Health Psychology
2004, Vol. 23, No. 4, 397–406

0278-6133/04/$12.00 DOI: 10.1037/0278-6133.23.4.397

A Randomized Trial Comparing the Effects of Self-Help Materials and Proactive Telephone Counseling on Teen Smoking Cessation

Isaac M. Lipkus, Colleen M. McBride, Kathryn I. Pollak, Rochelle D. Schwartz-Bloom, and Elizabeth Tilson
Duke University Medical Center

Paul N. Bloom
University of North Carolina at Chapel Hill

We conducted a 2-arm randomized trial to test the efficacy of self-help materials with or without proactive telephone counseling to increase cessation among teen smokers. Teen smokers ($N = 402$) recruited from 11 shopping malls and 1 amusement park in the southeastern United States were randomized to 1 of 2 groups: written self-help material plus video; or written self-help material, video, and telephone counseling. Cessation rates based on 7-day point-prevalent abstinence for the self-help and counseling arms were 11% and 16%, respectively ($p = .25$), at 4 months postbaseline and 19% and 21%, respectively ($p = .80$), at 8 months postbaseline. Sustained abstinence, reflecting 7-day abstinence at both time points, in the self-help and counseling arms was 7% and 9% ($p = .59$). Results suggest that minimal self-help cessation approaches that target youth have comparable success to that shown among adult smokers. However, refinements in telephone-counseling approaches may be needed to achieve the success observed in adult populations.

Key words: teen smoking, telephone counseling, self-help materials

Cigarette smoking among teens increased throughout the 1990s and only recently has begun to decline slightly (U.S. Department of Health and Human Services [DHHS], 2002). Approximately 23% of high school students have smoked in the previous 30 days (Centers for Disease Control and Prevention, 2003). Prevention of smoking initiation continues to be a public health priority. However, growing recognition of the concerted efforts needed to achieve the Healthy People Objectives 2010 has directed attention to the importance of increasing rates of teen smoking cessation (Sussman, 2002).

As with adult smoking, portable and disseminable interventions are needed to reach broad cross sections and geographically dispersed populations of smokers. However, the majority of smoking cessation programs tested with teens have been delivered in school settings and often are provided in multiple group sessions (Sussman, 2002). These programs often discuss the risks of smoking, factors affecting smoking (peer and familial influences, stress), and strategies to quit. Some programs have been provided as part of disciplinary actions for school smoking violations, with students mandated to attend in order to stay in school. Such circumstances may not be optimal to engage teens with program materials or to teach skills that could assist them in achieving cessation because multiple and group sessions require teens to set aside time and they may interfere or compete with other extracurricular activities. These cessation programs also do not reach youth who have dropped out of school or have high absenteeism, groups that have the highest rates of smoking (Pirie, Murray, & Luepker, 1988). Moreover, these programs often have high attrition rates that further limit their generalizability and statistical power.

A few cessation programs have targeted smokers in clinics (e.g., physician and dental offices; Colby et al., 1998; Skjoldebrand & Gahnberg, 1997; Townsend, Wilkes, Haines, & Jarvis, 1991; Walker et al., 2002). Most often, teens are identified as smokers based on medical records or at the time of the visit. If a teen is found to be a smoker, these interventions try to affect cessation through physician advice to quit while providing cessation materials (e.g., written materials). However, these programs are often impeded by scarce provider time, lack of or inconsistency in systems to identify teen smokers, teen smokers' feelings of discomfort discussing sensitive issues such as smoking, and lack of provider training and reimbursement for counseling (Lichenstein et al., 1996; Steiner & Gest, 1996). Further, these approaches are limited primarily to teen smokers who obtain regular medical or dental care. Based on the limitations of clinic- and school-based programs, it is an important public health priority to increase the reach of smoking cessation interventions to at-risk populations. As

Isaac M. Lipkus, Department of Psychiatry, Duke University Medical Center; Colleen M. McBride, Kathryn I. Pollak, and Elizabeth Tilson, Department of Community and Family Medicine, Duke University Medical Center; Rochelle D. Schwartz-Bloom, Department of Pharmacology, Duke University Medical Center; Paul N. Bloom, School of Business, University of North Carolina at Chapel Hill.

Colleen M. McBride is now at the National Human Genome Research Institute, Bethesda, Maryland, and Elizabeth Tilson is now at the Wake County Access II Program, Raleigh, North Carolina.

This study was supported by National Cancer Institute Grant CA80262. We thank Deborah Iden, who served as project manager.

Correspondence concerning this article should be addressed to Isaac M. Lipkus, Department of Psychiatry, Duke University Medical Center, 905 West Main Street, Box 34, Durham, NC 27701. E-mail: lipku001@mc.duke.edu

we have suggested elsewhere (Bloom, McBride, Pollak, Schwartz-Bloom, & Lipkus, 2004), the proactive identification of smokers in "nontraditional" settings, such as shopping malls and amusement parks, where adolescents congregate could broaden the reach of teens who participate in smoking cessation programs.

Use of minimal and self-directed interventions, such as printed self-help cessation guides and videos, can broaden the reach of cessation interventions. Within adult cessation programs, these interventions, often based on cognitive behavioral models (e.g., social learning, transtheoretical model), by themselves have not consistently shown an ability to substantially increase cessation rates above that of population quit rates (Fiore, 2000; Lancaster & Stead, 2002). However, these approaches may have greater success with teens for whom the habit of smoking is less entrenched, and the development of requisite skills (e.g., insights into what prompts urges to smoke, coping with obstacles to quitting, making plans to quit) may be responsive to minimal and self-directed approaches. Moreover, teen smokers could benefit from proactive delivery of these cessation interventions. Nonetheless, as with adult cessation interventions, the challenge is to engage teen smokers to read the materials and make use of the suggested strategies (McBride et al., 1998).

Visuals in the form of videos and television ads have been used along a continuum from persuading cessation (e.g., antismoking advertisements) to providing useful self-help cessation tools. Videos enable new cessation skills to be acquired via observational learning with the added advantage that they can be watched repeatedly; this further enhances skill acquisition (Bandura, 1986; Killen, Fortman, Davis, & Varady, 1997). Indeed, among adult smokers, cessation videos have increased cessation rates (Resnicow, Royce, Vaughan, Orlandi, & Smith, 1997).

Whereas the focus of these videos has been their use as individualized cessation tools, we took the approach that videos might be appropriate to encourage use of print self-help materials to motivate cessation among teen smokers. As such, our approach departs from the more traditional use of videos as methods of learning cessation skills or the use of video content to produce persuasive communications on a broader level (e.g., antismoking ads). We thought that a video that was created with input from teen smokers could be effective by highlighting issues that matter most to teens in a vivid and appealing fashion (Bauer, Johnson, Hopkins, & Brooks, 2000; Zucker et al., 2000). As such, video formats could be used to convey previews of compelling information contained and expanded upon in print materials.

Telephone counseling also encourages engagement with self-help programs (McBride & Rimer, 1999; Zhu, Tedeschi, Anderson, & Pierce, 1996). Proactive telephone counseling has been shown to enhance smokers' receptivity to and use of self-help cessation approaches (McBride & Rimer, 1999). Among adult smokers, telephone counseling consistently has doubled cessation rates in relation to usual care alone, especially with multiple contacts (McBride & Rimer, 1999; Zhu, Stretch, et al., 1996).

There are several advantages of telephone counseling that is targeted to teen smokers (Tedeschi, Zhu, Anderson, Cummins, & Ribner, 2004). Telephones are readily accessible, and teens often use them to communicate; an estimated 75% of teenagers are expected to use a wireless phone by 2006 (Rayburn, 2002). Telephone counseling allows for one-to-one and personalized support. Telephone counseling may be preferred by teens who face logistical barriers (e.g., time constraints, inconvenience of group cessation programs) or have a desire to maintain anonymity. Indeed, because telephone counseling is semianonymous, teen smokers may be willing to disclose more sensitive issues about their smoking attitudes and behaviors. In telephone counseling, content can be tailored to a smoker's readiness to quit and timed to coincide with critical time periods (e.g., during and shortly after the quit date). Telephone counselors can advise teen smokers to read relevant sections of printed self-help materials to gain insights about their smoking habit and strategies for quitting. Thus, telephone counseling may increase the likelihood that teens will use written self-help materials, and in so doing may increase treatment efficacy.

Despite promising findings with adult smokers, telephone counseling has been underutilized as a method to increase cessation among teen smokers and as an adjunct to enhance use of self-help smoking cessation materials. Although there is no evidence or theoretical reason why telephone counseling would be less effective with teen than adult smokers, telephone-counseling adjuncts have not been evaluated as a cessation strategy among proactively recruited teens. As with adult smokers, teens may reap the benefits of telephone counseling.

An equally important issue is whether there are subgroups of smokers for whom self-help materials and telephone counseling might be especially effective to increase cessation. We addressed this issue by asking what characteristic(s) of a smoker would be related to use of self-help materials and counseling, assuming that greater use enhances cessation (Curry, Wagner, & Grothaus, 1991; Davis, Faust, & Ordentlich, 1984; McFall et al., 1993). Smokers seriously thinking about or engaged in the process of quitting may make most use of self-help materials and counseling. We expected that our interventions might be more effective for teen smokers who expressed a strong desire to quit or who were in the contemplation and preparation stages of change.

A second characteristic that may influence the effectiveness of self-help materials and telephone counseling is the perceived benefits and costs to quitting. The extant literature clearly shows that smokers who report more positive than negative beliefs about quitting, as indicated by decisional balance measures, express a stronger desire and are more likely to take actions to quit (Prochaska, DiClemente, Velicer, Ginpil, & Norcross, 1985; Velicer, DiClemente, Prochaska, & Brandenburg, 1985). Teen smokers who express more negative and less positive beliefs about smoking may be more receptive to materials and counseling that reinforce these beliefs. Proactively delivered cessation materials provide the conduit to translate these beliefs into action. However, not all smokers conclude that the pros of quitting outweigh the cons. Some have equally strong reasons to smoke or to quit (Lipkus, Green, Feaganes, & Sedikides, 2001). For these ambivalent smokers, self-help materials and counseling may resolve their mixed feelings and thoughts and help them determine what actions to pursue. Thus, we predicted that teen smokers who were ambivalent about smoking would be more likely to quit if they received more cessation intervention.

Last, we considered the teen's perception of himself or herself as a smoker in relation to use of cessation materials. Teens who smoke on an irregular basis may not view themselves as smokers and see no need for cessation materials or counseling; they may not attend to cessation materials that are delivered proactively.

Rather, they may need these materials when they start perceiving themselves as similar to the prototypical smoker (Gibbons & Gerrard, 1995). However, it is also possible that teen smokers who rate themselves highly as a nonsmoker are expressing a future desired state (Shadel & Mermelstein, 1996). If so, these teens may avail themselves of self-help materials and counseling to reach this desired goal. For exploratory purposes, we tested whether image of self as a smoker or nonsmoker interacted with intervention to affect cessation.

In sum, the effectiveness of proactively delivered minimal cessation approaches has not been evaluated sufficiently. These approaches enable cessation programs to occur outside of school settings and can have a wide reach. Teen smokers may prefer these minimal and self-directed intervention approaches because they require minimal time commitments, interfere or compete less with other extracurricular activities, are relatively anonymous, are easily transportable, and can be customized to meet individual needs of the smoker. Customization can be well-served by telephone counseling. Telephone counseling has the added advantage of encouraging the use and maximizing the effectiveness of self-help written materials. Similarly, as with telephone counseling, videos constructed by teens can encourage their use of self-help written materials by presenting information in a manner that piques teen smokers' curiosity.

In this article, we report results of a randomized intervention trial that tested whether proactive telephone counseling enhances teen smokers' receptivity to and use of self-help cessation approaches and whether it results in higher cessation rates than video and self-help materials alone. We predicted that cessation rates would be higher among teen smokers who received telephone counseling, self-help material, and video than teens who only received self-help materials and video. We tested this hypothesis in a sample of teen smokers who were recruited proactively from shopping malls and one amusement park in the southeastern United States.

Method

Recruitment

Teen smokers who were 15–18 years old were recruited from 11 shopping malls in North Carolina, South Carolina, Georgia, and Tennessee. Teens were approached by recruiters, who were employed by marketing firms, and were asked to complete a short one-page "screening" questionnaire that included a question about smoking and age. If the teen smoked a cigarette, even a puff in the past 30 days, and was between the ages of 15 and 18, he or she was asked to follow the recruiter to an office in the mall. At the office, we tested a version of a foot-in-the-door social influence recruitment strategy versus a control (see Bloom et al., 2004, for detailed descriptions of the recruitment methodology and outcomes). While at the office, teens in the control condition were asked for consent to be called back to discuss a study on smoking. Teens in the experimental condition, prior to being asked for consent, were asked to generate a list of why teens should not smoke and for those who do smoke, why they should quit. It was expected, though not found, that teens in the experimental group would be more willing to consent to be called back. In addition, as a pilot, we recruited a small number of teens from Universal Studios in Florida using an identical recruitment approach. Hence, data from a small proportion of smokers who were recruited from the amusement park are included in the analyses.

Teens who consented to be called back were contacted by interviewers at Duke University Medical Center within 2 weeks to a month. Study details were provided. Teens were eligible if they were 15–18 years old, had smoked a cigarette within the last week, and gave verbal consent; parental consent was obtained for teens younger than 18. Overall, 402 teens were eligible and agreed to receive smoking materials in the mail and possibly receive telephone-counseling calls from the "X-Project." These teens completed a 20-min baseline telephone survey.

Intervention Design

Based on responses to the baseline survey, all 402 participants were stratified on their stage of readiness to quit (i.e., precontemplation, contemplation, and preparation) and then were randomized to one of two arms: (a) self-help materials with video ($n = 193$), or (b) self-help materials, video, and telephone counseling ($n = 209$). Teens were contacted at 4 and 8 months postbaseline to complete a 15- to 20-min telephone survey. Elements of the intervention and survey measures are discussed later. Teens who completed the surveys received a movie pass. Each intervention component was evaluated by an eight-member Teen Advisory Panel who met biweekly the first year of the project. Members of the Teen Advisory Panel were smokers and provided guidance on the appropriateness and comprehension of material.

Intervention Components

Self-help booklets. All participants received two self-help cessation booklets in the mail within a week of their baseline survey. These booklets were developed by Shu-Hong Zhu for teen and young adult smokers who called the California Smokers' Helpline to quit. The first booklet (California Smokers' Helpline, 1998) is geared primarily to smokers in the precontemplation and contemplation stages to encourage them to think about their feelings and attitudes toward smoking. It contains smoking-related questions and answers on smoking (e.g., "Most people smoke, why shouldn't I?", "Why should I worry about health problems that I won't get until I'm old?"), health effects of smoking, testimonials of embarrassing social situations involving smoking, a flowchart to help determine one's motivation to quit, a checklist of personal reasons to quit and to smoke, and an overview of various methods of trying to quit along with their advantages and disadvantages and persons for whom each method might work best.

The second booklet (California Smokers' Helpline, 1999) is geared to help smokers in the preparation and action stages to take steps toward quitting smoking. It includes information about what to expect while trying to quit and strategies for overcoming obstacles to quitting (e.g., how to overcome cravings, how to deal with other smokers, and how to handle stress). It reinforces the benefits of quitting (e.g., short- and long-term health benefits). The booklet contains a pocket diary to help smokers become aware of factors that could affect their smoking, when they smoked, and what they did to overcome their temptation to smoke.

Video. All participants received a 6-min video developed by the research team with the aid of the Teen Advisory Panel. The intent of the video was to motivate teens to use the self-help materials. The main themes of the video were to briefly educate viewers about the harmful contents of cigarette smoke and to arouse sufficient curiosity to get the participants to read the self-help materials. For example, the video portrayed snapshots of the content of the self-help materials; had a group of teens sitting together discussing elements of the self-help materials, such as the costs of smoking and how smoking can affect one's looks (e.g., showing a pretty woman morphing into an ugly one); and portrayed chemicals found in cigarette smoke (e.g., ammonia). Teens were informed that they should view the video prior to looking through the self-help materials.

Telephone counseling. Participants randomized to the telephone-counseling arm received, in addition to the printed self-help materials and video, a letter 1 week after their baseline survey informing them that they would get a call from a member of the X-Project. The counselor attempted

to contact the teen during those days and times they mentioned during the baseline survey as being optimal. A total of three counseling calls were attempted with each teen. Calls were timed to occur 2–3 weeks apart.

The objectives of telephone counseling were to engage teens to use the smoking cessation materials, to move teen smokers not yet ready to quit smoking along the continuum of readiness to quit, and to assist smokers who were ready to take steps toward quitting. The content of the calls was customized, but the theoretical underpinnings and hence themes of discussion were guided by the transtheoretical model (Prochaska & DiClemente, 1983). The counselors used motivational interviewing techniques (e.g., create discrepancy, express empathy, roll with resistance; Miller & Rollnick, 1991; Resnicow et al., 2002). Counselors encouraged teens in precontemplation to think about their reasons for wanting to quit and to gain an understanding of their own habits. For contemplators, the counselors reinforced the teens' reasons for wanting to quit, opened discussion of any barriers the teens anticipated or had experienced, and, for teens open to the idea, discussed plans for a quit date and related strategies. Among teens in preparation, the counselors emphasized self-efficacy for quitting by encouraging a discussion of barriers and eliciting the teens' ideas about ways to overcome these barriers as well as encouraging a discussion of strategies for quitting. In each call, the counselors referred teens to relevant section(s) of the self-help booklet and, as needed, helped teens come up with specific actions for follow-up discussion during the next call (e.g., try to think of reasons why you may want to quit, etc.).

The counselors were female undergraduate and graduate students with some experience working with or counseling teens. Counselors received about 40 hr of training that included motivational interviewing techniques and a review of factors that can affect teen smoking (e.g., peer influence, pros and cons of smoking), emotional development of teens, strategies to engage them in discussions, and strategies for building social support and self-efficacy. All counselors practiced with project staff and were "certified" before counseling teens. Weekly and bimonthly meetings were held to review case histories and strategies, to address questions, and to resolve issues.

Measures

In addition to assessing baseline demographics, smoking history, smoking among peers and family, and nicotine dependence based on the six-item revised Fagerstrom Nicotine Tolerance Scale (Prokhorov, Pallonen, Fava, Ding, & Niaura, 1996; study $\alpha = .62$), we had all participants complete the following measures at baseline.

Smoking cessation. At 4 and 8 months postbaseline, participants were asked if they smoked a cigarette, even a puff, during the preceding 7 days. Those who said no were considered to have quit.

At 4 months postbaseline only, smokers who reported not having smoked within the preceding 7 days were mailed a saliva kit for cotinine analyses to further validate self-reports. They were asked to provide and return within 24 hours of receipt two spit samples in a self-addressed stamped envelope. To help avoid erroneously classifying a self-reported nonsmoker as a smoker based on elevated cotinine levels, we asked teens whether they had smoked, even a puff during the last 7 days; whether they used either the nicotine gum or patch; and how many hours they were exposed to secondhand smoke during the preceding 2 days. Responses were included with the saliva samples, and teens were offered $10.00 for the return of these materials. Cotinine analyses were conducted by the American Health Foundation. Evidence to suggest a teen continued to smoke was based on a cotinine level of $\geq$10 ng/mL.

Attitudinal ambivalence. An eight-item scale was used to evaluate attitudinal ambivalence. Six of the items corresponded to items used by Lipkus et al. (2001); two additional items were included to assess their contribution to the reliability of the scale. Participants were asked how strongly they agreed, on a six-point Likert scale (1 = *strongly disagree* to 6 = *strongly agree*), with eight statements, for example, "You have strong feelings both for and against smoking"; "You have conflicting thoughts and feelings about smoking; sometimes you think smoking is good, while at other times you think smoking is bad"; and "You find yourself feeling torn between wanting and not wanting to smoke." We removed one item because it contributed to poorer scale internal consistency. The alpha for the final seven-item scale was .79.

Decisional balance. We assessed this by asking participants to rate how important (1 = *not important* to 5 = *extremely important*) six pro and four con smoking beliefs were to them (Pallonen, 1998). Pro beliefs concerned the importance teens attached to (a) relieves anxiety, (b) helps one's social life, (c) helps to find friends, (d) calms nerves, (e) conveys maturity, and (f) is relaxing. The con beliefs were (a) irritates nonsmokers, (b) affects the health of others, (c) poisons indoor air, and (d) bothers nonsmokers as secondhand smoke. The pros and cons scales were summed (αs = .64 and .77, respectively). We created a decisional balance score by standardizing the pros and cons scales to a mean of 50 and a standard deviation of 10 and then subtracting the cons from the pros.

Self-image of smoker/nonsmoker. We used Shadel and Mermelstein's (1996) five-item scale to assess image of self as a smoker (e.g., smoking is part of my daily life; smoking is part of my personality) and used three of four items of the scale to assess their image of self as a nonsmoker (i.e., abstainer; e.g., I am comfortable with the idea of being a nonsmoker; not smoking is "like me"; scored 1 = *strongly disagree* to 5 = *strongly agree*).[1] Alphas were .76 and .69, respectively.

Stage of readiness to quit. Participants were asked, "Are you seriously considering quitting smoking in the next 6 months?" and "Are you planning to quit smoking in the next 30 days?" (Prochaska & DiClemente, 1983). Those who answered that they were not considering quitting in the next 6 months were staged as precontemplation. Those who were considering, but not planning, to quit in the next 30 days were staged as contemplation. Those who were planning to quit in the next 30 days were staged as preparation.

Evaluation of the self-help materials. Teens were asked how much they read of each of the booklets (1 = *did not use it* to 5 = *read all of it*). Those who read at least some of it were asked to evaluate how negative and positive the booklets made them feel about their smoking and desire to stop smoking (1 = *not at all* to 7 = *definitely did*). They were also asked if they tried any of the suggestions to help them reduce or stop smoking altogether (no/yes).

Evaluation of the telephone counseling. Teens in the telephone-counseling arm were asked evaluative questions about the counseling similar to those posed about the self-help materials. In addition, they were asked if the counselor made them feel confident that they could stop smoking altogether (1 = *not at all* to 7 = *completely confident*) and encouraged them to use the booklets (1 = *not at all* to 7 = *strongly encouraged*).

Statistical Methods

In this two-arm study, the experimental arm (counseling, self-help, and video) was compared with the control arm (self-help and video) on cessation outcome measures. All analyses were performed two ways. First an intent-to-treat approach was used such that participants with missing smoking status were included in the analysis as smokers. In the second approach, participants with missing follow-up data on smoking status were excluded from the analysis. Results from both analyses are presented.

Separate logistic regressions were used to test for arm differences on each of the main binary outcomes. These outcomes were abstinence from smoking in the preceding 7 days at the 4- and 8-month postbaseline surveys and sustained abstinence (not smoking at both the 4- and 8-month follow-ups). We examined arm differences first unadjusted and then adjusted by adding the following baseline variables: age, gender, race, duration of

[1] Because of a clerical error, one of the items of the nonsmoker image scale ("It is easy to imagine myself as a nonsmoker") was not included for approximately 70% of respondents. Hence, our analyses are based on the sum of the remaining three items.

smoking, and amount of cigarettes smoked. To assess psychological moderators that might affect cessation, we tested two-way interaction terms between moderator and arm using logistic regression. We used Spearman's correlation coefficient to explore the relationship between use of counseling and counseling process measures.

Results

Recruitment

There were 39,454 young people who were intercepted at the shopping malls; 13,565 were 15–18 years old, of whom 5,591 (41%) had smoked at least a puff in the last month. Of the 5,591 teens, 3,837 (69%) agreed to return to the mall offices and went through one of the two procedures. Regardless of treatment group, 2,119 teens (55% of those intervened upon) consented to provide their names and had a working phone number, and 1,509 (71% of those who left names and numbers) were reached by phone. Of those reached, 823 (55% of 1,509) consented to participate in the smoking cessation program. Furthermore, 645 (43% of those reached) had parents who consented or were 18 years old and consented themselves. In addition to mall recruitment, 1,219 teens were intercepted at the amusement park. Of these, 373 teens qualified at intercept (i.e., were between 15 and 18 years old and had smoked within the last 30 days) and 42 (11% of those who qualified at intercept) consented (or had parental consent if under 18). When these results were merged with mall recruitment, a total of 687 teen smokers consented to participate.

We set the final criterion for eligibility into the cessation program to be teens between the ages of 15 and 18 who smoked at least one cigarette within the preceding 7 days. We reasoned that more "regular" smokers would find the materials more relevant because they might view themselves as smokers. Thus, among the 687 consented smokers, 541 completed the baseline survey; 30 were from the amusement park. Among the 541 who completed the interview, 139 were excluded for not having smoked in the preceding 7 days, which left 402 to be randomized to one of the two intervention arms ($n = 193$ for self-help plus video only, $n = 209$ for self-help, video, and counseling). Sample characteristics overall and collapsed across intervention arm are displayed in Table 1. Overall, there were no arm differences on any of these characteristics.

Demographic data (age, race, gender) collected during recruitment were used to compare smokers who qualified and could and could not be reached to be informed of the study and smokers who

Table 1
Sample Characteristics Overall and by Intervention Arm

	Intervention arm								
	Totals ($N = 402$)			Self-help only ($n = 193$)			Counseling ($n = 209$)		
Demographic and characteristic	*M*	*SD*	%	*M*	*SD*	%	*M*	*SD*	%
Age (median split)									
≥ 17 years old			56			59			55
Gender									
Male			49			51			47
Female			51			49			53
Ethnicity									
White			82			82			82
Black			10			10			10
Other			8			8			8
Education									
In school			75			75			75
Presently in school ($n = 300$)[a]									
High school			82			78			85
Alternative			3			4			3
College			15			18			12
Lives with at least 1 family member who smokes			59			59			60
More than half of friends smoke			82			84			81
Smoking profile									
Years smoked	3	2		3	2		3	2	
Cigarettes per day	10	8		10	8		10	8	
Nicotine dependence[b]			8			9			8
Decisional balance difference score[c]	0	14		−0.3	13		0.2	14	
Ambivalence toward smoking	4	1		4	1		4	1	
Self-image									
Nonsmoker	11	3		10	3		11	3	
Smoker	11	4		11	4		11	4	
Stage of change									
Precontemplation			21			19			23
Contemplation			40			41			39
Preparation			39			40			38

[a] Grade level was asked among those teens who reported being presently in school. [b] Refers to percent being highly nicotine dependent based on a Fagerstrom score of ≥ 6. [c] Difference score is a standardized score in which the raw mean sum score for pro items minus the con items was standardized using $M = 0$ and $SD = 10$.

Table 2
Percent Cessation Rates at 4 Months and 8 Months Postbaseline

	Intervention arm		*p*	
Time point and variable	Self-help only	Counseling	Unadjusted	Adjusted
4 months				
Intent to treat	11	16	.25	.23
Complete data ($n = 236$)	19	28	.12	.06
8 months				
Intent to treat	19	21	.80	.76
Complete data ($n = 259$)	29	33	.50	.50
Sustained abstinence				
Intent to treat	7	9	.59	.49
Observed ($n = 194$)	14	20	.34	.29

Note. Adjusted analyses were controlled for age, gender, race, duration, and amount of cigarettes smoked. All 402 participants were used in the intent-to-treat analyses.

did and did not consent to participate once contacted. There were no mean differences in age or in gender or racial composition for either of the two aforementioned group comparisons. No other data were available to make comparisons between these groups of smokers.

We compared the 402 smokers who were randomized to the intervention trial with the 128 who completed the baseline but were not randomized because they did not meet eligibility.[2] There were no differences in age, race, or gender distributions. However, smokers randomized compared with those not randomized to the intervention were less likely to be in school (75% vs. 89%, $p < .0006$), more likely to have smoked 100 cigarettes or more (96% vs. 58%, $p < .0001$), smoked longer in years ($M = 3.3$ years vs. $M = 2.2$ years, $p < .0001$), expressed less of a desire to quit ($M = 3.3$ vs. $M = 4.2$, 1 = *not at all strong* to 5 = *extremely strong*, $p < .0001$), were more addicted ($M = 2.9$ vs. $M = 1.3$, $p < .0001$), and felt less confident in being able to quit ($M = 3.0$ vs. $M = 4.2$, 1 = *not at all confident* to 5 = *completely confident*, $p < .0001$). Thus, our assumption that our intervention would target the more regular and nicotine-dependent smokers was valid.

Retention and Rates of Compliance

Among the 193 teens randomized to the self-help plus video arm, 61% and 64% were reached at 4 and 8 months postbaseline. Fifty-one percent completed both surveys. Among the 209 teens in the self-help, video, and telephone-counseling arm, 56% and 60% were reached at 4 and 8 months postbaseline, respectively. Forty-six percent completed both surveys. There were no baseline differences on any of the demographic or smoking profiles variables (see Table 1) between those who did and did not complete the 4- or 8-month surveys.

With respect to counseling, 72%, 52%, and 36% of teens completed one to three calls, respectively. On average, it took 8.1, 5.1, and 3.9 call attempts to reach participants for calls one through three, respectively. The average length of calls one through three was 15.0, 13.5, and 12.0 min, respectively. All counseling calls were completed prior to the 4-month postbaseline interview.

Cessation as a Function of Intervention Arm

Point-prevalent abstinence at 4 and 8 months postbaseline and the proportion of teens who reported not smoking at both follow-ups (i.e., sustained abstinence) were the primary outcomes. There were no group differences in abstinence at either time point or for sustained abstinence (see Table 2). Based on the intent-to-treat analyses, abstinence rates for the self-help plus video arm were 11% and 19% at 4 and 8 months, respectively; abstinence rates for the self-help, video, and telephone-counseling arm were 16% and 21% at 4 and 8 months, respectively. These results were unchanged after adjusting for sex, race, age, baseline duration of smoking, and number of cigarettes smoked per day.

Among participants who at 4 months postbaseline reported not smoking within the preceding 7 days, 40% ($n = 22$) returned saliva samples. Rates of return did not differ by arm (41% vs. 39% in control and counseling arms, respectively). Among those who provided samples, 50% had levels suggestive of smoking; 45% and 55% of whom were in the self-help plus video or in the self-help, video, and counseling arms, respectively. These proportions were not statistically significantly different. Hence, although it is questionable whether self-reports of cessation were accurate, potential bias could not be attributed to the intervention arm.[3]

We explored whether cessation rates differed by the number of counseling calls completed in the self-help, video, and telephone-counseling arm. Based on an intent-to-treat model, participants who completed more counseling calls were more likely to report having quit at 4 and 8 months postbaseline (odds ratio [OR] = 1.59, 95% confidence interval [CI] = 1.14, 2.22 for 4 months; OR = 1.54, 95% CI = 1.15, 2.07 for 8 months, *p*s $< .007$) and to have sustained abstinence (OR = 2.03, 95% CI = 1.14, 2.22, $p <$

[2] Initially, 139 were excluded from the analyses. Among these 139, there were 11 teens who provided inconsistent reports of their smoking history; they claimed to have stopped smoking yet they reported smoking in a subsequent question. Consequently, we removed these 11 teens from further analyses. Their exclusion did not affect the results.

[3] Among the 22 teens who reported quitting, half returned the saliva samples within a week of reporting having stopped smoking. Based on self-reports on the survey accompanying the test kit, five reported having smoked during the preceding 7 days. None claimed to have used either the nicotine gum or patch. However, when queried as to the number of hours they have been exposed to secondhand smoke during the last 2 days, only one claimed zero hours and nine claimed 10 hours or more. Hence, the elevated nicotine levels found are most likely due to resumption of smoking or exposure to secondhand smoke.

.006). However, based on the observed data, number of completed counseling calls was unrelated to cessation at 4 months (OR = 1.26, 95% CI = 0.89, 1.80, $p < .20$) or 8 months postbaseline (OR = 1.24, 95% CI = 0.91, 1.70, $p < .18$) or to sustained abstinence (OR = 1.50, 95% CI = 0.91, 2.48, $p < .10$).

Last, we explored whether intervention arm affected other smoking-related behaviors, including the proportion of quit attempts, average number of cigarettes smoked, and mean desire to quit. Intervention arm did not affect any of these outcomes at any time point.

Subgroup analyses for cessation. We examined whether any subgroups of smokers benefited more from the telephone-counseling intervention than the self-help plus video intervention. Subgroups were identified based on the conceptual factors discussed in the introduction. These factors included stage of readiness to quit, decisional balance, ambivalence toward smoking, and image of self as a smoker or as a nonsmoker. It was expected that the self-help, video, and counseling arm would be more effective than the self-help plus video arm for participants who were more rather than less ready to quit, who reported more pros than cons for quitting, who felt more rather than less ambivalent about smoking, who had a stronger desire to see themselves as nonsmokers, and who perhaps had a stronger image of themselves as smokers. In addition, we tested whether age, gender, duration of smoking, number of cigarettes smoked, and addiction level interacted with arm.

Teens who viewed themselves more strongly as nonsmokers (i.e., those above the median on the scale) were more likely to report having quit smoking at 8 months if they received self-help, video, and telephone-counseling than those who viewed themselves less strongly as nonsmokers (i.e., those below the median on the scale; OR = 2.8, 95% CI = 1.3, 6.0, $p < .009$). This effect was not found among teens who received self-help materials plus video (OR = 0.9, 95% CI = 0.4, 2.0, $p = .85$). No other effects were found.

Predictors of cessation. Predictors of cessation were also evaluated. These analyses were based on smokers who had complete data (intent-to-treat results can be obtained from Isaac M. Lipkus). Compared with teens who smoked more than the median number of cigarettes per day (> 8), teens who smoked equal to or less than the median number of cigarettes a day (i.e., ≤ 8), were more likely to have quit smoking at the 4-month (OR = 3.3, 95% CI = 1.7, 5.0, $p < .0004$) and at the 8-month follow-ups (OR = 2.0, 95% CI = 1.2, 3.3, $p < .007$) and to have sustained abstinence at both follow-ups (OR = 2.5, 95% CI = 1.2, 5.0, $p < .01$). Teens in the preparation stage were more likely than precontemplators to have quit at the 4-month (OR = 2.4, 95% CI = 1.0, 5.4, $p < .05$) and at the 8-month follow-ups (OR = 2.9, 95% CI = 1.4, 6.0, $p < .005$). Stage of readiness was not related to sustained abstinence. Teens who viewed themselves most strongly as nonsmokers were more likely to report having quit at 4 months than teens who viewed themselves as less likely to be nonsmokers (OR = 3.3, 95% CI = 1.7, 6.5, $p < .0006$). No other effects were found.

Use of the Materials

Contrary to our prediction, teens in the self-help, video, and counseling arm compared with those in the self-help plus video arm were less likely to watch some to all of the video (44% vs. 62%, $p < .05$) and to have read some to all of the self-help booklets (57% vs. 78%, $p < .01$). Teens in both arms were equally likely to report having followed the quit-smoking suggestions in the booklets (39% vs. 44% for self-help and video and self-help, video, and counseling arms, respectively). None of the demographic or smoking history variables (duration and amount smoked), stage of readiness to quit, decisional balance, or image of self as a smoker or a nonsmoker were related to use of program materials. Smokers who felt more ambivalent about their smoking reported greater use of both self-help booklets at 8 months (rs = .18, ps $< .004$).

Reactions toward the self-help materials. Comparisons of teens' reactions to the self-help materials by intervention arm with respect to positive and negative attitudes toward their smoking and desire to quit indicated no differences (see Table 3). Among teens in both arms, the use of the booklets was associated with moderately negative and lower positive attitudes about their smoking and with a somewhat greater desire to stop smoking.

Reactions toward telephone counseling. Teens had relatively positive evaluations of the telephone counseling (see Table 3). Seventy-nine percent recalled getting at least one counseling call, and recall was greater with increasing number of times reached by telephone ($r = .67$, $p < .001$). Overall, teens felt very comfortable with the counselor ($M = 6.3$ on a 7-point scale), and their comfort level was positively related with the number of calls they accepted ($r = .25$, $p < .05$).

As with the self-help materials, telephone counseling was associated with teens reporting moderately negative and not very positive attitudes about their smoking and a greater desire to stop smoking. Of import, the more calls teens accepted, the more negative they felt about smoking ($r = .23$, $p < .05$) and the more they reported wanting to stop ($r = .23$, $p < .05$) at follow-up. Teens who received counseling reported greater confidence in being able to quit, although confidence was not associated with the number of calls accepted ($r = .06$). Consistent with a goal of telephone counseling, teens felt encouraged to read the self-help materials and felt more encouraged to do so the more times they were counseled ($r = .30$, $p < .01$). Sixty-nine percent reported making use of the counselor's suggestions, although use was not related to the number of calls accepted ($r = .16$, *ns*). None of the demographic or smoking history variables (duration and amount smoked), stage of change, decisional balance, felt ambivalence toward smoking, or image of self as a smoker and as a nonsmoker were related to total number of calls accepted.

Discussion

This study tested a low-intensity, highly disseminable intervention to increase cessation among a unique population-based sample of teen smokers who were recruited from shopping malls and one amusement park. Cessation rates did not differ between arms. However, based on the more conservative intent-to-treat analyses, the combined self-help, video, and telephone-counseling intervention at least doubled the 3%–7% yearly cessation rates typically found among unaided teen smokers (Sussman, 2002; Zhu, Sun, Billing, Choi, & Marlacher, 1999). Further, based on teens' self-reports, the self-help materials and counseling improved teens' attitudes toward smoking and quitting. Close to half of the teens

Table 3
Evaluation of Self-Help Materials and Telephone Counseling

Outcome	Intervention arm			
	Self-help only		Counseling	
	M	*SD*	*M*	*SD*
Self-help materials[a]				
Extent to which it made you feel negatively about your smoking	4.6	1.8	4.5	1.8
Extent to which it made you feel positively about your smoking	2.5	1.7	2.5	1.7
Extent to which it made you want to stop smoking	4.8	1.7	4.7	1.7
Telephone counseling[b]				
Extent to which it made you feel negatively about your smoking			5.2	1.7
Extent to which it made you feel positively about your smoking			2.4	1.7
Extent to which it made you want to stop smoking			5.1	1.9
Counselor made you feel confident that you can quit			5.9	1.3
Counselor encouraged you to make use of the self-help materials			5.5	1.6

Note. Responses ranged from 1 to 7, with the larger number representing a more positive or negative evaluation.
[a] For evaluation of self-help materials, data for 24 teens were excluded (15 reported not receiving the materials; 9 reported not reading any of the materials), which reduced the sample size to 212 (104 in the self-help arm only and 108 in the counseling arm). [b] For evaluation of telephone counseling, 25 teens reported not receiving any counseling call, which reduced the sample size to 93. To an additional question, "Made use of the suggestions provided by the counselor," 69% answered "yes."

made use of the cessation materials; close to 70% made use of the counselor's suggestions and favorably evaluated the counseling.

Why did counseling not produce higher cessation rates? At the onset, we ruled out several individual characteristics that might have affected compliance. These included demographic and smoking history variables (duration and amount smoked), outcomes related to desire and beliefs about smoking (e.g., stage of change, decisional balance), and self-perceptions of self as a smoker or nonsmoker. Thus, our telephone counseling was well received across the spectrum of these individual differences.

A plausible answer to the question is that the dose of intervention was not strong enough to promote cessation. Only one third of the sample completed all three counseling sessions. Based on the intent-to-treat analyses, cessation rates were higher with increasing number of completed calls. Although results based on observed data proved nonsignificant, the direction of change was consistent with the intent-to-treat analyses. These findings indicate that greater efforts may be needed to engage teens with serialized counseling. This might be achieved by providing more incentives for them to participate. Future trials might consider alternatives to calling participants at home. It was difficult to reach teens at home, primarily due to their busy schedules. We discovered that many teens could have been reached at other locations or on their cellular phones. Therefore, the future use of proactive telephone counseling might use cellular phones to reach teens.

It is also possible that our counseling calls were not maximally effective because they were not associated with greater use of the self-help materials. This occurred despite teens' reports of feeling encouraged by the counselor to use the materials. Therefore, the full potential to motivate use of materials and, in turn, motivate cessation was not fully realized. It is possible that teens viewed the information discussed during counseling as either a substitute for, or duplication of, information included in the booklets. Future counseling could give greater attention to and create linkages to content of self-help guides and could make the role of the counselor and the materials more clear to teens. For example, the counselor's role is to encourage the use of strategies discussed in the guides and to customize the materials to the needs of the smoker. We speculate that differences between intervention arms would have emerged if reach and compliance with counseling was improved and if the self-help materials were used more effectively.

Our findings suggest that our telephone-counseling program was more effective among teens who saw themselves as nonsmokers. Conversely, we found an opposite, albeit not significant, trend among teens who saw themselves as smokers. For these smokers, self-help materials and video tended to be more effective at increasing cessation than telephone counseling, self-help materials, and video. Stage of readiness to quit did not interact with intervention arm, thus it is unlikely that image of self as a smoker or nonsmoker was a proxy for intentions to quit.

Why should self-image influence receptivity to telephone counseling? Teens who desire to view themselves as nonsmokers may make better use of and engage themselves more in discussions with the counselor by asking more questions about their smoking habits and strategies to achieve the goal of quitting than teens with less desire to see themselves as nonsmokers. If the latter is true, then we should find that teens who desire to see themselves as nonsmokers should make greater use of the counselor's suggestions. However, our data do not support this hypothesis.

For teens who do not strongly desire to view themselves as nonsmokers, the topics raised and the person-to-person contact of telephone counseling might be too threatening or too direct. Self-help materials might have the advantage of being indirect and may enable teens who do not have a strong motivation to quit to gain

insights into their smoking habits without feeling threatened or confronted. The advent of computer tailoring enables printed materials to be customized to individual characteristics and may provide some of the advantages of telephone counseling and personal contact approaches among teens who are not ready to quit.

Our cessation rates mirror the typically low cessation rates found in other trials with teen smokers. If we compare the modal cessation rate of 12% found across experimental arms of programs (Sussman, 2002), then our 16% and 21% abstinence rates at the 4- and 8-month follow-ups are promising. Admittedly, the results of the cotinine assays do suggest that these abstinence rates could be anywhere from 45% to 55% lower (see Footnote 3). Nonetheless, our effect sizes should be evaluated within the context of a minimal intensity intervention that is highly disseminable and transportable and can reach teens beyond school and medical settings. Although such a program may not produce long-term high cessation rates, for example, we found sustained abstinence to range between 7% and 9%, the aforementioned benefits of this approach and the broad reach and relatively low cost of these interventions may ultimately be cost-effective. Because of the growing number of state smoking cessation hotlines in use or being planned, the refinement of counseling calls to increase their efficacy is warranted (Zhu et al., 2002).

One weakness of this study was the relatively high attrition rate. Although our intervention did not appear to produce bias in terms of which smokers remained in the program and for whom the results can be generalized, it does raise the issue of whether our minimal intensity approaches are differentially effective based on whether teen smokers are reactively or proactively recruited. Proactive approaches are likely to result in more representative samples, but they may result in lower compliance with intervention components. Reactive approaches, whereby participants seek cessation services, may be less representative but may lead to higher rates of compliance. Thus, tests of the potential bias associated with attrition and our interventions might be usefully explored within the context of reactively and proactively recruited teen smokers.

In sum, this is the first study to test a low-intensity, highly disseminable intervention to increase cessation among a heterogeneous sample of teen smokers proactively recruited primarily from shopping malls. Based on these results, self-help materials hold promise for increasing teen smoking cessation. However, there is a need to better understand under what conditions, for whom, and at what dose telephone counseling is most effective. There is also a need to ascertain how best to maximize the reach of telephone counseling. Due to the increasing number of states that are using and creating telephone hotlines to assist smokers with cessation, the aforementioned issues will become paramount to decrease, in a cost-effective manner, the burden of tobacco use among teen and young adult smokers.

References

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.

Bauer, U. E., Johnson, T. M., Hopkins, R. S., & Brooks, R. G. (2000). Changes in cigarette use and intentions following implementation of a tobacco control program: Findings from the Florida Youth Tobacco Survey, 1998–2000. *Journal of the American Medical Association, 284,* 723–728.

Bloom, P. N., McBride, C. M., Pollak, K. I., Schwartz-Bloom, R. D., & Lipkus, I. M. (2004). *Recruiting teen smokers in shopping malls to a smoking cessation program using the foot-in-the-door technique*. Manuscript submitted for publication.

California Smokers' Helpline. (1998). *Butts out: Issue No. 1.* (Available from Shu-Hong Zhu, University of California, San Diego, 9500 Gilman Drive, La Jolla, CA 92093-0905)

California Smokers' Helpline. (1999). *Butts out: Issue No. 2.* (Available from Shu-Hong Zhu, University of California, San Diego, 9500 Gilman Drive, La Jolla, CA 92093-0905)

Centers for Disease Control and Prevention. (2003, November 14). Tobacco use among middle and high school students—United States, 2002. *Morbidity & Mortality Weekly Report, 52,* 1096–1098.

Colby, S. M., Monti, P. M., Barnett, N. P., Rohsenow, D. J., Weissman, K., Spirito, R. H., et al. (1998). Brief motivational interviewing in hospital setting for adolescent smoking: A preliminary study. *Journal of Consulting and Clinical Psychology, 66,* 574–578.

Curry, S. J., Wagner, E. H., & Grothaus, L. C. (1991). Evaluation of intrinsic and extrinsic motivation interventions with a self-help smoking cessation program. *Journal of Consulting and Clinical Psychology, 59,* 318–324.

Davis, A. L., Faust R., & Ordentlich, M. (1984). Self-help smoking cessation and maintenance programs: A comparative study with 12-month follow-up by the American Lung Association. *American Journal of Public Health, 74,* 1212–1217.

Fiore, M. C. (2000). U. S. Public Health Services clinical practice guideline: Treating tobacco use and dependence. *Respiratory Care, 45,* 1200–1262.

Gibbons, F. X., & Gerrard, M. (1995). Predicting young adults' health risk behavior. *Journal of Personality & Social Psychology, 69,* 505–517.

Killen, J. D., Fortman, S. P., Davis, L., & Varady, A. (1997). Nicotine patch and self-help video for cigarette smoking cessation. *Journal of Consulting and Clinical Psychology, 65,* 663–672.

Lancaster, T., & Stead, L. F. (2002). Self-help interventions for smoking cessation. *Cochrane Database of Systematic Reviews, 1,* 2003.

Lichenstein, E., Hollis, J. F., Severson, H. H., Stevens, V. J., Vogt, T. M., Glasgow, R. E., & Andrews, J. A. (1996). Tobacco cessation interventions in health care settings: Rationale, model, and outcomes. *Addictive Behaviors, 21,* 709–720.

Lipkus, I. M., Green, J. D., Feaganes, J. R., & Sedikides, C. (2001). The relationship between attitudinal ambivalence and desire to quit among college smokers. *Journal of Applied Social Psychology, 31,* 113–133.

McBride, C. M., Curry, S. J., Grothaus, L. C., Rosner D., Louie, D., Wagner, E. H. (1998). Use of self-help materials and smoking cessation among proactively recruited and volunteer intervention participants. *American Journal of Health Promotion, 12,* 321–324.

McBride, C. M., & Rimer, B. K. (1999). Using the telephone to improve health behavior and health service delivery. *Patient Education and Counseling, 37,* 3–18.

McFall, S. L., Michener, A., Rubin, D., Flay, B. R., Mermelstein, R. J., Burton, D., et al. (1993). The effects and use of maintenance newsletters in a smoking cessation intervention. *Addictive Behaviors, 18,* 151–158.

Miller, W. R., & Rollnick, S. (1991). *Motivational interviewing: Preparing people to change addictive behavior*. New York: Guilford Press.

Pallonen, U. E. (1998). Transtheoretical measures for adolescent and adult smokers: Similarities and differences. *Preventive Medicine, 27,* A29–38.

Pirie, P. L., Murray, D. M., & Luepker, R. V. (1988). Smoking prevalence in a cohort of adolescents, including absentees, dropouts and transfers. *American Journal of Public Health, 78,* 176–178.

Prochaska, J. O., & DiClemente, C. (1983). Stages and processes of self-change of smoking: Towards an integrative model of change. *Journal of Consulting and Clinical Psychology, 3,* 309–395.

Prochaska, J. O., DiClemente, C., Velicer, W. F., Ginpil, S., & Norcross, J. C. (1985). Predicting changes in smoking status for self-changers. *Addictive Behaviors, 10,* 395–406.

Prokhorov, A. V., Pallonen, U. E., Fava, J. L., Ding, L., & Niaura, R. (1996). Measuring nicotine dependence among high-risk adolescent smokers. *Addictive Behaviors, 21,* 117–127.

Rayburn, R. (2002, October 3). Basic cell. *Albuquerque Journal*. Retrieved from http://www.abqjournal.com

Resnicow, K., Dilorio, C., Soet, J. E., Borrelli, B., Hecht, J., & Ernst, D. (2002). Motivational interviewing in health promotion: It sounds like something is changing. *Health Psychology, 21,* 444–451.

Resnicow, K., Royce, J., Vaughan, R., Orlandi, M. A., & Smith, M. (1997). Analyses of multicomponent smoking cessation project: What worked and why. *Preventive Medicine, 26,* 373–381.

Shadel, W. G., & Mermelstein, R. (1996). Individual differences in self-concept among smokers attempting to quit: Validation and predictive utility of measures of the smoker self-concept and abstainer self-concept. *Annals of Behavioral Medicine, 18,* 151–156.

Skjoldebrand, J., & Gahnberg, L. (1997). Tobacco preventive measures by dental care staff. An attempt to reduce the use of tobacco among adolescents. *Swedish Dental Journal, 21,* 49–54.

Steiner, B. D., & Gest, K. L. (1996). Do adolescents want to hear preventive counseling messages in outpatient settings? *Journal of Family Practice, 43,* 375–381.

Sussman, S. (2002). Effects of sixty-six adolescent tobacco use cessation trials and seventeen prospective studies of self-initiated quitting. *Tobacco Induced Diseases, 1,* 35–81.

Tedeschi, G. J., Zhu, S.-H., Anderson, C. M., Cummins, S., & Ribner, N. G. (2004). *Putting it on the line: Telephone counseling for adolescent smokers.* Manuscript submitted for publication.

Townsend, J., Wilkes, H., Haines, A., & Jarvis, M. (1991). Adolescent smokers seen in general practice: Health, lifestyle, physical measurements, and response to antismoking advice. *British Medical Journal, 303,* 947–950.

U.S. Department of Health and Human Services. (2002). *Changing adolescent smoking prevalence: Where it is and why*. Atlanta, GA: Public Health Service, National Institutes of Health, National Cancer Institute.

Velicer, W. F., DiClemente, C. C., Prochaska, J. O., & Brandenburg, N. (1985). Decisional balance measure to assessing and predicting smoking status. *Journal of Personality and Social Psychology, 48,* 1279–1289.

Walker, Z., Townsend, J., Oakley, L., Donovan, C., Smith, H., Hurst, Z., et al. (2002). Health promotion for adolescents in primary care: Randomized control trial. *British Medical Journal, 325,* 524–527.

Zhu, S.-H., Anderson, C. M., Tedeschi, G. J., Rosbrook, B., Johnson, C. E., Byrd, M., & Gutierrez-Terrill, E. (2002). Evidence of real-world effectiveness of a telephone quitline for smokers. *New England Journal of Medicine, 347,* 1087–1093.

Zhu, S.-H., Stretch, V., Balabanis, M., Rosbrook, B., Sadler, G., & Pierce, J. P. (1996). Telephone counseling for smoking cessation: Effects of single-session and multiple session interventions. *Journal of Consulting and Clinical Psychology, 64,* 202–211.

Zhu, S.-H., Sun, J., Billing, S. C., Choi, W. S., & Marlacher, A. (1999). Predictors of smoking cessation in U. S. adolescents. *American Journal of Preventive Medicine, 16,* 202–207.

Zhu, S.-H., Tedeschi, G. J., Anderson, C. M., & Pierce, J. P. (1996). Telephone counseling for smoking cessation: What's in a call? *Journal of Counseling and Development, 75,* 93–101.

Zucker, D., Hopkins, R. S., Sly, D. F., Urich, J., Kershaw, J. M., & Solari, S. (2000). Florida's "Truth" campaign: A counter-marketing, antismoking media campaign. *Journal of Public Health Management & Practice, 6,* 1–6.