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The Effect of Adding Telephone Contact to Self-Instructional Smoking-Cessation Materials

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Self-instructional materials are widely used to help smokers develop cognitive-behavioural techniques which may assist them to stop smoking. The effectiveness of these materials may be augmented by a minimal therapist support component to encourage and supervise their use. Forty-five smokers were recruited to a smoking-cessation program at a community health centre, and were randomly assigned to either a self-instructional manual plus regular telephone contact condition, or to a manual-only condition. A higher proportion of participants in the telephone contact condition reported being abstinent at 3- and 6-month follow-ups, but not at a 12-month follow-up. There were no differences between the two conditions for the smoking rates of the remaining smokers at each of the follow-ups. Levels of adherence to the techniques presented in the manual were generally low, with a preference for the more-simple behavioural techniques, and those which were related to initial behaviour change rather than to maintenance. There was no relationship between levels of reported adherence to the techniques and smoking status at follow up. There is the need for further research on the cost-effective use of social support strategies to augment the impact of self-instructional behaviour-change materials.

Cigarette smoking is the major preventable cause of ill health and premature death in Australia (Australian Bureau of Statistics, 1985). Smoking is a major cause of lung and most respirator tract cancers, vascular problems, and emphysema. Smokers also suffer from a range of minor, although chronic, symptoms including reduced aerobic fitness, smokers' cough, and a reduced immunity to infectious disease. Despite these widely known health consequences, the prevalence of smoking in Australia is 30.2% of adult men and 27% of adult women (Hill, White, & Gray, 1991).

Mass-reach smoking-cessation campaigns are designed to stimulate and assist self-directed cessation attempts (Ryder, 1988) and, therefore, contribute to reducing overall community smoking prevalence. They include mass-media interventions (Flay, 1987), worksite interventions (Hallett, 1986), and interventions administered by general practitioners (Richmond & Heather, 1990). Controlled studies suggest that such procedures are generally successful in stimulating cessation attempts by large numbers of people (Schofield, Redman, & Sanson-Fisher, 1991).

Glynn, Boyd, and Gruman (1990) recommend that such campaigns be supplemented with interventions specifically aimed at prompting behaviour change as well as changes in knowledge and attitudes. There is an extensive literature concerned with the modification of smoking behaviour based upon teaching behavioural skills and techniques (Lichtenstein & Mermelstein, 1984). However, the minimal-con-

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tact nature of mass-reach interventions often militates against the transfer of specific cognitive-behavioural skills and strategies to smokers making self-directed cessation attempts.

Printed self-instructional materials may offer a method of teaching behaviour-change techniques within a mass-reach context. The use of these materials may promote intrinsic motivation, self-reliance, and self-attribution for behaviour change — important preconditions for long-term maintenance (Colletti & Kopel, 1979; Harackiewitz, Sansone, Blair, Epstein, & Manderlink, 1987). Controlled studies suggest that the use of such materials promotes abstinence rates of between 10% and 20%, which usually are greater than those achieved by the use of non-intervention conditions or by the used of simple cessation pamphlets (Pederson, Baldwin, & Lefcoe, 1981; Davis, Faust & Ordentlich, 1984; Harackiewitz et al., 1987).

It is not clear whether the effectiveness of these materials is due to participants making use of their specific behavioural content, or due to other, less specific, factors. Cummings, Ermont, Jaen, and Sciandra (1988) compared well-packaged and presented behavioural smoking-cessation programs with equally well-packaged materials containing information on the adverse health consequences of smoking, but containing no specific cessation techniques. They found that the manuals incorporating the specific behavioural techniques were no more effective than those which contained only information on the health consequences of smoking. Furthermore, post hoc reports from participants revealed that, although participants read their manuals, relatively few of the behavioural techniques were actually used.

It may be the case that the effectiveness of self-instructional smoking-cessation manuals can be augmented by maximising the use of their behavioural content. Glasgow, Schafer, and O'Neill (1981) augmented cessation rates by including a therapist-contact component. They offered group therapy, in which a therapist explained techniques to a group which met only as a discussion group. The self-instructional manual plus therapy group achieved a greater cessation rate than the discussion group. The authors were able to attribute this to the specific aspects of the therapy, rather than to extraneous factors such as social support or other placebo effects.

Regular telephone contact with smokers using self-instructional materials may serve to influence cessation rates. Ossip-Klein et al. (1991) provided a telephone "hotline" where smokers were able to call either a prerecorded motivational message or a counsellor. They found that the addition of this service to the use of the manual served to increase the cessation rate achieved by smokers using the manual only. Furthermore, this increase was more apparent among smokers who had actually used the service than those who had not. Orleans et al. (1991) also found that telephone contact augmented the effects of a self-instructional smoking-cessation manual.

We provided regular telephone contact to smokers who received a cessation manual, to encourage the use of specific smoking-cessation techniques and also to provide assistance in the implementation of the techniques. It was predicted that greater cessation rates would be achieved in the manual plus telephone contact condition than with the self-instructional manual alone. The telephone calls were also used to monitor the techniques that participants used to stop smoking. During the calls we asked them if they had implemented the techniques and strategies presented in the manual. Low reported rates of usage would support the suggestion of Cummings et al. (1988) that the success of self-instructional interventions owes more to placebo effects than to participants' use of the materials' specific content.

METHOD

Procedure

The study was conducted at a community health centre in the outer north-eastern suburbs of Adelaide. Participants were recruited in two phases; one in August 1988, the other in February 1989. The service was advertised in the health centre's regular column in a local newspaper, 2 weeks in advance of the course, with a follow-up article a week later in a community news column. The course was also advertised at a community information booth located in the major local shopping centre, and at the local public hospital. All advertisements requested that persons interested in smoking-cessation contact the health centre and reserve places at an information evening. The information evenings provided information relevant to

the health consequences of smoking and offered the opportunity to use the cessation manual. The manual was described as a tool for learning specific cessation techniques and was recommended that time and effort be put into learning and practising these techniques. People who joined the course paid a $3 cover charge for the manual. Two participants received manuals but did not consent to follow up, so their data were excluded from the formal evaluation. Each participant was then randomly assigned to one of two conditions: one being the use of a manual and regular telephone contact, the other condition being the use of a manual only. To test the adequacy of the randomisation procedure, a stepwise discriminant function analysis was used to identify differences between the conditions on the baseline variables. There were none identified (eigenvalue = 0.07, canonical correlation = 0.25, *NS*).

After 3 and 6 months, all participants were telephoned to ascertain whether they had stopped smoking, how many times they had attempted to stop smoking, how many cigarettes they smoked, and if they were contemplating making further cessation attempts. Participants were considered to be smokers if they had smoked more than one cigarette in the last 7 days. During the course of the follow-ups, 5 participants were unable to be contacted (2 in the manual plus telephone contact condition, and 3 in the manual-only condition). For the purposes of data analysis, they were considered to be smokers. After 12 months all participants were again telephoned. Those participants claiming abstinence were asked if they would provide a saliva sample for the purpose of biochemical validation.

Participants

There were 45 participants in the study (28 females and 17 males). Their mean age was 40 years (*SD* = 12.5 years), they were smoking an average of 22.7 cigarettes a day (*SD* = 7.0), and had been smoking for an average period of 22.9 years (*SD* = 11.6). Only 20% of participants reported having previously been able to stop smoking for a period of greater than 1 month.

The Manual

The manual we employed had been used in two previous studies (Owen, Ewins, & Lee, 1989; Lee, 1991) and had been found to produce a 10% to 20% long-term abstinence rate. It was designed to be implemented in three stages: preparing to quit, quitting, and maintenance. Participants were advised (both in the text of the manual and at the information night) to proceed through each stage in the recommended sequence.

The "preparing to stop" chapter included an exercise designed to make reasons for quitting more salient, a self-monitoring exercise for current smoking, and instruction in deep muscular relaxation, instant relaxation, and deep breathing. Participants were asked to practice these until they became proficient. The "stopping" chapter included instructions on quitting, such as setting a target date and halving their daily smoking rate for 3 days prior to quitting. A number of strategies designed to aid coping with withdrawal distress were included. These were distraction, challenging, and concentration on the benefits of cessation. The last chapter dealt with the maintenance of non-smoking, including strategies to cope with lapses, relaxation and cognitive coping, using behavioural contracts not to smoke, dietary advice, and identifying and coping with high-risk situations.

Telephone Contact Group

After the information night, each member of the telephone-contact group was telephoned during the course in Weeks 1, 2, 4, 6, 8, and 10.

The first telephone interview was carried out a week after the information night. This assessed smoking status, intention to quit, whether the participant had read the manual, and the extent to which she or he had used the skills included in the first two chapters. All subsequent interviews repeated the questions and asked about the use of the final two chapters.

Data concerning the participants' smoking habits were collected using a structured interview. The interviewers used a score sheet which divided the manual into its component parts such as specific skills and techniques. Participants were asked if they had attempted to implement each, and if they had experienced any difficulty in doing so. When a participant reported difficulty in using a particular skill or technique they were instructed in how the technique worked, when to use it, the benefits of its

use, and criteria for how the effectiveness of its use may be checked.

RESULTS

Participants in both conditions were followed up by telephone after periods of 3, 6 and 12 months. At the 12-month follow-up those claiming abstinence were asked to provide a sample of saliva for biochemical testing. One participant claimed to have achieved abstinence but refused to provide a saliva sample at the 12-month follow-up. Abstinence rates at 3 and 6 months reflect only self-reported abstinence, whilst the 12-month follow-up consists of those who claimed abstinence and agreed to the biochemical test.

Table 1 shows the percentage and number of participants abstinent at each follow up. The two conditions were significantly different at the $p < .05$ level for the 6-month follow-up (Fisher's exact test, $p = .001$), and for the 6-month follow-up (Fisher's exact test, $p = .041$), but not for the 12-month follow-up (Fisher's exact test, $p = .076$).

For those participants still smoking, we calculated the change in the reported number of cigarettes smoked each day using the following formula: The daily smoking rate at follow-up was subtracted from the baseline daily smoking rate, this was then multiplied by 100 and divided by the baseline daily smoking rate.

$$\frac{\text{(Pretreatment rate} - \text{Follow up rate)} \times 100}{\text{Pretreatment rate}}$$

This formula was used in order to avoid basal effects, as the more cigarettes a smoker smokes at baseline the more they may reduce absolute consumption at follow-up. There was no difference in smoking rates between the two conditions at the 3-month follow-up ($t = 1.73$, $df = 31$), at the 6-month follow-up ($t = 1.57$, $df = 33$) or at the 12-month follow-up ($t = 1.72$, $df = 36$). Table 2 shows the means and standard deviations for both groups at each follow-up.

At the 3-month follow-up, participants in the telephone contact condition reported making more cessation attempts than participants in the manual-only condition ($t = 2.27$, $p < .01$, means: telephone contact group 1.30, $SD = 0.97$; control 0.73, $SD = 0.70$). It is possible that the telephone contact intervention may have promoted a greater abstinence rate by stimulating people to make more cessation attempts.

Adherence to the Techniques

In order to determine the extent to which participants in the manual plus telephone contact condition adhered to the content of the manual, they were asked whether they had used each technique. For this analysis, techniques were coded as having been attempted if the participant reported having used the technique at any one or more interviews during the first 3 months. Use of the techniques is reported in Table 3. All participants were included in the table for the techniques related to preparing to stop ($n = 23$). As some participants had not progressed further, only those who reported making cessation attempts were included in the table for techniques related to stopping smoking ($n = 19$) and only those who ceased smoking for a week were included in the table for techniques related to maintenance ($n = 10$).

TABLE 1 Participants who reported not smoking at each follow-up for the manual plus telephone contact and manual only conditions.

Condition	3 months	6 months	12 months
Manual plus telephone contact	43.5% ($n = 10$)	34.8% ($n = 8$)	30.4% $n = 7$)
Manual only	9% ($n = 2$)	9% ($n = 2$)	9% ($n = 2$)

TABLE 2 Mean smoking reductions at each follow-up for the manual plus telephone contact, and for the manual-only condition (standard deviations are in parentheses).

Condition	3 months	6 months	12 months
Manual plus telephone contact	38.6% (21.9)	24.6% (24.9)	25.3% (22.4)
Manual only	24.8% (22.7)	11.6% (22.3)	11.3% (23.1)

TABLE 3 Number and percentage of behavioural techniques utilised in the first 3 months of the program.

Technique	Number	Percentage
Preparing to stop		
Listing the advantages of cessation	12	52%
Self-monitoring of smoking rate	10	43%
Relaxation skills	12	52%
Stopping smoking		
Signing personal contract	8	42%
Halving smoking rate	9	47%
Use of substitute activities	7	37%
Challenging	3	16%
QUIT (problem solving) technique	1	5%
Maintenance		
Covert sensitisation	0	0%
Monitoring urges	0	0%
Follow dietary advice	1	10%
Reminds self of smoking's negative effects	8	80%
Identifies high-risk situations	1	10%
Reminds self of the benefits of nonsmoking	1	10%
Signs contract to remain abstinent	0	0%

An aim of this intervention was to provide instruction for the use of the techniques in the manual. Only one participant asked for a technique to be explained to them.

To test the hypothesis that the number of techniques utilised would predict cessation we calculated the total number of techniques used in the first two sections by all 23 participants. The mean number of techniques used was compared for those who had reported abstaining for periods for a week and 3 months. A Pearson correlation coefficient, measuring the relationship between adherence and smoking reduction, was then computed. The total number of techniques used predicted neither abstinence after 3 months ($t = 0.98$, *NS*), continuous abstinence for the period of at least 1 week ($t = 1.01$, *NS*) nor the level of smoking reduction ($r = 0.12$, *NS*).

DISCUSSION

We provided regular, scheduled telephone contact to smokers interested in stopping smoking. This was designed to enhance the effects of a self-instructional smoking-cessation manual. This condition was compared with a manual-only condition. There were between group differences of participants claiming abstinence at the 3- and 6-month follow-ups in the hypothesised direction. However, the 12-month follow-up of participants who agreed to provide a saliva sample to validate their claims of abstinence showed a nonsignificant trend toward a higher abstinence rate in the telephone-contact plus manual condition than the manual-only condition.

We hypothesised that telephone contact would facilitate greater levels of adherence to the specific content of the manual. Adherence to the techniques in the telephone-contact plus manual condition was low. Furthermore, there were no associations between participants' levels of adherence to the manual and the outcome of their cessation attempts. The failure of the telephone contact intervention to enhance the cessation rate of the smoking-cessation manual may have been due to its inability to promote increased levels of adherence to the behavioural content of the manual.

The scheduling of the telephone calls may also have contributed to the failure of the intervention condition to stimulate a greater cessation rate than the control. The telephone assistance ceased after a period of 3 months. Subsequently, several relapses occurred among participants of the telephone contact group. It may be the case that the cessation of the calls influenced the process of relapse. Given that the

number of cessation attempts in the first 3 months was greater in the telephone contact condition, the cessation of contact may have reduced participants' ability to recover from relapses.

Ossip-Klein et al. (1991) used a telephone "hotline" described in the introduction to augment the cessation rate promoted by a self-instructional manual. Smokers in the Ossip-Klein et al. study were able to use the hotline at their own discretion, presumably when they were experiencing specific problems in stopping smoking or remaining abstinent. Recently, Orleans et al. (1991) were successful at increasing the abstinence rate promoted by a self-instructional manual by providing the smoker with both advice in soliciting social supports and scheduled telephone counselling. Our intervention incorporated a series of telephone calls, scheduled by us, designed to promote greater levels of adherence to the content of the manuals, whereas Ossip-Klein et al. and Orleans et al. used telephone contact as a source of counselling and support.

Participants in the telephone contact group made a greater number of attempts to stop smoking. Studies of the behaviour change process suggest that smokers may make a number of unsuccessful cessation attempts before they eventually achieve permanent cessation (Schacter, 1982; Swan & Denk, 1987; Prochaska, Velicer, Di Clemente, & Fava, 1988). It is, therefore, important to develop ways of stimulating smokers to persist in making cessation attempts in order to increase their chances of achieving eventual cessation. Occasional telephone contact may be a way of achieving this objective.

Our program was advertised in an area where 80,000 people live — approximately 20,000 of whom were estimated to be smokers (Brown & Owen, 1990) — we were only able to recruit 45 participants. Our program used limited resources for advertising and was not able to achieve high levels of participation compared to programs which have been integrated into large scale mass-media campaigns (Egger et al., 1983; Sutton & Eiser, 1984; Sallis, Flora, Fortmann, Taylor, & Maccoby, 1985; Cummings, Sciandra, & Markello, 1987). Recruitment to projects such as ours may be enhanced by combining them with mass-reach smoking-cessation campaigns aimed at stimulating awareness of and changing attitudes towards smoking issues. Recruitment to our program may also have been enhanced if participants had not been required to attend an information evening held at the centre. The privacy and convenience of a program administered through the post may attract more participants.

Self-instructional materials have been shown to be more cost effective than other methods of behavioural skills training (Altman, Flora, Fortmann, & Farquhar, 1987). The provision of therapist support does, however, serve to increase costs. Unless a clear facilitation effect can be shown it is obviously not economical to use such supports. There are several studies which show that the effectiveness of self-instructional smoking-cessation materials may be augmented by providing smokers with varying levels of personal support and feedback (Glasgow et al., 1981; Windsor, Lowe, & Bartlett, 1988). We used regular telephone contact to achieve this end but were unsuccessful, possibly because we were unable to promote rigorous implementation of the strategies and techniques contained in the manuals. A broader approach may be more effective. Social support and the ability of smokers to elicit it are important aspects of the smoking-cessation process (Lichtenstein, Glasgow, & Abrams, 1986). Windsor et al. (1988) augmented cessation rates by helping smokers elicit support from their nonsmoking friends and relatives. Such an approach may be more appropriate to mass-reach smoking campaigns because it requires less of an investment in therapist resources.

Mass-reach strategies have the potential to reduce the prevalence of smoking in the community. This is especially true if methods can be developed to support behaviour change as well as attitude change (Glynn et al., 1990). Self-instructional materials have been shown to facilitate behaviour change, especially if effective compliance with their content can be increased. The provision of social support is a powerful way of enabling people to modify their behaviour (Windsor et al., 1988). The challenge for behavioural scientists and practitioners is to design, implement, and evaluate interventions which use these processes to contribute to reducing the prevalence of smoking in Australia.

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