess whether that influenced the subjects, the fifth- and eighth-grade classes were compared with regard to changes on the belief and intention measures. There were no significant differences between the two classes.

Discussion

The study provided evidence that information about the possible negative social consequences of smoking leads to a change in beliefs about the consequences of smoking among young adolescents. Information about the social consequences of smoking also seems to make it less likely that young teens will plan to start smoking. These findings, along with the consistently significant correlation between the belief that smoking leads to negative social consequences and lessened intention to smoke, support the conclusion of Oei and Fea (1987) that beliefs about smoking are one of the factors that influence the decision to smoke.

Because adolescents tend to have inaccurate perceptions of the consequences of smoking (Bloom & Greenwald, 1984; Malouff et al., 1988; Pederson & Lefcoe, 1985) and because they are quite concerned about their social standing (Barton et al., 1982), an approach such as the one described in this study might be an effective component in smoking prevention programs.

The results of the present experiment should be interpreted cautiously, however, because of certain methodological limitations. First, subjects were used as the unit of analysis, although random assignment was of classes. The generalizeability of the findings, therefore, may be limited (Murray et al., 1987). Hence, the need for replication of the findings is greater here than with studies that use dozens of classes.

Second, the intervention appeared to prevent an increase in inclination to smoke in the experimental group, such as that experienced by subjects in the control group. There was, however, no evidence of a significant decrease in inclination to smoke among subjects in the experimental group. That might be due to a ceiling effect in that, prior to the intervention, subjects in both groups generally expressed a strong disinclination to start smoking.

Third, there were not enough smokers among the subjects for it to be statistically possible to demonstrate an effect on smoking behavior, in addition to smoking attitudes. Attitudes do predict behavior (Fishbein & Ajzen, 1975), including starting to smoke (Oei & Fea, 1987), but it is not known to what extent the changes in belief and intention produced by the intervention will lead to an actual change in future smoking behavior.

Fourth, the physical health education program provided to the fifth-grade subjects at about the same time as the social-consequences intervention may have had some effect on the subjects' attitudes toward smoking. A comparison of their attitude outcomes, however, with those of the other intervention class, the eighth graders, provided no evidence of that.

Future research could build on the present findings by examining (a) the long-term efficacy of a similar intervention with other children and (b) the importance of the didactic-psychodrama component of the intervention.

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