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COMPARISON OF THREE MAINTENANCE PROCEDURES
FOLLOWING TREATMENT BY RAPID SMOKING

A Thesis

Presented to
the Graduate Faculty of the
University of the Pacific

In Partial Fulfillment
of the Requirements for the Degree

Master of Arts

by

Stuart P. Gordon

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ABSTRACT

Thirty-two cigarette smokers received six sessions of rapid smoking after which they were randomly assigned to one of four maintenance conditions. The conditions were (a) contingency contracting, (b) social support, (c) a continuation of rapid smoking and (d) a minimal contact control group. A total of seven maintenance sessions were scheduled for each maintenance group, and they were spread over a three month period. At the end of the maintenance period the control group was smoking at baseline level again. No differences between the maintenance groups were detected. However, the contracting group and the social support group were smoking significantly less than the control group.

Research on cigarette smoking control has yet to uncover any highly reliable therapeutic techniques (Bernstein, 1969; Epstein & McCoy, 1975; Hunt & Bospalec, 1974; Hunt & Matarazzo, 1973). This deficiency has been compounded by the absence of effective maintenance procedures for individuals who manage to abstain from smoking or reduce it at least temporarily. Although current knowledge about how to help chronic smokers "kick the cigarette habit" is limited, research advances have occurred, and there seem to be some emerging trends.

Hunt and Matarazzo (1973) have reviewed the data on the long term success of various smoking control techniques. Their results indicate that regardless of the kind of treatment used, a sharp increase in recidivism occurs immediately after treatment has ended. This continues for a 3 to 6 month period, at which time the graph levels off, leaving about 25% of the treated clients still abstinent. Hunt and Matarazzo's review clearly points out the high recidivism rate among people who have managed to abstain from smoking temporarily. It also suggests that continuing research be directed at treatment strategies that produce more durable results.

Of the various treatment modalities currently available, some of the most successful would fall under the rubric of aversive conditioning. Rapid smoking (Danaher, Note 1; Lando, 1975; Lichtenstein, Harris, Bircher, Wahl & Schmahl, 1973; Schmahl, Lichtenstein & Harris, 1972) is one of them. This procedure requires the client to smoke

rapidly (a puff every 6 seconds) paced by the verbal commands of the therapist, while at the same time attending to the negative sensations rapid smoking produces, i.e., sore throat and nausea. Clients are usually requested to smoke in this manner for about 3 to 5 minutes at a time, two to three times during each treatment session, or until they are unable to continue any longer. Furthermore, clients are urged not to smoke in between the rapid smoking sessions. Following these procedures, which usually last about 1 or 2 weeks, clients are required to abstain from smoking altogether.

In one study which compared the effects of warm, smokey air coupled with rapid smoking, Schmahl, Lichtenstein, and Harris (1972) found that 100% of their clients in both groups were able to abstain from smoking. Sixty-four percent of the clients were still abstinent after a 6 month follow-up. These results compare very favorable with the statistics amassed by Hunt and Matarazzo.

Lichtenstein, Harris, Buchler, Wahl and Schmahl (1973) conducted a second study to compare the effects of rapid smoking with and without warm, smokey air to an attention placebo control. The attention control condition consisted of having clients smoke two cigarettes at a comfortable rate during treatment sessions. Placebo pills were also given along with an explanation that the pills would help the clients reduce their desire to smoke. The use of warm, smokey air did not enhance the effects of rapid smoking alone. Although there were no differences between the aversive control groups and the placebo control group immediately after treatment, a 6 month follow-up revealed that 60% of the treated clients were still abstinent, while the control clients were smoking at baseline level again.

Lando (1975) controlled for expectancy factors by intentionally minimizing client-therapist contact. In this study excessive smoking consisted of having the clients double (at least) their cigarette consumption during the week of treatment. The difference between the control group (in which clients were asked to smoke at a rate of one puff per 30 second interval) and the two experimental groups was significant. Comparisons were made on the basis of percentage reduction in smoking and total abstinence. Initially, 60% of the treated clients refrained from smoking entirely, compared to 100% in the Lichtenstein et al. (1973) study. Lando attributes the difference between his initial abstinence rate and the superior abstinence rate achieved by Lichtenstein et al. to interpersonal factors such as therapist warmth, expectancy and encouragement. Lando also suggests that since the control groups in the Lichtenstein et al. study displayed 100% abstinence initially, the success of rapid smoking cannot be attributed solely to the effects of aversive conditioning. A 12 month follow-up by Lando revealed that all three groups had relapsed considerably with only 20% of the clients still abstinent.

Grimaldi and Lichtenstein (1969) examined the effects of contingent hot, smokey air on the reduction of cigarette smoking. Their results indicate that smokey air blown into the client's face during the act of smoking produces the same effects as smokey air blown into the face when not smoking. Initially, both groups reduced to about one-third of baseline level; however, at 1 month follow-up smoking increased to over one half of baseline level.

Marrone, Merksamer and Salzberg (1970) used a procedure similar to Lando's (1975) excessive smoking. Two groups of clients were requested

to chain smoke, one group for 10 hours, the other for 20 hours. The results indicate that both groups experienced equal short term success; however, long term success was reported for the 20 hour satiation period only. Sixty percent of the clients were still abstinent 4 months after treatment.

Although the use of treatments which either incorporate or rely solely on cigarette smoke as an aversive stimulus have produced impressive results, there are drawbacks to these procedures. For example, Hauser (1974) claims that for persons who have already developed coronary artery lesions, there is a risk of heart attack when exposed to rapid smoking. To safeguard against such dangers, potential clients should be screened and warned of the possibility of adverse side effects.

However, Danaher, Lichtenstein and Sullivan (1976) conducted a study which evaluated the effects of normal and rapid smoking on heart rate and carboxyhemoglobin. They conclude that although rapid smoking produces greater stress on the cardiovascular system than normal smoking, Hauser probably overestimated the risk of rapid smoking for young adult, nonsymptomatic smokers. Nevertheless, to safeguard clients and researchers alike, it is important that potential clients (a) complete a medical history questionnaire, (b) receive a detailed description of the procedures and (c) obtain a physician's approval.

A common theme in the smoking control literature has to do with weak or ineffective maintenance procedures. As a result, high recidivism rates seem to be the rule, not the exception. Even with the rapid smoking approaches there is no set of procedures to maintain an abstinence or a reduction in smoking after treatment has ended

(Bernstein, 1969; Epstein & McCoy, 1975; Hunt & Bespalec, 1974; Hunt & Matarazzo, 1973).

Katz, Heiman and Gordon (1976) performed a study which compared habit reversal, cognitive self-control procedures and a patient education/social support control. As a means of maintaining reductions in smoking, booster sessions which were scheduled in accordance with fading principles were provided. Since these meetings were not required, only about 25% of the clients attended regularly. However, the clients who attended the booster sessions were more successful in maintaining their reductions in smoking than non-attenders. Further evidence is needed to support this finding, since it may be that only clients who were pleased with their progress came to the booster sessions. In fact, there is some evidence to support this latter notion. Questionnaires were administered to the clients to determine which aspects of the program were perceived as most helpful. In all three conditions, social support was perceived as the most helpful aspect, i.e., participating in a group with other smokers who were also trying to "kick the habit." Since social support was perceived as a "motivator" during treatment (when the groups were reducing smoking), it may be that individuals who were backsliding during follow-up did not attend the booster sessions to avoid negative peer pressure.

Contracting is another strategy which has been used in the treatment of cigarette smoking. For example, Axlerod, Hull, Weis and Rohrer (1974) conducted two studies that seem to demonstrate the short term effectiveness of self-imposed contingencies to reduce cigarette smoking. In one study a smoker was required to tear up a dollar bill each time his daily cigarette consumption exceeded a prespecified,

gradually descending criterion. In the second study a smoker was required to forfeit 25¢ for each cigarette that exceeded the gradually descending criterion. In both studies there was a significant reduction in smoking during treatment, with a gradual return to baseline during follow-up when the contract was no longer in effect. In another study which used contingency contracting in conjunction with gradually reduced smoking occasions, Winet (1973) reported successful results. However, when the contracts were terminated, a return to baseline occurred. Winet suggests that long term contracts be used as a maintenance procedure. Furthermore, to make the consequences for not smoking more immediate, money could be exchanged at various intervals rather than in one lump sum at the end.

In a more recent experiment, Lando (1976) used contingency management as a maintenance procedure for rapid smoking. In this experiment the pay-off periods were scheduled at 1 week, 1 month, 2 months, 3 months and 4 months. During the first two months 80% of the clients were abstinent. This compared favorably with a contract control group which was about 50% abstinent after 2 months. However, there was no difference between conditions at a 4 month follow-up. At that time only about one-third of the clients in all conditions were still abstinent.

Relinger, Bornstein, Bugge, Carmody and Zohn (Note 2) examined the effectiveness of two maintenance procedures and a control group following treatment by rapid smoking. The two maintenance procedures were (a) in vivo rapid smoking sessions in the clinic at 1, 2, 4, 8 and 12 weeks following treatment and (b) rapid smoking sessions ad-

ministered over the telephone. (The spacing between calls increased as the 3 month period progressed.) The third group was a no-treatment control. At the end of the 3 month maintenance period, 33% of the participants were abstinent and the mean rate of smoking for all the participants was 56% of baseline.

The purpose of the present study was to compare the effectiveness of three maintenance procedures for cigarette smokers who have previously been treated by rapid smoking. The three procedures were contingency contracting, social support, and a continuation of the rapid smoking treatment. The contracting condition involved written contracts. In accordance with the suggestions of Winet (1974), participants in this study earned back money they had deposited contingent upon the maintenance of reduced smoking. In the rapid smoking group participants recalled the aversiveness of rapid smoking while viewing videotapes of themselves rapid smoking. Clients who exceeded their desired level of maintenance actually engaged in rapid smoking during follow-up sessions. In the social support condition, clients met regularly and offered social support to each other for maintaining success achieved during treatment. A fourth group in which no booster sessions occurred was used for comparison purposes.

Method

Subjects and Setting

Subjects for the study were solicited through advertising in the Stockton Record and KUOP FM radio announcements. (See Appendix A for advertisements.) Sixty-one people responded to the advertisements by telephoning a number carried in the advertisements. Each person was given the following information when they telephoned:

The smoking clinic that is being started is a free clinic. The methods that are being used have proven to be successful and are used commercially nationwide. This is a research clinic, and its main goal is to compare the effectiveness of various maintenance procedures that can be used after treatment has ended. There is a \$40 deposit to insure us that you continue to send us data and attend 13 meetings that are spread out over a 3 month period. The treatment sessions will last 2 weeks, three meetings each week. After that, there will be seven maintenance meetings which are spread out over a 2½ month period. To participate in the clinic, you should have the following times available: 7:00 to 9:00 P.M. for the days of October 11, 13, 14, 18 and 21 and 6:30 to 9:30 P.M. for the days of October 25 and 28, November 1, 9 and 23, December 14 and January 5. You will receive a treatment called rapid smoking. This treatment requires that during the treatment session you engage in 12 minutes of rapid smoking. Rapid smoking involves smoking a cigarette in a rapid manner, about one puff every 6 seconds. Although this treatment is reported to be uncomfortable by some individuals, it is a highly effective smoking control technique which has been documented and used nationwide. Thousands of smokers have undergone rapid smoking without ill effects, many of them in commercial clinics. However, it is suggested that you obtain a physician's approval to participate in this program since rapid smoking is not advised for people who suffer from cardiovascular disease, high blood pressure, diabetes, emphysema, chronic bronchitis or asthma. If you decide to participate there is a 25% chance that you will be placed in a maintenance group that requires you to earn back \$25 of your \$40 deposit by maintaining a desired level of smoking. Do you have any questions?

Forty-one of the callers agreed to participate in the program after being read the above information. A description of the sample can be found in Table 1. Thirty-two of these people actually attended

TABLE 1
CLIENT CHARACTERISTICS

| Group | Sex | Mean age (yr) | Motivation to quit ** | Mean No. of years of smoking | Mean No. cigarettes per day |
|----------------|--------|---------------|-----------------------|------------------------------|-----------------------------|
| Social Support | 5F, 2M | 39.6 | 5.1 | 20.1 | 27.3 |
| Contracting | 5F, 2M | 39.0 | 5.2 | 21.3 | 26.4 |
| Rapid Smoking | 6F, 2M | 35.9 | 5.3 | 18.9 | 28.6 |
| Control | 5F, 2M | 37.5 | 5.6 | 18.9 | 27.5 |

**Mean rating on a 7 point scale, with 7 being more motivated than ever.

the orientation meeting.

The treatment sessions were held in classrooms on the UOP campus. Two treatment rooms were used so that the second group of participants would not have to enter smoke-filled rooms.

Orientation Meeting

The agenda for the orientation meeting was as follows: (a) points that were covered during the initial telephone conversation were reviewed; (b) participants filled out a "Smoking History and Assessment Form;" (c) they also filled out Informed Consent Forms; and (d) they were asked to fill out a contract statement which explained how their \$40 deposit could be returned. (See Appendix B through D for forms.)

The participants were then randomly assigned to one of the two treatment groups. The random assignment was conducted by passing out schedules (randomly distributed in a pile) of the maintenance dates. The purpose of this procedure was to divide the 32 participants into smaller and more manageable groups.

At the end of the orientation meeting each participant was given 14 data collection booklets, one for each week of the study. Each booklet contained seven pages, one for each day of the week. Each page had squares numbered from 1 to 60. The participants were instructed to check off a box (in numerical order) before smoking a cigarette. They were also asked to monitor their level of smoking and not attempt to reduce smoking for the entire week prior to the onset of treatment.

Dependent Variables and Verification of Client Reports

The dependent variable was the number of cigarettes smoked per day. During the orientation meeting the participants were asked to list three collateral sources who could verify their reported rate of smoking. During the second week of rapid smoking, collateral sources were contacted for 20 of the participants. They were asked if they had seen the participant monitoring his/her smoking behavior and following the rapid smoking treatment procedure. Ninety percent of the sources were able to verify that the participant was monitoring his smoking and following the treatment procedures.

During the maintenance phase of the experiment, 32 verification checks between reducers and their sources were conducted. Although the sources were not always able to be exact about a participant's level of smoking, 97% of the sources were aware of a "definite reduction" in smoking. Fourteen checks between abstainers and their sources were conducted during the maintenance phase. In 100% of the checks the sources reported that they had not observed the participant smoking.

Treatment Procedures: Rapid Smoking

Two treatment groups with 16 participants in each group were used initially. Each group met six times during a 2 week period, Monday, Wednesday, Thursday and Monday, Wednesday, Thursday. The meeting times for these groups were 7:00 to 8:00 P.M. and 8:00 to 9:00 P.M. The meeting times for the groups were altered such that on every other session Group 1 met at 7:00 and Group 2 met at 8:00. This procedure was intended to control for any confounds that may have resulted from one group always meeting an hour later than the other.

The rapid smoking procedures used in both groups were identical and resembled those of Lichtenstein et al. (1973).

During the six treatment sessions there were three 4 minute rapid smoking trials. Participants were asked to smoke rapidly (every 6 seconds) paced by prompts from the experimenter. While smoking in this manner, they were asked to attend to the negative sensations they experienced (e.g., sore throat, dizziness, nausea). During each trial the participants were asked to smoke rapidly until they were unable to continue or until 4 minutes had elapsed.

Following this trial there was a 5 minute break. The participants were asked to remain in the room during the break.

At the end of the first treatment session the participants were asked to continue recording the number of cigarettes smoked during the treatment phase. However, they were asked to refrain from smoking outside the clinic as much as possible. The participants were instructed to rapid smoke every cigarette they felt they "must" smoke. It was explained that to "enjoy" smoking outside the clinic would undermine the effects of rapid smoking and that to rapid smoke every cigarette outside the clinic would increase the effectiveness of the procedure.

During the first treatment session the participants were also told to anticipate quitting smoking by the end of the treatment sessions two weeks hence. On the last day of treatment the participants were asked once again to abstain from smoking, or to reduce it to the lowest possible limit.

In the final meeting the participants were randomly assigned to the four maintenance groups. The random assignment was conducted by passing out schedules (randomly distributed in a pile) of the maintenance

dates. The maintenance sessions started 4 days after the last treatment session.

Maintenance Procedures

Four maintenance procedures were compared in the study. For three of the conditions attendance was required at additional meetings; the fourth condition was a minimal contact control. This latter group did not attend any maintenance sessions but continued to collect data regarding their smoking level. The purpose of this group was to provide a measure of recidivism in the absence of any maintenance treatment following treatment by rapid smoking.

All three maintenance groups had seven 1 hour maintenance sessions. The groups met on the same day of the week at the following times: 6:30 to 7:30 P.M.; 7:30 to 8:30 P.M.; 8:30 to 9:30 P.M. The meeting times for the groups were altered such that Group 1 met at 6:30 for session one, 7:30 for session two, etc.

The spacing of these sessions was staggered in accordance with thinning and fading principles. The spacing of the seven sessions occurred as follows: (a) 3 days after treatment, (b) 4 days after session 1, (c) 5 days after session 2, (d) 1 week after session 3, (e) 2 weeks after session 4, (f) 3 weeks after session 5 and (g) 4 weeks after session 6.

Contingency contracting. Contracting maintenance involved the use of written contracts and the contingent return of money for meeting stated agreements. At each maintenance session participants in this group were asked to write a contract that lasted until the next maintenance session. The contracts stipulated the conditions to be met

for the return of money. (See Appendix E for sample contract.) For example, if more cigarettes were smoked in between maintenance sessions than contracted for at the previous meeting, the participant forfeited (permanently) a portion of his/her money. If not, that portion of his/her deposit was refunded. Participants were allowed, indeed encouraged, to write contracts which demanded further reductions if they had not already quit smoking during the maintenance period.

The length of each contract was for the time period separating each maintenance session. The reward for successful maintenance was given during the maintenance session itself. That is, a check was awarded to each person who met his/her contract goal. The first two contracts were for \$5 each, while the remaining five contracts were for \$3 each. The sum of these contracts amounted to \$25. It was stipulated that the remainder of the participant's \$40 deposit would be returned only if he/she came to the treatment meetings regularly and provided data as requested.

At the end of each session (following contract review and the dispensation of rewards) there was a short discussion led by the experimenter. The purpose of this discussion was to help people who did not fulfill their contract goals by encouraging them to "remember" their contracts each and every time they had the urge to smoke.

Social support meetings. In this group, participants who maintained smoking reductions, or who continued to decrease their cigarette consumption, received praise and encouragement from the rest of the group. Prior to the onset of these meetings the group was instructed to heartily praise individuals who either maintained their earlier

success or who continued to lower their rate of smoking. People who were unable to maintain their success were asked to describe in detail how they thought they could do better in the future. The rest of the group was instructed to make comments and suggestions that they felt might be helpful. Each participant was required to mail in his/her data weekly. Their scores determined the type of interaction that they received at the next meeting.

Rapid smoking. In this group individuals saw videotapes of themselves and of other members in the group engaging in the rapid smoking treatment. During the videotape viewing, which lasted about 10 minutes, the clients were asked to recall the aversiveness of rapid smoking. The therapist attempted to aid recall by vividly describing the events and behaviors that were associated with the rapid smoking procedure, e.g., picking up a cigarette, inhaling fast and hard, feeling a burning in the lungs, feeling nauseous, and experiencing relief after putting the cigarette out. Participants were also instructed to recall (by imagery) the aversiveness of the previous rapid smoking sessions whenever they smoked. Clients who smoked in excess of their maintenance level engaged in 8 minutes of actual rapid smoking during the latter part of the maintenance session.

Follow-up

After the three month maintenance period had passed, additional follow-up data were collected. The clients first learned about this portion of the experiment 2 weeks after their deposit had been returned. This follow-up was conducted by telephone to determine the effectiveness

of the maintenance procedures after the formal data collection phase had ended. During the first phone call each person was asked to give an estimate of his/her daily smoking rate since the end of the study (2 weeks ago). Two weeks after the first phone call, another request (by telephone) for the same information was made.

Results

In all but the rapid smoking group, one participant dropped out, which brought the group size to seven. One participant dropped because of a change in working hours, one moved, and the other was ill for a long period of time.

The results of the study are depicted in Figure 1, which reveals the mean number of cigarettes smoked per week for the four groups. Figure 2 shows a transformation of these data to percentage of baseline smoking. As can be seen both figures show similar trends.

At the start of maintenance each group had three abstainers (criterion for abstinence equals 1 week), except for the social support group which had two abstainers. At the end of the 3 month maintenance phase, the social support group was smoking at 32.45% of baseline level (8.85 cigarettes per day), with three abstainers; the contracting group was smoking at 17.32% of baseline (4.57 cigarettes per day), with five abstainers; the rapid smoking group was smoking at 43.72% of baseline (12.5 cigarettes per day), with one abstainer; and the control group was smoking at 96% of baseline (25.43 cigarettes per day), with one abstainer.

The maintenance data in Figure 1, from week 3 until week 13,

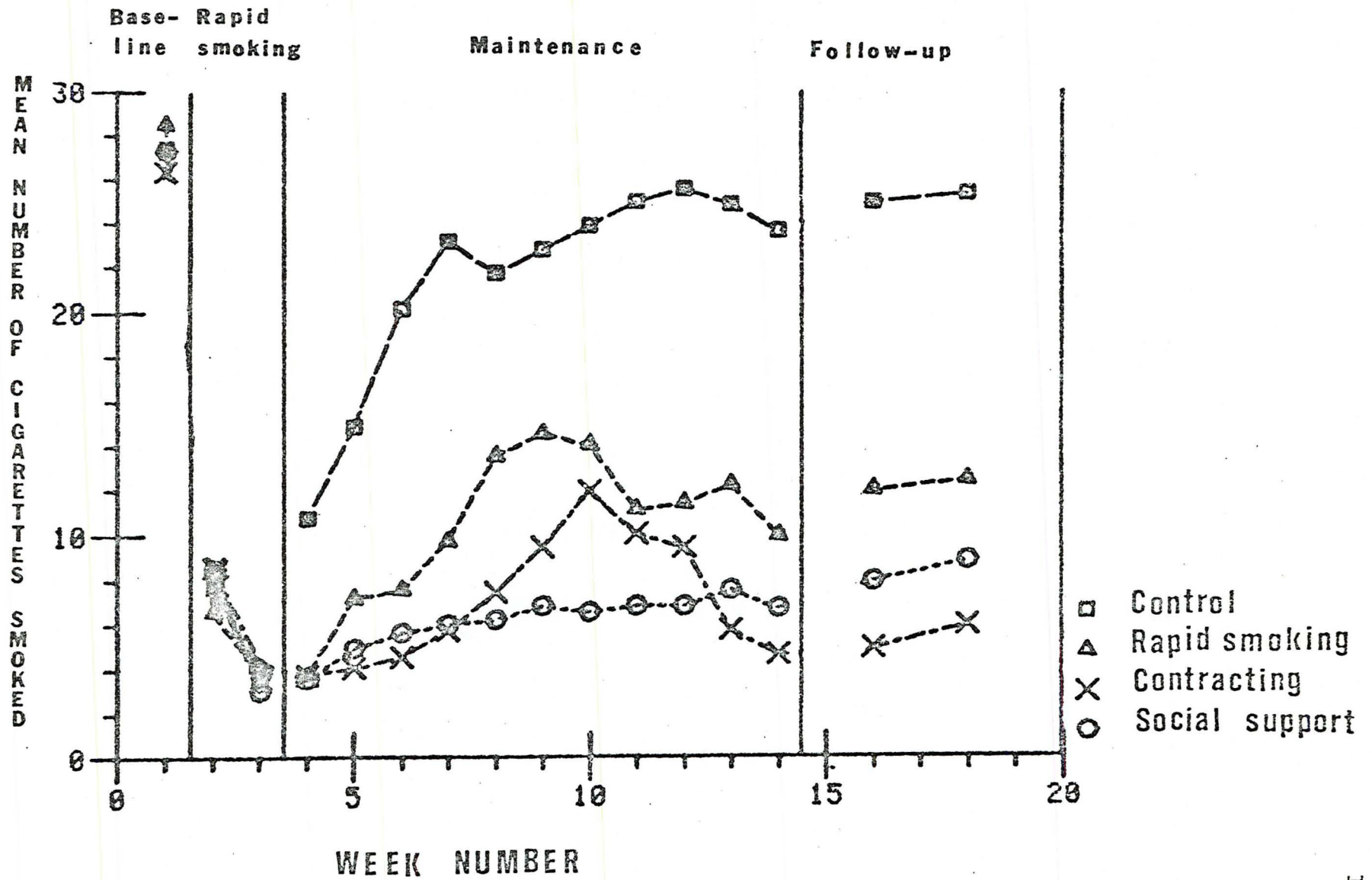


Figure 1. Weekly averages of cigarettes smoked for the four maintenance groups.

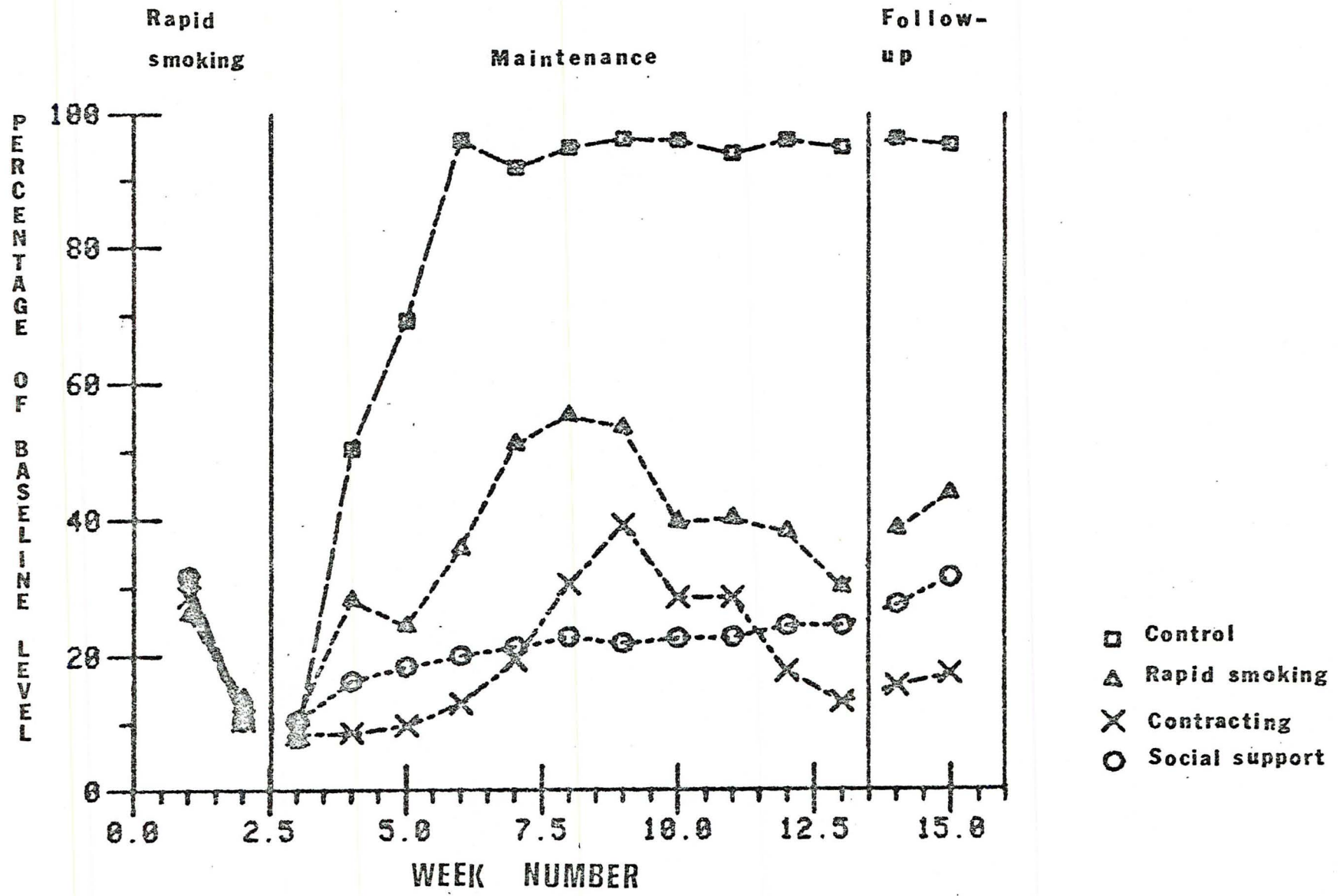


Figure 2. Weekly number of cigarettes smoked based on the percentage of baseline.

were analyzed using an SPF-4.11 analysis of variance (Kirk, 1968). The results of this analysis yielded a significant trial effect ($F = 10.67$, $df = 3, 25$, $p < .05$) which reflects relapsing over time. A significant group effect ($F = 4.22$, $df = 3, 25$, $p < .05$) indicates that there was a difference between the overall relapse rate for the four groups. The Group X Trial interaction was not significant ($F = 1.49$, $df = 30, 250$).

Tukey's H.S.D. test (Kirk, 1968) was used to determine which of the groups differed from each other and also to compare the group means at weeks 1, 3, 5, 7, 9, 11 and during follow-up. The tests showed no difference between any of the three maintenance groups ($p > .05$). Only the comparisons between the contracting and the control group and the social support group and the control group were significant ($q = 4.21$, $df = 4, 24$, $p < .05$, and $q = 4.46$, $df = 4, 24$, $p < .05$, respectively). Comparisons between the three maintenance groups at different points in time were not significant. However, similar comparisons between the three maintenance groups and the control group showed that both the contracting and the social support groups were smoking consistently less than the control group. The rapid smoking group also differed from the control group but only at weeks 3, 9 and 11. These comparisons are summarized in Table 2.

Since the follow-up data were collected differently than the maintenance data (telephone calls as opposed to self-monitoring), they were analyzed separately using an SPF-4.2 analysis of variance (Kirk, 1968). The results of this analysis yielded a significant group effect ($F = 5.23$, $df = 3, 25$, $p < .01$), a non-significant trial effect ($F = 1.67$,

TABLE II

COMPARISONS OF THE MAINTENANCE GROUPS TO THE CONTROL
 GROUP OF WEEKS 1, 3, 5, 7, 9, and 11 OF
 MAINTENANCE AND FOLLOW-UP

| Group Compared To Control | Weeks | | | | | | Follow Up |
|------------------------------|-------|----|------|------|----|----|--------------|
| | 1 | 3 | 5 | 7 | 9 | 11 | |
| Contracting | N.S. | ** | * | * | ** | ** | ** |
| Social Support | N.S. | ** | ** | ** | ** | ** | * |
| Rapid Smoking | N.S. | * | N.S. | N.S. | * | * | N.S. |

N.S. = Not significant

** = $P < .01$

* = $P < .05$

$df = 1, 25$) and a non-significant Group X Trial effect interaction ($F = .09, df = 3, 25$).

Once again, Tukey's H.S.D. test (Kirk, 1968) was used to determine where the difference between the groups occurred. The tests showed no significant difference between the three maintenance groups. Only the comparisons between the contracting group and the control group ($q = 5.19, df = 4, 24, p < .01$), and the social support group and the control group ($q = 4.42, df = 4, 24, p < .05$) were significant. The difference between the rapid smoking group and the control group did not reach significance ($q = 2.11, df = 4, 26$).

A chi square was performed on the follow-up data to test for differences in abstainers among the four groups. The results of this test approached but did not reach significance at the .05 level ($\chi^2 = 7.02, df = 3, p > .05$). Figure 3 depicts the percentage of abstainers in each group for weeks 1, 6, and 11 of maintenance and for follow-up.

Discussion

The primary purpose of the present study was to help cigarette smokers stop smoking and to compare different methods for doing so. In this respect the success rates exhibited by two of the maintenance groups were encouraging; i.e., smoking reductions in both the contracting (17.32% of baseline after 3 months) and the social support groups (32.45% of baseline after 3 months) compare favorably with the follow-up data obtained from other experiments (Hunt & Matarazzo, 1973). For example, Grimaldi and Lichtenstein (1969) found that without maintenance sessions smokers were smoking at 55% of baseline 1 month after receiving treatment using smokey air as an aversive stimulus. Similarly, Katz et al. (1976) report that smokers treated with self-control procedures

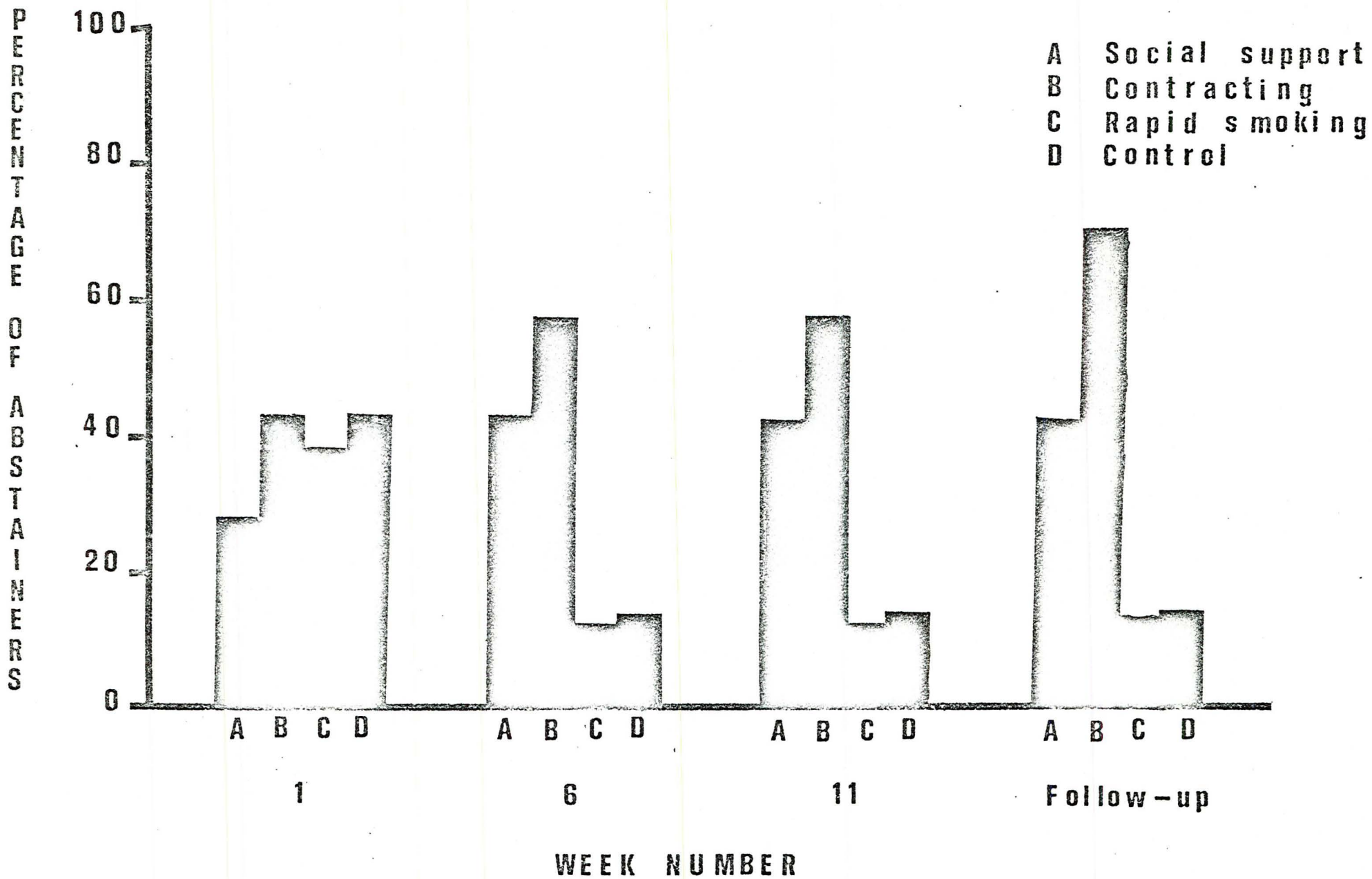


Figure 3. Percentage of each group that was abstinent at weeks 1, 6, 11 and during follow-up.

backslided to 55% of baseline after 15 weeks, during which optional booster sessions were made available. In Lando's (1975) study smokers were smoking at 35% of baseline level in the absence of maintenance sessions. More recently, Relinger et al. (Note 2) found that participants were smoking at 56% of baseline level 3 months after being treated by rapid smoking with rapid smoking maintenance sessions.

Comparisons between the three maintenance groups at weeks 1, 3, 5, 7, 11 and during follow-up revealed no reliable differences between them. However, results from the social support and contracting groups were superior to those from the minimal contact control group (except during week 1 when there was no difference between any of the four groups). The rapid smoking group produced mixed results, being more effective than the control group at weeks 3, 9 and 11 but not during follow-up. When the means for all 11 weeks of maintenance were compared, no differences between the treated maintenance groups emerged. Only the social support and the contracting maintenance groups fared consistently better than the control group during this period.

In view of these and other findings (Relinger et al., Note 2) it is interesting to speculate why rapid smoking should be effective as a treatment procedure but not as a maintenance procedure. It may be that a contrast effect occurred; i.e., the intermittent and milder rapid smoking maintenance sessions were less aversive after the longer and continuous rapid smoking sessions given during treatment. Another hypothesis is that the better results from the social support and contracting groups resulted from a placebo effect associated with a novel approach, for it was only in these two groups that a "new" treatment was introduced. Other smoking control studies have shown that placebo control groups have produced favorable and, in some cases, similar

results when compared to treated groups (Bernstein, 1969; Grimaldi & Lichtenstein, 1969; Sipich, Russell & Tobias, 1974). Future studies that are designed to control for such placebo effects are needed to test this hypothesis.

Epstein and McCoy (1975) suggest that researchers first develop effective smoking control "treatment packages," and then perform component analyses to determine the "active ingredients." In line with this reasoning "maintenance packages" can be developed for use after smoking treatment has ended. Various parameters that need to be considered in the development of these maintenance strategies include (a) the actual maintenance procedures to be used, (b) the length, duration over time and the spacing of maintenance sessions, (c) individual client characteristics with respect to selecting effective procedures and (d) the type of treatment used. By developing a better understanding of the variables that contribute to the effectiveness of maintenance procedures, researchers and therapists alike will be more successful in prolonging the effects of available smoking therapies. What the results of this experiment show are that maintenance procedures involving social support and contingency contracting following treatment by rapid smoking can extend the effects of rapid smoking relative to no maintenance procedures at all.

In conclusion, the present study sought to enhance the effects of rapid smoking by providing various maintenance procedures following rapid smoking treatment. It was found that social support and contracting procedures reduced backsliding significantly when compared to a no-maintenance control group. The results produced by these two groups compare favorably with the relapse rates observed in other smoking

control studies at a 3 month follow-up period. Rapid smoking in the absence of continued maintenance sessions produced less stable results. It is suggested that researchers routinely include investigations of maintenance strategies as part of their smoking therapy.

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APPENDIX A

Stockton Record Classified Advertisement

Are you interested in learning how to stop smoking? A non-profit stop smoking clinic will be conducted at University of the Pacific in conjunction with the psychology department. The program is free of charge and will use procedures that have been used in expensive commercial programs nationwide. A special emphasis will be placed on maintaining the success after treatment has ended. For more information contact Mr. Stuart Gordon after 6, 463-0909.

KUOP FM Radio Announcement

A stop smoking program at the University of the Pacific is scheduled to begin this week. Stuart Gordon, a graduate student who worked on a similar project with Dr. Roger Katz of the psychology department, will be directing the 3 month program. He said it will be free, and is interested in area residents who smoke at least 15 cigarettes per day.

"Our approach will emphasize behavior change techniques and stress some of the undesirable features of smoking," Gordon said. "Our aim will be to have the participants at least maintain a reduced level of smoking."

The first of several meetings is set for this Thursday. More information is available by contacting Gordon after 6 P.M. at 463-0909.

APPENDIX B

CONTRACT STATEMENT

I, _____, am depositing \$40.00 to participate in the U.O.P. Stop-Smoking Program. I understand that this deposit is a sign of my good faith (1) to attend the required treatment and maintenance meetings, and (2) to provide the program with a weekly report on my smoking behavior. I also understand that this deposit will be refunded in full at the end of the study if I comply with the above requests. However, I realize that there is a 25% chance that I will be randomly assigned to a maintenance group that will have to earn back \$25 of the \$40 deposit by maintaining the success achieved during treatment. I also realize that failure to live up to this contract will result in the loss of some or all of my deposit.

(Signature)

(Date)

APPENDIX C

PSYCHOLOGY DEPARTMENT "STOP SMOKING" PROJECT
Mr. Stuart Gordon

INFORMED CONSENT FORM

I understand that this is a research project and that some of the procedures I may be asked to carry out are in an experimental stage of development. Furthermore, I understand that I will be assigned to one of four groups. Consequently, other people participating in the project may receive a somewhat different treatment than me.

I understand that I will receive a treatment called rapid smoking. This treatment requires that during the treatment sessions I engage in a total of 12 minutes of rapid smoking. Rapid smoking involves smoking a cigarette in a rapid manner, about one puff every 6 seconds. Although this treatment is reported to be slightly uncomfortable by some individuals, it is a highly effective smoking control technique which has been documented and used nationwide.

Although thousands of smokers have undergone rapid smoking without ill effects, many of them in commercial programs, it was suggested by Mr. Gordon that I obtain my physician's approval to participate in this program. Rapid smoking is not advised for people who suffer from cardiovascular disease, high blood pressure, diabetes, emphysema, chronic bronchitis, or asthma, since it may aggravate these conditions.

I understand that at the conclusion of the project I may request to receive the more effective maintenance procedure, if differences between the groups exist and I had received a less effective approach.

I understand that there are several procedures that may be used, including careful monitoring of the number of cigarettes I smoke, education about potential hazards associated with smoking, group counseling, and suggestions to engage in specific activities that may help me curtail the urge to smoke.

Mr. Gordon has agreed to answer any questions that I have about the research, and I understand that I may withdraw this consent and discontinue my participation at any time.

I also understand that any personal information requested of or about me will only be obtained with my consent, and that if this information is published or will be presented in a scientific forum, my personal identity will not be revealed.

Finally, I understand that my success or failure in this project may depend on any of several factors, including the type of treatment I receive, and does not reflect any deficiency in intelligence or personality problem.

Your signature: _____

Please print your name: _____

Date: _____

APPENDIX D

Smoking History and Assessment Form

1. Your name: _____
2. Age: _____
3. Sex: M F
4. Mailing address
5. Home Phone: _____
6. Please list the name and phone number of two people we can contact about your progress in the program.

| | <u>Name</u> | <u>Phone</u> |
|----|-------------|--------------|
| 1. | _____ | _____ |
| 2. | _____ | _____ |

Smoking History

7. How many years have you been smoking cigarettes: _____
8. How many times have you tried to quit the the past (circle one) 0 1 2 3 4 5 more than 5 times (about how many? _____)
9. If you have tried to quit smoking before, what was your longest period of non-smoking (circle one number only).
 Days: 1 2 3 4 5 6 7
 Weeks: 1 2 3 4 5 6 7 8 9 10 more than 10 weeks (how many? _____)
10. About how many cigarettes does your mate (husband, wife, roommate, etc) smoke per day:
 0, 1-5, 6-10, 11-15, 16-20, more than a pack per day.
11. Have you been told by your doctor that you have a health problem(s) related to smoking?
 1. yes 2. no
12. If your answer was "yes" to #11, list the problems and indicate how many months ago they were called to your attention.

| | <u>Problem</u> | <u>Months</u> |
|----|----------------|---------------|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |

13. Has a close friend or relative become ill or died within the last year due to a problem related to smoking?
1. yes
 2. no
14. How would you rate your present motivation to quit smoking (circle the most appropriate item).
1. Hardly motivated at all, but willing to give it a try.
 2. Slightly motivated
 3. Mildly motivated
 4. Moderately motivated
 5. Highly motivated
 6. Very highly motivated
 7. More motivated than ever before.

APPENDIX E

MAINTENANCE CONTRACT

I _____ plan to keep the average
(name)
number of cigarettes I smoke per day at or below _____
(number)
until _____. If I meet this goal Stuart
(date)
will write me a check for _____. If
(amount)
I do not meet this goal, this money will be sacrificed.

Signature: _____

Date: _____

Witness: _____