A COMPARISON OF SELF-HELP APPROACHES TO SMOKING CESSATION

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Abstract — The current study evaluated the effectiveness of widely used self-help materials for quitting smoking. Five hundred and seventy smokers volunteered during a baseline survey to participate in the evaluation. After random assignment, 200 were mailed National Cancer Institute (NCI) "Quit for Good" materials, 200 the Minnesota "Quit and Win" program, and the remaining 170 were assigned to a nonintervention control condition. Results at 7-month follow-up failed to indicate treatment effects either for abstinence or for reported quit attempts. A number of smokers quit prior to the mailing of self-help materials, suggesting that a telephone prompt in itself may have been an important stimulus to cessation. Overall abstinence at follow-up was 10%. Contrary to expectation, successful participants were less likely to use a number of specific preparation strategies for quitting. The results are instructive in providing a large-scale assessment of self-help materials in a population of smokers that was not specifically seeking treatment.

Considerable improvement in treatment outcome for smoking cessation programs has occurred over the past 20 years (USDHHS, 1988). Multicomponent group programs achieve abstinence rates as high as 40 to 50% at one-year follow-up (Glasgow & Lichtenstein, 1987; Schwartz, 1987). However, such group programs are of interest to a small minority of smokers (Gallup, 1974). Group programs are also relatively expensive. Thus there has been a search for more cost-effective methods that can be widely applied to large numbers of smokers (Davis, Faust, & Ordentlich, 1984).

A variety of self-help programs have been developed in recent years (Cummings, Emont, Jaen, & Sciandra, 1988; Davis et al., 1984; Prochaska & DiClemente, 1985; Sallis et al., 1986). Materials are inexpensive and can readily be disseminated. Unlike a group program, self-help materials can be available immediately upon request. Given that the vast majority of exsmokers have quit on their own (USDHHS, 1988), self-help approaches appear to have considerable potential.

To date, most smoking interventions have been directed toward samples of volunteers who have requested assistance. These volunteers may not be representative of the overall population of smokers because they tend to be from relatively advantaged educational and socioeconomic circumstances. The vast majority of smokers do not volunteer for intervention programs (USDHHS, 1988). An important public health issue then involves reaching smokers who do not present themselves for treatment.

The current study assessed the use of self-help materials in a general population of smokers recruited in Mankato, Minnesota. Mankato is one of three intervention communities in the Minnesota Heart Health Program, a 10-year research and demonstration project intended to reduce the prevalence of heart disease. Risk factors intervened upon include cholesterol, hypertension, obesity and eating habits, and smoking (Mittelmark et al., 1986). At the time of the present study, intervention in Mankato had been ongoing for approximately three years. In addition to allowing an assessment of the effectiveness of the intervention, the study provided a large-scale assessment of self-help materials in a general population of smokers.

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of self-help in a representative community population, the current study undertook an evaluation of the widely used Quit for Good program prepared by the National Cancer Institute (NCI) and the Quit and Win materials developed specifically for the Minnesota Heart Health Program (Pechacek, Arkin, & Hall, 1984).

No prediction was made concerning relative outcome for self-help materials. Results for assessments of competing sets of manuals have been mixed, even with motivated volunteers (Cummings et al., 1988; Davis, Faust, & Ordentlich, 1984; Glasgow, Schafer, & O’Neil, 1981). It was expected that the overall level of commitment of the current study population would be less than would be true for volunteer samples. On the other hand, these self-help materials were distributed in the context of ongoing intervention in Mankato (e.g., widely publicized Quit and Win contests which drew hundreds of participants). This ongoing intervention could potentially enhance the effectiveness of self-help approaches. Smokers might be reached through several intervention channels, thereby increasing the impact of the smoking cessation message.

Although the Quit and Win materials appear more attractive than Quit for Good, their greater length and detail could be a problem especially in a less motivated subject pool. It was hypothesized, however, that the more structured Quit and Win materials (which included very concrete preparation strategies) would lead to a greater incidence of quit attempts than would the less structured NCI materials or the control condition. It was also hypothesized that a greater proportion of those receiving the Quit and Win materials would report using specific recommended smoking cessation strategies. The SMOG grading formula indicated that the Quit and Win materials were at the eighth grade reading level (McLaughlin, 1969).

**METHODS**

**Subjects**

Individuals participating in this study were those identified during 1981-83 as smokers when they participated in a community wide cardiovascular risk factor screening, the Mankato Heart Health Education Center (Murray et al., 1986). The entire adult population of Mankato, a community of approximately 38,000 residents, had been invited to participate in this screening and 60% did so. The proportion at this screening who identified themselves as smokers, however, was less than 28%, as compared to a community-wide smoking rate of just over 31% at that time. Thus, it is estimated that somewhat less than 54% of the adult smokers in the population took part in the screening.

Individuals identified by the Mankato Heart Health Education Center as smokers were invited by telephone beginning in October, 1985, to take part in an evaluation of the effectiveness of self-help materials for quitting smoking. Of the 1198 smokers so identified, 271 had moved and 6 were ineligible for the study due to problems such as language or hearing difficulties which prevented participation in a telephone survey. Of the 921 remaining, telephone surveys were conducted with 889 (response rate 96.5%); 695 of these admitted being current smokers, and 570 (82%) agreed to take part in the study.

These 570 individuals were randomly assigned to three groups. Beginning in late January, 1986, 200 respondents were mailed the Quit and Win materials, 200 were mailed the NCI Quit for Good materials, and the remaining 170 were assigned to the wait-list control group.

Subjects who participated in the study were evenly divided between males and females. Mean age was 42 years. Average number of cigarettes smoked per day was 20. Subjects reported an average of 41 min prior to their first cigarette in the morning. They tended to enjoy smoking, assigning a rating of 7.3 on a 10-point scale to enjoyment. Fifty-three
percent of married subjects (76% of the sample was married) had a smoking spouse; an additional 24% were married to an exsmoker. Fifty-two percent of the subjects indicated that half or more of their acquaintances were smokers. Only 3.3% of the subjects indicated use of forms of tobacco other than cigarettes.

A substantial percentage of subjects (39.7%) had no more than a high school education. An equal proportion (39.6%) reported some college or vocational training, with the remainder (20.7%) having completed college or attained graduate level education. Occupations were as follows: 16% professional, 39% clerical, 30% blue collar, and 15% not working for pay. Two-thirds of the subjects had children living at home.

**Self-help materials**

*Quit for good.* The Quit for Good materials (NCI, 1985) are divided into two parts: "Quit It" and "For Good." The preparation program includes such recommended strategies as listing the reasons for quitting, setting a quit date, and switching brands. Alternatives to smoking are suggested, together with suggestions for minimizing weight gain. This first booklet is 12 pages (3" x 6") and includes other sources of information on quitting (e.g., the American Cancer Society, the American Lung Association, the Office of Cancer Communications).

The "For Good" booklet is a bit longer, 20 pages. This booklet emphasizes common triggers for smoking and appropriate coping strategies. Recent exsmokers are advised to reward themselves for not smoking, to use positive thoughts and relaxation techniques, and to maximize social support. Examples are given of potentially difficult situations (frustration, stress, anxiety) encountered by hypothetical individuals. Coping skills are described for each of these circumstances. The NCI booklets are presented in a rather stark black and white format with numerous half page illustrations.

*Quit and win.* The Quit and Win materials (Pechacek et al., 1984) are considerably more extensive than the NCI booklets. Quit and Win is divided into an upper and lower half ("Quit" and "Win," respectively). In addition, there is a section in the back of the booklet containing advice for supportive others and an additional section listing tar, nicotine, and carbon monoxide ratings of various brands for individuals who choose a nicotine fading strategy.

Topics in the "Quit" section include reasons for quitting, the "Why" test (Ikard, Green, & Horn, 1969) and suggestions for coping based upon the results of this test (e.g., scores for stimulation, handling, pleasure, craving), anticipated problems (physical dependence, weight gain, stress, alcohol), cold turkey vs. gradual reduction strategies, tips for quit day, and suggestions for the first few days and weeks after cessation. The "Win" book is divided into problems and answers for the following issues: urges and temptations, tension and restlessness, withdrawal problems, weight gain, and relapse. Physical activity is recommended as a major alternative to smoking. Although the Quit and Win materials are also essentially black and white, green is used for section covers and to highlight each page. A combination of photographs and drawings appears to provide somewhat greater visual appeal for the Quit and Win materials than for the NCI Quit for Good booklets.

Both self-help approaches give tips and suggestions for quitting. Quit and Win is somewhat more structured than the Quit for Good program. The greater length of the Quit and Win materials permits more detailed discussion of specific coping strategies. Strategies are tied more closely to anticipated problem situations, especially as derived from a "Problems Test" developed for these materials.
Follow-up interview

Follow-up surveys were attempted with all subjects beginning in May, 1986. All telephone interviewing was conducted by trained, supervised interviewers from a central facility at the University of Minnesota. All data reported are from the telephone survey and are based upon self-report.

The follow-up survey included items about subjects’ current smoking status and attempts to quit smoking. Subjects were asked if they had received self-help materials and if they could recall the title of these materials. They were also asked how much of the materials they had read. They were then asked to rate the informativeness of the self-help materials. An additional six items focused upon recall of specific advice (dealing with urges, anxiety or pressure, being around other smokers, boredom or depression, concern about weight gain, surviving the first few days of abstinence). A number of additional questions focused upon methods of coping with urges and preparing for quitting.

RESULTS

Volunteers vs. nonvolunteers

A few differences were observed between individuals who volunteered for the study and nonvolunteers (N = 125). Volunteers were significantly more likely to report a "gnawing hunger" for cigarettes when deprived (t = 3.54, df = 162, p < .001) and were also more likely to view themselves as habitual smokers (t = 2.72, df = 693, p < .01). As might be expected, volunteers rated themselves as both more likely to quit within the next 6 months (t = 6.36, df = 166, p < .001) and as more concerned about the effects of smoking on their health (t = 8.08, df = 165, p < .001). However, nonvolunteers expressed greater confidence that they could quit either for one week (t = -2.80, df = 147, p = .006) or permanently (t = -2.80, df = 135, p < .01). There was no difference between volunteers and nonvolunteers in their rated ability to quit for 24 h.

The overall pattern of differences suggests that volunteers were more addicted to cigarettes. Volunteers appeared more motivated to quit, but were less confident in their ability to do so.

Experimental vs. control subjects

Despite random assignment to condition, a few differences were found between experimental (Quit and Win, Quit for Good) and control subjects. Experimental subjects were more likely to be male (54% vs. 42%, $\chi^2 = 5.53, df = 1, p < .02$), and to have attained a higher level of education ($\chi^2 = 11.5, df = 5, p = .04$). Approximately 37% of experimental subjects reported no more than a high school education as opposed to 45% of control subjects.

The only difference between the experimental and control groups in their smoking habits was that the control group was more likely to use other forms of tobacco (5.1% reported other tobacco use) than was the group assigned Quit for Good (only 1.0% of these subjects indicated any use of other tobacco products), $p < .05$. Subjects assigned Quit and Win reported a 4.2% incidence of consumption of other tobacco products.

Control subjects were significantly more confident that they could quit for 24 h ($t = -2.83, df = 341, p = .005$) and for 1 week than were subjects assigned the self-help materials. The groups did not differ in their confidence that they could quit permanently. Weight change from pretreatment to follow-up surveys did not differ across the three conditions.

Abstinence

Follow-up surveys were completed with 95.5% (191 of 200) of those receiving Quit and Win materials, 98.5% (197 of 200) of those receiving Quit for Good materials, and
92.4% (157 of 170) of control subjects. Three subjects died, 15 had either moved or had no current telephone number, and 7 refused the interview.

Subjects were asked if they currently smoked cigarettes. Those who answered negatively were counted as abstinent. The groups did not differ in the proportion of subjects who were abstinent at the 7-month follow-up. Abstinence levels for Quit and Win, Quit for Good, and controls were 8.9% (17 of 191 respondents), 10.2% (20 of 197 respondents), and 10.8% (17 of 157 respondents), respectively. If refusers and those with no current telephone numbers are counted as smokers, the respective abstinence figures would be 8.5%, 10.0%, and 10.0%. Although control subjects reported more confidence that they could quit, adjusting outcomes by baseline confidence levels failed to reveal even marginally significant effects as a function of treatment condition ($\chi^2$, $df = 2$, $p < 1$).

These overall abstinence figures are misleading, however. Self-help booklets were mailed at the end of January. Inspection of reported quit dates indicates that 24 of 53 abstinent subjects in fact quit before the mailing of the self-help materials. Fourteen subjects quit in January, with seven stopping on New Year's Day. If quit rates are examined only for subjects who quit after they received self-help materials, abstinence figures for Quit and Win, Quit for Good, and controls are reduced to 6.0% (11 of 184 respondents), 5.3% (10 of 189 respondents), and 5.4% (8 of 148 respondents), respectively. Follow-up occurred only 3-4 months rather than seven months after the mailing of materials. The higher than expected quitting between the initial telephone contact and the mailing of materials might have been partially a function of the telephone call itself serving as a prompt and the anticipation of self-help assistance.

It should again be noted that abstinence figures are based upon unconfirmed self-reports. These self-reported abstinence data are likely to represent somewhat of an overestimate of actual abstinence levels. It is unlikely, however, that inclusion of biochemical validation measures would have significantly altered the major findings of the current study. No differences in outcome were found between any of the treatment conditions. Other work conducted as part of the Minnesota Heart Health Program revealed no differences in false reporting rates between intervention and nonintervention control conditions.

Although the lack of difference between control subjects and those assigned the self-help materials is disappointing, the overall abstinence rates attained in the current study are comparable to those in many previous self-help interventions (Cummings et al., 1988; Davis et al., 1984; Prochaska & DiClemente, 1985). Again, however, almost half of the smokers who quit did so prior to the mailing of the self-help materials.

All subjects expressed interest in quitting, and virtually all subjects were exposed to other interventions including the extensively promoted community quit contests (cf. Glasgow, Klesges, Mizes, & Pechacek, 1985). The grand prize was a trip to Disney World for a family of four. Approximately 15% of subjects in each of the conditions had enrolled in Quit and Win contests held during the previous three years. Control subjects were more likely to report hearing of the contest (94% awareness) than were subjects who received self-help materials (87% awareness; $\chi^2 = 4.29$, $df = 1$, $p = .04$).

Contrary to hypothesis, there was no significant difference in the proportion of subjects who attempted to quit in the three conditions. Thirty percent of unsuccessful Quit and Win subjects attempted to quit as compared to 31% of unsuccessful Quit for Good subjects and 25% of controls.

**Ratings of materials**

Subjects assigned to Quit and Win and to Quit for Good differed little in their use and ratings of the self-help materials, memory for content, preparation for quitting, and strate-
Table 1. Strategies used to resist smoking**

<table>
<thead>
<tr>
<th>Strategies</th>
<th>Q&amp;W</th>
<th>QFG</th>
<th>Suc.</th>
<th>Unsuc.</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relax</td>
<td>2.6</td>
<td>2.6</td>
<td>2.7</td>
<td>2.6</td>
<td>2.5</td>
<td>2.7</td>
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<td></td>
<td>(1.1)</td>
<td>(1.1)</td>
<td>(1.1)</td>
<td>(1.1)</td>
<td>(1.1)</td>
<td>(1.0)</td>
</tr>
<tr>
<td>Exercise</td>
<td>2.6</td>
<td>2.8</td>
<td>3.0</td>
<td>2.6</td>
<td>2.5</td>
<td>2.6</td>
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<td>(1.2)</td>
<td>(1.2)</td>
<td>(1.0)</td>
<td>(1.2)</td>
<td>(1.1)</td>
<td>(1.2)</td>
</tr>
<tr>
<td>Eat or drink</td>
<td>2.6</td>
<td>2.8</td>
<td>3.0</td>
<td>2.6</td>
<td>2.5</td>
<td>2.9</td>
</tr>
<tr>
<td></td>
<td>(1.1)</td>
<td>(1.2)</td>
<td>(1.1)</td>
<td>(1.2)</td>
<td>(1.2)</td>
<td>(1.1)</td>
</tr>
<tr>
<td>Smoking paraphernalia out of sight</td>
<td>2.2</td>
<td>2.2</td>
<td>2.2</td>
<td>2.2</td>
<td>1.9*</td>
<td>2.6</td>
</tr>
<tr>
<td></td>
<td>(1.3)</td>
<td>(1.3)</td>
<td>(1.5)</td>
<td>(1.3)</td>
<td>(1.1)</td>
<td>(1.4)</td>
</tr>
<tr>
<td>Stay away from other smokers</td>
<td>1.8</td>
<td>1.6</td>
<td>1.7</td>
<td>1.7</td>
<td>1.6</td>
<td>1.8</td>
</tr>
<tr>
<td></td>
<td>(1.1)</td>
<td>(1.0)</td>
<td>(1.0)</td>
<td>(1.0)</td>
<td>(1.0)</td>
<td>(1.0)</td>
</tr>
<tr>
<td>Think about negative effects of smoking</td>
<td>3.4</td>
<td>3.1</td>
<td>2.9*</td>
<td>3.4</td>
<td>3.2</td>
<td>3.3</td>
</tr>
<tr>
<td></td>
<td>(1.0)</td>
<td>(1.1)</td>
<td>(1.2)</td>
<td>(1.0)</td>
<td>(1.0)</td>
<td>(1.0)</td>
</tr>
<tr>
<td>Think about smell, etc.</td>
<td>3.2</td>
<td>2.8*</td>
<td>2.7</td>
<td>3.0</td>
<td>2.8</td>
<td>3.2</td>
</tr>
<tr>
<td></td>
<td>(1.1)</td>
<td>(1.2)</td>
<td>(1.1)</td>
<td>(1.1)</td>
<td>(1.2)</td>
<td>(1.1)</td>
</tr>
<tr>
<td>Think about others’ reactions to smoking</td>
<td>3.1</td>
<td>3.0</td>
<td>2.7*</td>
<td>3.1</td>
<td>3.1</td>
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<tr>
<td></td>
<td>(1.0)</td>
<td>(1.1)</td>
<td>(1.3)</td>
<td>(1.0)</td>
<td>(1.0)</td>
<td>(1.1)</td>
</tr>
<tr>
<td>Think about benefits</td>
<td>3.7</td>
<td>3.5</td>
<td>3.7</td>
<td>3.6</td>
<td>3.6</td>
<td>3.6</td>
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<tr>
<td></td>
<td>(0.6)</td>
<td>(0.8)</td>
<td>(0.6)</td>
<td>(0.8)</td>
<td>(0.7)</td>
<td>(0.8)</td>
</tr>
</tbody>
</table>

Note. Mean of 4 = frequently, 3 = sometimes, 2 = seldom, 1 = never. Standard deviations are in parentheses. *Significantly greater than comparison group at p < .05 **Includes only the respondents in the experimental groups who attempted to quit.

Strategies used to resist temptations to smoke. The failure to obtain differences in use of specific preparation strategies was contrary to hypothesis. In general, subjects’ ratings of self-help materials tended to be quite favorable. Interestingly, although not significantly different, 43% of Quit and Win participants surveyed reported reading all of the material, as compared to 33% of Quit for Good participants. This is perhaps somewhat surprising given the considerably greater length and detail of the Quit and Win materials. Only 7% of Quit and Win participants reported not reading the materials at all, as opposed to 14% of Quit for Good subjects. Again, however, this difference is not significant.

Subjects reported a number of preparation strategies for quitting. Most subjects (78%) reduced their number of cigarettes prior to quitting and practiced going without cigarettes (75%). The vast majority of subjects indicated that they thought of reasons to quit (91%). A majority of subjects relied upon supportive others (64%), bought cigarettes by the pack rather than by the carton (69%), switched to low-tar brands (62%), and set a target date for quitting (55%). A substantial proportion of subjects switched brands (46%) and made cigarettes less accessible (49%).

Table 1 indicates the frequency of experimental subjects’ reported use of various coping strategies. As indicated in the table, subjects were especially likely to think about the benefits of quitting. Thinking about the negative effects of smoking was reported almost as frequently. Most strategies appeared to receive moderate use. Interestingly, subjects were least likely to report staying away from other smokers. Quit and Win subjects were more likely than Quit for Good subjects to think about the smell of cigarettes, dirty ashtrays, or cigarette burns ($t = 1.94, df = 126, p = .05$). Although the overall trend was generally for Quit and Win subjects to use coping strategies more frequently, as was hypothesized, this was the only significant difference between the two conditions. Because many subjects quit prior to mailing of self-help materials, differences in coping strategies...
between conditions might not be expected. On the other hand, even early quitters reported referring to the self-help booklets.

Control subjects who quit smoking were asked to report methods they had used in doing so. Of 17 control smokers who were abstinent at follow-up, 4 used self-help materials, 2 enrolled in a formal quit smoking program, and 1 used stress management or hypnosis. None of these individuals quit as the result of advice from a health professional.

**BASELINE DIFFERENCES BETWEEN SUCCESSFUL AND UNSUCCESSFUL PARTICIPANTS**

Considering all subjects, there were no significant demographic differences between successful and unsuccessful participants. A few differences were found on the baseline measures. To reduce Type I error rate, a multivariate procedure was employed. First, baseline bivariate predictors of success were identified. The resulting set of seven variables was then subjected to a multivariate logistic regression which indicated that successful participants were more likely to be trying to lose weight ($\chi^2 = 6.16, df = 1, p = .013$), and were less likely to identify themselves as habitual smokers ($\chi^2 = 5.10, df = 1, p = .024$).

**DIFFERENCES BETWEEN SUCCESSFUL AND UNSUCCESSFUL QUIT ATTEMPTORS**

The following analyses considered only those subjects in the two self-help materials conditions who reported quit attempts following the mailing of the materials. There were no differences in use or ratings of the self-help materials, nor in memory for the advice contained therein. There were, however, a number of differences between successful and unsuccessful participants in the methods that they used to prepare for quitting. Differences were in fact obtained for 6 of 12 preparation strategies listed.

Surprisingly, for 5 of these 6 strategies, use was associated with unsuccessful rather than successful outcome. Specifically, reducing the number of cigarettes, switching to low-tar cigarettes, switching brands more generally, buying by the pack rather than the carton, and practicing going without cigarettes were all associated with unsuccessful outcome (see Table 2).

These differences may indicate that successful participants were more likely to stop completely rather than to prepare for quitting by using gradual reduction strategies. Use of supportive others was the only preparation resource that was associated with quitting. The only difference in methods subjects used to resist temptation after quitting was that successful quitters were less likely to think of the negative effects of smoking (see Table 1).

**Differences between males and females**

There were many baseline differences in smoking habits. Males started smoking at an earlier age, smoked more cigarettes per day, smoked sooner and more in the morning, were more likely to think of themselves as habitual smokers, to smoke when ill, and to have more health problems associated with smoking. Thus, males in this sample may have been more addicted to cigarettes than the females. Other baseline measures indicated that females were more concerned about their weight, more likely to be trying to lose weight, less likely to exercise, and less likely to drink alcohol regularly. There was no difference in weight change between the sexes over time.
Table 2. Preparations for quitting** (percent yes)

<table>
<thead>
<tr>
<th>Strategies</th>
<th>N</th>
<th>Q&amp;W</th>
<th>QFG</th>
<th>Suc.</th>
<th>Unsuc.</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keep a record</td>
<td>63</td>
<td>19</td>
<td>11</td>
<td>14</td>
<td>15</td>
<td>12</td>
<td>19</td>
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<tr>
<td>Reduce number</td>
<td>75</td>
<td>75</td>
<td>80</td>
<td>52</td>
<td>82*</td>
<td>71</td>
<td>85</td>
</tr>
<tr>
<td>Switch to low tar</td>
<td>65</td>
<td>65</td>
<td>58</td>
<td>31</td>
<td>67*</td>
<td>59</td>
<td>66</td>
</tr>
<tr>
<td>Switch brands</td>
<td>48</td>
<td>48</td>
<td>45</td>
<td>24</td>
<td>50*</td>
<td>48</td>
<td>44</td>
</tr>
<tr>
<td>Buy by the pack</td>
<td>68</td>
<td>68</td>
<td>71</td>
<td>47</td>
<td>74*</td>
<td>66</td>
<td>73</td>
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<tr>
<td>Make cigarettes difficult to get</td>
<td>54</td>
<td>54</td>
<td>45</td>
<td>38</td>
<td>51</td>
<td>41</td>
<td>60*</td>
</tr>
<tr>
<td>Practice going without cigarettes</td>
<td>69</td>
<td>69</td>
<td>80</td>
<td>48</td>
<td>80*</td>
<td>71</td>
<td>79</td>
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<tr>
<td>Think of reasons to quit</td>
<td>90</td>
<td>90</td>
<td>91</td>
<td>86</td>
<td>92</td>
<td>83</td>
<td>100*</td>
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<td>Set target date</td>
<td>51</td>
<td>51</td>
<td>58</td>
<td>43</td>
<td>57</td>
<td>51</td>
<td>59</td>
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<tr>
<td>Get others involved</td>
<td>52</td>
<td>52</td>
<td>41</td>
<td>38</td>
<td>49</td>
<td>41</td>
<td>54</td>
</tr>
<tr>
<td>Develop plan for first day</td>
<td>30</td>
<td>30</td>
<td>38</td>
<td>29</td>
<td>36</td>
<td>33</td>
<td>36</td>
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<tr>
<td>Supportive others</td>
<td>69</td>
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<td>60</td>
<td>86*</td>
<td>60</td>
<td>64</td>
<td>64</td>
</tr>
</tbody>
</table>

*Significantly greater than comparison group at p < .05.
**Includes only the respondents in the experimental groups who attempted to quit.

Males were more likely to report prior quit attempts ($\chi^2 = 4.3$, df = 1, $p = .04$). Differences were also evident in predictions about the future. As with the successful participants, males predicted that they would be more likely to quit in the next six months ($t = 2.37$, df = 681, $p = .02$), and were more confident that they could quit for 24 h ($t = 3.9$, df = 678, $p = .001$) or for a week ($t = 2.12$, df = 65, $p = .04$). However, there were no differences between males and females either in the percentage who quit smoking or in the percentage who attempted to quit.

There were no differences between the sexes in use or ratings of the self-help booklets. In general, the sexes did not differ in their memory of content. However, a marginal effect was obtained for advice about weight gain, with females more likely to remember reading about this topic ($\chi^2 = 3.6$, df = 1, $p = .06$). Females were also more likely to think of reasons to quit ($\chi^2 = 11.32$, df = 1, $p<.001$), to make cigarettes more difficult to get ($\chi^2 = 4.47$, $p = .03$), and to put smoking paraphernalia out of sight ($t = 3.16$, df = 126, $p = .002$).

**DISCUSSION**

Results failed to indicate any difference in effectiveness between the Quit and Win and Quit for Good self-help materials. Contrary to expectations, neither set of self-help materials led to higher abstinence rates than were achieved by control subjects who did not receive materials. This failure to obtain superior outcomes to the control condition is disappointing. Also contrary to expectation was the failure to achieve significant superiority for Quit and Win over the other conditions in either reported quit attempts or in use of preparation and coping strategies. The lack of differences between conditions cannot be attributed to a lack of power to detect treatment effects.

It may be extremely important, however, that subjects had been recruited for participation in a study. They were not motivated smokers who were seeking assistance in quitting. A majority of smokers (approximately 54%) attended community-wide cardiovascular risk factor screening and were thereby eligible to be contacted for participation in the present study. Of those contacted and self-identified as continuing to smoke, 78% agreed to participate. Thus, the present study population represented a substantial fraction of all smokers in Mankato. In contrast, studies that have relied upon self-referrals to treatmen have reached very small percentages of the total community smoking population.
In some other studies, the success rate among nonmotivated volunteers has been strikingly low (British Thoracic Society, 1983). In light of this fact, the overall 10% quit rate at 7-month follow-up could be considered encouraging. This level of success among nonmotivated volunteers substantially exceeds normative population trends. Smoking prevalence among adults in the United States is currently declining at a rate of 0.50 percentage points per year (thus, slightly fewer than 2% of adult smokers are quitting each year; USDHHS, 1989). Furthermore, longer-term follow-up conceivably could have revealed higher prevalences of abstinence (Davis et al., 1984, obtained better abstinence outcomes for the American Lung Association self-help program at 12-month than at 6-month follow-up). However, in the absence of superior abstinence levels for self-help as opposed to control subjects, it is difficult to attribute outcome to self-help materials per se.

The impact of the self-help materials is called into further question by the fact that almost half of the smokers who quit did so prior to the mailing of these materials. This unexpectedly high premailing quit rate (almost 5% over approximately a 3-month period) suggests that the telephone prompt itself may have been an important stimulus to quitting. Other studies (Lando et al., 1989; Orleans et al., 1988) indicate that brief telephone intervention can contribute significantly to abstinence outcome. Future work might more systematically combine mailing of self-help materials and telephone prompting or support.

It should be recognized that in contrast to other assessments of self-help materials (e.g., Davis et al., 1984), the current study occurred in the context of intensive community intervention. Thus, smokers in the present sample may have been subjected to an unusually high level of social support and/or pressure to change. Blackburn and Pechacek (1983) noted that community quit contests have as a side effect brought about higher rates of quitting in the community more generally, including among individuals who had not signed up for the contests. Awareness of intervention activities was very high, with 89% of subjects indicating that they had heard of the community quit contest. Perhaps the incremental impact of self-help materials under these circumstances might be expected to be less.

The context of intensive community intervention also may help to explain the unexpected 10.8% quit rate at follow-up among control subjects. This quit rate clearly exceeds the level of success typically achieved by wait list controls in other studies (Sallis et al., 1986). Of some importance perhaps is the fact that subjects assigned to the control condition originally reported more confidence in their ability to quit for one day than did subjects assigned to receive self-help materials. Overall, confidence in ability to quit was a predictor of successful outcome. Yet even when outcome is adjusted on the basis of initial confidence, treatment effects fail to approach significance.

Evaluations of self-help materials in both conditions tended to be quite favorable, perhaps reflecting a positive rater bias. Reported use of materials was encouraging, especially for the more extensive Quit and Win program. Forty-three percent of Quit and Win participants indicated that they had read the entire set of materials. The present results are instructive in terms of preparation and coping strategies reported by subjects. Somewhat surprising is the extent to which subjects practiced various reduction strategies prior to quitting (reducing number of cigarettes, switching to low-tar brands, buying cigarettes by the pack rather than by the carton, making cigarettes less accessible).

Some interesting differences were found between successful and unsuccessful participants. The most unexpected finding was that use of a number of preparation strategies was associated with unsuccessful outcome. However, these strategies tended to involve some type of reduced smoking exposure (e.g., reduction in number of cigarettes, switching to low-tar brands). Perhaps subjects who simply quit abruptly fared better. Overall, individuals who identified specific preparation strategies were significantly less likely to
quit than were individuals who did not report use of such strategies. The only exception was for use of supportive others. Successful abstainers were more likely to call upon the assistance of supportive others in their environment. Reported strategies used to resist smoking following quitting in the present study generally did not differentiate successful and unsuccessful subjects. However, and again perhaps surprisingly, successful quitters were less likely to think of the negative consequences of smoking.

No sex differences were found in either success in quitting or in the proportion of subjects who attempted to quit. Although males expressed greater confidence in their ability to abstain, this confidence did not translate into better outcome. Differences on a number of indices suggested that males in the current sample were significantly more addicted to cigarettes than were the female subjects.

This study represents a rare systematic evaluation of the effectiveness of self-help in a population of smokers that was not specifically seeking assistance in quitting. Active personalized solicitation among general populations of smokers either by letter or by telephone may prove extremely fruitful. Surveys have indicated that substantial majorities of smokers would like to quit (USDHHS, 1987). Personalized recruiting may yield not only increased enrollment in interventions (including use of self-help materials), but also increased self-directed quit attempts. Innovative recruitment strategies may be especially important in reaching subgroups of smokers that currently tend not to enroll in treatment programs.

The current study also provides one of the few comparative evaluations of widely used self-help materials. The Quit for Good self-help program is broadly disseminated by the National Cancer Institute and remains in common use. The Quit and Win program is not only used extensively in Minnesota, but has been adopted by investigators and by providers of cessation services in a number of locales. Differences between volunteers and non-volunteers and between successful and unsuccessful participants deserve further study.

If a 10% quit rate with self-help materials (especially in a general population sample) is taken at face value, the current program is relatively cost-effective (Altman, Flora, Fortmann, & Farquhar, 1987). However, the meaningfulness of this effect is again called into question both by the comparable results for nonintervention controls and by the rate of quitting prior to the mailing of these materials.

In addition to contests and telephone prompting, other inexpensive intervention channels might be considered, including personalized advice through written correspondence materials (Jeffery, Hellerstedt, & Schmid, in press). The search for effective interventions that are both cost-effective and appealing to large percentages of smokers is an important one and represents an area that deserves more research attention. Further research is also needed to determine effective change methods for the majority of smokers who do not present themselves for treatment.

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