University of Louisville

ThinkIR: The University of Louisville's Institutional Repository

---

Electronic Theses and Dissertations

5-1975

A comparison of two smoking reduction treatments under conditions designed to be interfering or not interfering with the smoking habit.

Gary Clive Salk 1944-
University of Louisville

Follow this and additional works at: <https://ir.library.louisville.edu/etd>

Recommended Citation

Salk, Gary Clive 1944-, "A comparison of two smoking reduction treatments under conditions designed to be interfering or not interfering with the smoking habit." (1975). *Electronic Theses and Dissertations*. Paper 1252.
<https://doi.org/10.18297/etd/1252>

This Doctoral Dissertation is brought to you for free and open access by ThinkIR: The University of Louisville's Institutional Repository. It has been accepted for inclusion in Electronic Theses and Dissertations by an authorized administrator of ThinkIR: The University of Louisville's Institutional Repository. This title appears here courtesy of the author, who has retained all other copyrights. For more information, please contact thinkir@louisville.edu.

A COMPARISON OF TWO SMOKING REDUCTION TREATMENTS
UNDER CONDITIONS DESIGNED TO BE INTERFERING OR
NOT INTERFERING WITH THE SMOKING HABIT

By

Gary Clive Salk
B.S., Michigan State University, 1966
M.A., University of Iowa, 1969

A Dissertation
Submitted to the Faculty of the
Graduate School of the University of Louisville
in Partial Fulfillment of the Requirements
for the Degree of

Doctor of Philosophy

Department of Psychology
University of Louisville
Louisville, Kentucky

May 1975

A COMPARISON OF TWO SMOKING REDUCTION TREATMENTS
UNDER CONDITIONS DESIGNED TO BE INTERFERING OR
NOT INTERFERING WITH THE SMOKING HABIT

By

Gary Clive Salk
B.S., Michigan State University, 1966
M.A., University of Iowa, 1969

A Dissertation Approved on

March 7, 1975

(DATE)

by the Following Reading Committee:

_____
Dissertation Director

_____

_____

_____

_____
Dean or Chairman

ABSTRACT

Thirty smokers were solicited from the Wichita, Kansas community via the newspaper and broadcast media for a stop-smoking project. The volunteers were assigned to one of two treatments: double smoking or a modification of Von Dedenroth's (1964) treatment. Each of these treatments was further divided into two groups. These groups were designed to provide high and low interference with the smoker's habit. No effect was observed for interference and it was observed that the experimental conditions probably did not permit the possibility of more than a small interference effect in either group. However, a significant effect for time and time by treatments was obtained. The Von Dedenroth groups showed a greater drop in smoking than the doubling groups. Both Von Dedenroth groups were superior to both doubling groups at the three-month follow up and one Von Dedenroth group was superior to one doubling group at the six-month follow up. The effect observed was apparently a stable diminution in the number of cigarettes smoked by the Von Dedenroth groups. There were like numbers of subjects quitting in both Von Dedenroth and doubling groups. The results were discussed in light of the previous literature. The scarcity of treatment effects, and especially, treatment effects showing a diminution in smoking rate in the previous literature was discussed. The results were explained in terms of the combined effects of prolonged observation by the smokers of their habits and the availability of substitute behaviors.

ACKNOWLEDGEMENTS

Any person so foolhardy or of such unbridled ambition as to embark upon a doctoral dissertation soon learns that his chances of success are dependent upon the cooperation and support of a good many people. Here are but a few on whom this work was dependent:

Dr. Willard Mainord, my chairman, from whom, true to his Western heritage, seldom was heard a discouraging word. Dr. John Birkimer, of my committee, whose availability and advice on statistical matters was invaluable. Dr. Perry Rushlau, my boss at Wernersville State Hospital, who deserves credit for whatever felicity of linguistic style this dissertation may obtain. The Psychology Department of Wichita State University for help and advice on all manner of things academic. The members of the Psychology Department of the Wichita Veterans Administration Center, who gave advice on the politics and praxis of dissertations, and especially their secretary, Ruth Mankins, whose value, like her Biblical namesake, is far above rubies. Mrs. Virginia Bales, whose timely assist at the onset of the experiment enabled it to start on time. Carolyn Gettler, who typed and retyped the numerous revisions of this dissertation. Finally and foremost, my wife, Dr. Martha Salk, whose assistance, encouragement and example at every stage of the dissertation and in every way were paramount.

TABLE OF CONTENTS

	Page
ABSTRACT	iii
ACKNOWLEDGEMENTS	iv
LIST OF TABLES	viii
LIST OF FIGURES.	ix
A REVIEW OF THE LITERATURE	1
Aversion	2
Information.	11
Imagination Techniques	13
Systematic Desensitization Therapy	16
Covert Operant Control	18
Assorted Studies	22
ANALYSIS OF THE SMOKING TREATMENT LITERATURE	28
METHODS.	33
The Search for Subjects.	33
Pre-Treatment Procedures	34
Treatment Procedures	37
Follow Up Procedures	41
RESULTS.	42
Personal Data Cards.	42
Analysis of Variance of the Base Rate.	44
Treatment Smoking Rates.	47
Analysis of Variance of Final Data	47
Analysis by Post Hoc Tests	52

Analysis of Raw Data	56
Questionnaire Data	57
Observational Results.	62
DISCUSSION	64
APPENDIX I: NEWSPAPER PUBLICITY OF THE EXPERIMENT	72
APPENDIX II: PERSONAL DATA CARD	82
APPENDIX III: INTRODUCTORY STATEMENT AND CONSENT FORM	83
APPENDIX IV: COVER LETTER FOR FOLLOW UP 1	85
APPENDIX V: COVER LETTER FOR FOLLOW UP 2	86
APPENDIX VI: SMOKING QUESTIONNAIRE FOR FOLLOW UP 1	87
APPENDIX VII: SMOKING QUESTIONNAIRE FOR FOLLOW UP 2	89
APPENDIX VIII: COVER LETTER FOR SECOND MAILING OF FOLLOW UP 2	91
APPENDIX IX: VERBATUM RESPONSES TO QUESTIONNAIRE ITEM 1, I. OF FOLLOW UP 1.	92
APPENDIX X: VERBATUM RESPONSES TO QUESTIONNAIRE ITEM 1, I. OF FOLLOW UP 2	94
APPENDIX XI: VERBATUM RESPONSES TO QUESTIONNAIRE ITEM 3 OF FOLLOW UP 1.	95
APPENDIX XII: VERBATUM RESPONSES TO QUESTIONNAIRE ITEM 4 OF FOLLOW UP 1	98
APPENDIX XIII: VERBATUM RESPONSES TO QUESTIONNAIRE ITEM 6 OF FOLLOW UP 1.	100
APPENDIX XIV: RAW DATA.	104
APPENDIX XV: VERBATUM RESPONSES TO QUESTIONNAIRE ITEM 3 OF FOLLOW UP 2.	105
APPENDIX XVI: VERBATUM RESPONSES TO QUESTIONNAIRE ITEM 4 OF FOLLOW UP 2	107
APPENDIX XVII: VERBATUM RESPONSES TO QUESTIONNAIRE ITEM 6 OF FOLLOW UP 2	109

REFERENCES	112
CURRICULUM VITAE	117

LIST OF TABLES

	Page
TABLE I. AN ANALYSIS OF SUBJECT'S AND NON-SUBJECT'S PERSONAL DATA CARDS	42
TABLE II. MEANS AND STANDARD DEVIATIONS OF ALL TREATMENT GROUPS AT BASE RATE AND FOLLOW UPS.	44
TABLE III. SUMMARY TABLE OF ANALYSIS OF VARIANCE OF BASE RATES	48
TABLE IV. SUMMARY TABLE OF A 4 BY 3 UNEQUAL N'S ANALYSIS OF VARIANCE WITH REPEATED MEASURES OF MEAN NUMBER OF CIGARETTES SMOKED PER DAY AT BASE RATE AND FOLLOW UPS.	50
TABLE V. RESPONSES TO ITEM 1 OF FOLLOW UP QUESTIONNAIRE 1: "HOW WOULD YOU DESCRIBE YOUR SMOKING PATTERN SINCE THE SMOKING PROJECT?"	57
TABLE VI. RESPONSES TO ITEM 1 OF FOLLOW UP QUESTIONNAIRE 2: "HOW WOULD YOU DESCRIBE YOUR SMOKING PATTERN SINCE THE SMOKING PROJECT?"	58
TABLE VII. RESPONSES TO ITEM 5 OF FOLLOW UP QUESTIONNAIRE 2: "WHAT IS THE LONGEST PERIOD YOU HAVE BEEN OFF CIGARETTES SINCE THE END OF THE PROGRAM?"	60

LIST OF FIGURES

	Page
FIGURE 1. Mean Number of Cigarettes Smoked per Subject per Day for each Treatment Group During Treatment Compared to Base Rates and Quotas	47
FIGURE 2. Mean Number of Cigarettes Smoked per Day at Base Rate and Follow Ups for each Treatment Group	48
FIGURE 3. Group Percent Base Rate Smoking at Follow Up	49
FIGURE 4. Mean Individual Percent Base Rate Smoking at Follow Ups.	53

A REVIEW OF THE LITERATURE

The Limits of this Review

The smoking literature is vast. There are studies on the physiology of smoking, delving into heart rate changes (Elliot & Thysell, 1968), EEG rhythms (Murphee, Pfeiffer, & Price, 1967), physical endurance (Cooper, Gey, & Bottenberg, 1968), etc. There are psychoanalytic studies of the orality of smokers (Jacobs, Anderson, Champagne, Karush, Richman, & Knapp, 1966) and a study purporting to find penis envy and castration anxiety in the ways men and women open cigarette packs (Landy, 1967). There are correlational studies showing, for instance, that smokers are taller than nonsmokers (Baer, 1966), and there is a correlational controversy centering around Eysenck's assertion that a predisposition to both smoking and cancer is hereditary (Eysenck, Tarrant, Woolf, & England, 1960). The smoking literature is truly vast and varied.

However, the present work is concerned with the study of outcomes of different methods of breaking smoking habits. Therefore, this review will focus on the therapeutic studies and more specifically, those therapies available to the psychological practitioner. This last restriction should be no source of jealousy toward physicians in as much as the medical treatments for smoking have, as yet, been notably ineffective (Graff, Hammett, Bash, Fackler, Yanovski, & Goldman, 1966; Ford & Ederer, 1965; and Schwartz & Dubitsky, 1967).

The Organization of this Review

The review that follows classifies the smoking literature by the technique used to stop or lessen smoking. First will come the major areas into which the literature appears to be divided: aversion, information, imagination techniques, covert operant controls, and assorted studies. Then under these headings will come the specific techniques. It is realized that any such organization is more or less arbitrary--most of the treatments involve the management of aversive outcomes of smoking--but it is hoped some increased clarity will come from this particular ordering.

Those studies which compare more than one technique will be reviewed completely under the heading of the technique which figured most prominently in the study. Each technique will be reviewed separately, uncontrolled studies first, then controlled studies, and, finally, any studies comparing the treatment in question with other treatments.

Aversion

Noise

In what was perhaps the first attempted behavior modification treatment of smoking, Greene (1964) used noise as a punisher of smoking in a task presented as "music test" to retardates. In this situation noise interrupted the music whenever the retarded subject lit a cigarette. However, instead of smoking less on the introduction of noise, they smoked more. Later manipulations showed that the faint click of a photocell relay switch activated by the glow of the cigarette ash was sufficient to increase smoking rate. The authors were not

able to establish why this click was reinforcing.

Shock

Perhaps the first, and to date most promising, of the studies using shock on smoking is that of McGuire and Vallance (1964). In their unfortunately brief section dealing with smoking, they reported only one case in any detail and gave only summary statistics on nine others. The one case on which there is some detail was that of a 37 year old woman who was a 40 cigarette-a-day smoker who had been smoking for 19 years. She was seen as an inpatient and was shocked on three of five inhalings for "several" sessions a day. The inpatient treatment lasted for two weeks and she was then seen as an outpatient on a weekly basis. On a six-month follow up she was discovered to be a nonsmoker. Summary statistics were provided on ten cases and of these six were abstinent on follow up.

Powell and Azrin (1968) devised a cigarette case that delivered a shock to the left arm when it was opened. Of 20 smokers contacted, six volunteered and only three remained after one day of shock. While the case was worn, the punishment reduced smoking 100%, 70% and 30% in the three subjects respectively. The shock intensity was increased "periodically" until two of the three subjects refused to bear the next highest level of shock. When the device was still worn, but the shock was no longer administered, all subjects resumed smoking at their pre-experimental level.

Carlin and Armstrong (1968) divided three groups of male smokers who responded to a newspaper advertisement into: 1) A group receiving shock contingent on smoking two cigarettes per day for four

days (conditioning). 2) Another group receiving random shocks while viewing 27 slides two times a day for four days. One third of the slides were "smoking relevant". 3) A group who were told they were receiving subliminal shocks. In the 24 hours following the fourth and last treatment, all groups reduced smoking by 40-50%. There was no follow up. In view of the very limited treatment offered this study probably best illustrates short term placebo effects.

Whitman (1969) contrasted groups receiving: 1) information about the negative side of smoking; 2) aversive conditioning where subjects put quinine on their tongues on an FR-3 schedule when they got the urge to smoke, and if the desire for a cigarette persisted, they self-administered shock; 3) "incompatible behavior development" which meant lectures on basic learning theory with discussion of each member's attempts to use them; and 4) a control group who simply recorded their smoking behavior. All groups (except the control group) were seen once a week for one hour over five weeks. None of the treatment groups differed either at the termination of treatment or one week later; and at the end of three months, all groups including the control group were smoking comparable amounts. The unfortunate aspect of this study for evaluating the effects of shock is, of course, the confounding of shock with the application of quinine. Some inkling of Whitman's feeling about the relative powers of the various treatments used might be gleaned from a later study of his (Whitman, 1972) in which he abandoned shock in favor of an aversive taste substance. This newer study will be reviewed later.

The second study comparing shock to other treatments is that of Koenig and Masters (1965). They compared systematic desensitization

therapy (SDT) a la Wolpe and Lazarus (1966), shock administered in the laboratory to 50% of the behaviors comprising the smoking act (e.g., taking a cigarette from the package, lighting it, inhaling, etc.) and a "supportive-counseling therapy". All treatments ran for nine sessions. They discovered no difference among the therapies. At the end of six months all groups were smoking at between 75% and 84% of the pre-treatment level.

D. C. Ober (1968) contrasted: 1) transactional analysis, 2) shock (to be self-administered as soon as the subject craved a cigarette), and 3) a self-control group receiving instruction in habit formation and breaking, and discussions of the difficulties the subjects encountered in applying these principles to their smoking. The college student subjects in all groups were seen for ten 50-minute sessions over a four week period. All three groups, though statistically indistinguishable, differed significantly from a no-treatment control group at the end of treatment and did not significantly relapse over a one-month follow up.

Steffy, Meichenbaum, and Best (1970) also used shock in their work, but that study can be more appropriately considered with the covert vocalization studies.

A final study using shock was that of Berecz (1972), who had undergraduate smokers shock themselves either while smoking or while imagining themselves smoking. He also included placebo, wait, and minimal-contact control groups. The placebo group was placed in the same situation as the shock groups, but was told to turn the shock down until they could feel nothing. The treatment groups and the placebo group were seen individually for three weeks, two sessions

per week. The wait group was composed of people who were told that they had been accepted for treatment, but would have to wait a few weeks until an opening appeared. In the meantime, they were told to keep records of their smoking. The minimal-contact group showed initial interest, but did not follow through long enough to start treatment. They were asked over the phone to estimate the number of cigarettes they were smoking. All groups except the minimal-contact group paid a five-dollar deposit. For the women no one method worked any better than any other. For moderate smoking males (mean = 13 cigarettes per day) both treatment groups were superior to the control groups at the end of treatment and at a six-week follow up. However, for heavy smoking males (mean = 23 cigarettes per day) the imagined-smoking group was superior to both the placebo and actual-smoking groups, both at the end of treatment and on six-week follow up. Bercus was able to replicate these results.

Hot Smoky Air

It might appear to the uninitiated that hot, smoky air would be a positive or, at least neutral, reinforcing stimulus to smokers, but Wilde (1964), perhaps generalizing from its effects on nonsmokers, constructed a device that would blow hot, smoky air at a smoker's face while he was smoking and cool, lightly mentholated air when he would say, "I want to quit smoking" and put the cigarette out. By this method he reported three of his seven subjects quit cigarette smoking, two greatly reduced their smoking, and two broke off the treatment.

Franks, Fried, and Ashern (1966) followed Wilde's lead with an improved apparatus and reported that of the nine subjects who completed

the treatment (out of 23 who started), four of the eight responding to a follow up questionnaire were nonsmokers six months later.

It remained for Grimaldi and Lichtenstein (1969) to apply controls to this phenomenon and explore it systematically. One of their groups received smoke contingent on smoking, another group received smoke but not contingent on smoking, and a third group received no smoke. All groups smoked much less than base line on the days during which they were treated, all groups smoked more on a one-month follow up, and all groups were indistinguishable in smoking rate at all points.

Massed Smoking

Jerome Resnick (1968a) had smoked a pack of cigarettes a day, and after numerous attempts to stop, in August, 1966, he hit upon the idea of smoking five packs a day for a week and then quitting. He reports that by the end of the week, smoking had become a noxious act and he encountered little difficulty stopping and staying off cigarettes. He then rounded up eight undergraduate students and talked to them for a half-hour each explaining stimulus satiation and told them to bring their smoking rate up to four packs a day as quickly as possible and then stop one week from the interview. One of the subjects did not comply with the instructions and remained smoking at his usual rate; another complied but was able to stay off cigarettes for only two days after treatment; all others quit and were not smoking four months later.

Resnick (1968b) then set out to look at this procedure more systematically. He took 60 undergraduate students, divided them into

groups of 20 and spoke to each member of each group individually for ten minutes. One group he told to double their smoking rate and then quit in a week, a second group were instructed to triple their smoking rate, and the third group he told to remain smoking at the same rate as always for a week and then quit. He reports subjects in the last group readily believed the instructions would work, but those in the first two groups were skeptical [!]. He then called all of the students at two weeks and four months later. All groups exhibited a drop in smoking rate, but the two satiation groups showed a profound drop. At the end of four months, 20% of the control subjects had quit smoking, but 63% of the satiation subjects had quit. It should be emphasized that they were not "smoking significantly less" or "smoking at X% of their operant rate", but that they had quit, and all supposedly as a result of a ten-minute instruction.

The work of Schmahl, Lichtenstein, and Harris (1972) attempted to discover the efficacy of combining warm, smoky air and rapid smoking. They presented their subjects (11 men and 17 women, who had an average age of 27.3 years and were pack and a half-a-day smokers) with either warm, smoky air or mentholated air, had them light up and inhale every six seconds. They were to smoke on command until they could not take it any more. At that point they were instructed to say, "I don't want to smoke" and put out the cigarette. The exhaust fans would then come on and they would rate the unpleasantness of the trial. As soon as they could stand it, they would be forced to start another trial, and the cycle would repeat itself until the subject would report that he could not take it any more. The subjects were asked not to smoke between sessions. All had quit at the end of the procedure, and at the end of six months a telephone follow up indicated that 57% were still

abstinent. No effect was found for hot, smoky versus mentholated air blown in the face of the subject. Some subjects were given booster treatments and, after the third session, a five-dollar deposit was required.

Marston and McFall (1971) attempted to compare stimulus satiation, hierarchical reduction, pill control, and cold-turkey control conditions. The stimulus satiation condition was quite different from Resnick's (1968b) and will be explained fully. The college student subjects were asked to smoke three cigarettes everytime they had an urge to smoke, to get cigarettes from the authors at the clinic rather than buy cigarettes, to smoke continental style, and to record every cigarette. The subjects were seen for five sessions (of unspecified length and spacing). At the fourth meeting some subjects asked to quit and were allowed to do so. The hierarchical reduction group also obtained their cigarettes from the clinic and kept records of every cigarette smoked. They were to divide the day into four parts and to quit smoking in the easiest part first, then the next easiest, etc., until they were not smoking at all by the fifth session. They also used relaxation techniques, social commitments, coverants, and numerous activities designed to interrupt the smoking act. The pill control condition subjects were asked to suck on a non drug spice tablet every time they had an urge to smoke, and if the urge persisted, to smoke while still sucking on the tablet. They were also asked to change their brand of cigarettes and to think about smoking so as to make it not a mechanical act. They also met in twice-weekly sessions for discussion. The cold-turkey group was just what the name suggests--the subjects were asked to quit and were given supportive group sessions.

It is difficult to tell how long the treatments took, but it was apparently no less than two weeks in all conditions. There were no differences on follow up between any of the treatments.

The stimulus satiation group did not increase their smoking more than slightly and, in fact, showed a precipitous drop in smoking less than half-way through the treatment. The reader is not told what the measure consisted of, although it may be conjectured from the figures that it was mean number of cigarettes smoked per group.

The flaws in this study are numerous. The satiation group did not smoke at triple their base rate (nor were they actually asked to-- they were simply told to smoke three cigarettes at every urge to smoke). The instructions to both the satiation and hierarchy groups included a great deal more than the basic treatment and the synergistic effects of all these instructions are unknown. Indeed, it is not known if the hierarchy subjects followed their instructions any better than the satiation group followed the tripling instructions.

In a study to be covered in more detail below, Keutzer (1968), compared negative practice to breath holding, covert vocalization, and a placebo drug condition and showed no differences between treatments. An examination of Resnick's (1968b) and Keutzer's (1968) operations, however, may serve to clear up the apparent conflict in their results. Keutzer placed her subjects in a closed room and had them smoke three cigarettes in rapid succession, rest, and then repeat the cycle two more times. It is easy to imagine that these nine cigarettes smoked once-a-week for three weeks would not have the same satiation effect as doubling or tripling smoking for a full week.

Taste Aversion

Whitman (1972) used a pill that contained ginger, licorice, coriander, cloves, menthol, etc. as an aversive agent. Also, they were to place this pill in their mouths upon feeling an urge to smoke, let it half-dissolve, and then light up a cigarette and smoke it while the pill was still in their mouths. The subjects were also asked to change their brand of cigarettes. One treatment condition followed this regime with group support for six one-hour sessions once-a-week and one group did it without the group support. Two control groups were used: a waiting-list control and a group of smokers discovered by random selections from the local phone book. The measure was the subject's estimate of how many cigarettes he had smoked when questioned: 1) before the treatment period, 2) at the end of treatment (six weeks later), 3) at a one-month follow up, and 4) at a six-month follow up. All treatment groups and the waiting-list control group reduced smoking with the group-aversive treatment doing better than all others at the end of treatment. Both treatment groups and the waiting-list controls maintained slight, but statistically significant, reductions in smoking at all follow ups, although the differences between them had washed out. The randomly selected control group showed no drop in smoking over time. No therapist effects were shown.

Information

A "treatment" that surely must not be overlooked is the simple giving of information. After all, it could be assumed that the many people who have quit in the last decade have relied on information received from the various media about the harmfulness of smoking and

not upon the intervention of psychologists.

Mausner (1966) used this approach and reports that he had so many dropouts that its effects could not be evaluated. Eighty-two of 206 smokers in his population (a girl's college) indicated an interest in attending a discussion on how to quit smoking. Of these, 17 arrived for the first session, and only four remained for the last session. It is worth noting that this problem of dropouts has been very successfully dealt with by requiring subjects to post deposits to be returned at the end of treatment (e.g., Keutzer, 1968; Elliott & Tighe, 1968).

Lawton (1967) compared an educational group, a therapy group, a group receiving both information and therapy, and a group receiving a concentrated five-day treatment. They did not differ. All groups at the one-year follow up had the same abstinence rate of 18%.

Leventhal, Watts, and Pagano (1967) in a complicated two by two by two by two factorial experiment compared fear stimulus (high or moderate), instructions on how to quit (given or not given), smoking during the fear stimulus (encouraged or forbidden), and subjects (heavy versus light smokers). Only instructions on how to quit had any effect on smoking rate; an effect still evident three months after the experiment. The subjects were Yale students.

The reader will also remember that in Whitman's (1969) experiment, information proved as good a treatment as aversive stimuli or the conditioning of incompatible responses, but that on the follow up no treatment, including information, had any effect.

In sum, it must be said that the transmission of information has its place in smoking therapy, especially if it is specific instruc-

tion on how to quit (Leventhal et al., 1967), but that information alone apparently has not had a strong effect on the populations that typically find their way into psychological experiments.

Imagination Techniques

Hypnosis

Erickson (1964) reports three cases of heavy smokers with assorted physical and psychological disorders whom he treated for smoking with one session of hypnosis. On follow ups of six months, one year, and two years respectively, they were off cigarettes and, with the exception of the patient with the six-month follow up who died of heart failure at that time, all reported excellent health as well as no relapse in smoking.

Moses (1964) reported the results of 75 patients treated for smoking with hypnosis. Of the 75, 70 were seen for one session (consisting of 20 minutes discussion about the patient's smoking, 20 minutes of lecture by Moses about the evils of smoking, and ten to 15 minutes of hypnosis). Fifty of the 75 patients could be reached for follow ups. Thirteen smokers reported no effect of hypnosis on smoking; 13 were abstinent at the time of questioning; and 24 reported some effect ranging from a few hours to 30-months abstinence, but were smoking at the time of the follow up.

We now turn to the apparently very successful work of T. E. A. Von Dedenroth, M.D. Von Dedenroth (1964a & b) in two successive articles reports 193 of 200 (96.5%!) patients were able to give up smoking at the end of his treatment. On the last 150 patients (Von Dedenroth, 1964b), no follow up data were given, but of the first 50

patients (Von Dedenroth, 1964a) 48 were abstinent four to 13 months later. Such an outstanding success rate clearly deserves close attention.

Information on the last 150 patients is more sparse than on the first 50, so most of the remarks about his patient population will come from this first group alone. The patients ranged in age from 32 to 69; 57% were referrals from other physicians, 32% were self-referrals, and 10% he advised to quit for medical reasons.

His technique consisted of an initial one-hour session followed by three 15- to 30-minute sessions over the next three weeks, thus the total treatment takes 21 days. During the initial session, hypnosis was discussed as a method intended to make the individual more susceptible to positive suggestion. Any fears of loss of control under hypnosis were specifically countered. Then a series of questions were asked: How long has the patient smoked? Why did he begin? Has he ever tried to quit? Does he wish to stop now? What benefit does he get from smoking? and specifically, What benefit at what times? and How much does he smoke? He was then told that 21 days from today is "Q-day" or "Quitting day". He was told to keep a notebook in which he was to list the reasons why he should not smoke.

He was also asked to enlist the support of his family, change his brand of cigarettes, and not to smoke: 1) before breakfast, 2) one-half hour after all meals, and 3) 30 minutes before retiring. To make his restricted smoking time easier, he was on these occasions to go to the bathroom and gargle, clean his teeth, and then notice the fresh taste in his mouth.

The morning hours were accorded special consideration. Aside

from the pre- and post-breakfast gargle and tooth brushing, the patient was to have a glass of fruit juice or water available immediately on rising. Should the desire to have a cigarette strike before one-half hour after breakfast, he was to talk with someone, drive to the office sans cigarettes, or engage in some other activity until the urge passed.

After these instructions were given a trance state was then induced (Von Dedenroth is gratifyingly explicit in his description of exactly how he accomplished this), and the suggestions made while the patient was awake were repeated and reinforced.

During the second session, the subject was asked to increase to one hour the length of abstinence after meals and before retiring. This suggestion was reinforced during the trance state. During the third session the patient was asked to curtail or stop drinking alcoholic beverages, and it was suggested that although the first puff of a cigarette will taste good, the later puffs will become progressively more annoying. These suggestions were also repeated and reinforced under hypnosis. On the last treatment day, "Q-day", a trance state was immediately induced. Then it was stressed and re-stressed that the individual had started some good habits, replaced some bad habits, and become aware that over the past several weeks cigarettes were getting more and more unpleasant.

Before moving on to the lone controlled study which could be found, one should note the Kraft and Al-Issa (1967) study (reviewed more fully below) in which hypnosis was used in four of five cases to induce relaxation. Smoking was reduced in this study as a concomitant to treating alcoholics for social anxiety.

Graff, Hammett, Pash, Fackler, Yanovsk, and Goldman (1966) compared hypnosis to "group therapy", chlordiazepoxide, lobeline, and a control group made up of those who did not volunteer. The results of this somewhat loosely controlled study (controls were drawn from a different population than treated groups, the amount of time spent with each group varied greatly, and therapist effects were confounded with treatment effects) were that on a three-month follow up, 88% of the hypnosis patients, 44% of the group therapy patients, 22% of the chlordiazepoxide patients, and none of the lobeline patients were abstinent.

Role-playing

Platt, Kraussen, and Mause (1969) got 44 male members of a Catholic church group to role-play either a physician or a patient in a scene where a man is being told he has advanced lung cancer, should have an immediate operation, and should quit smoking. Thirty-two percent of this group were abstinent at the end of four months, as were 19% of a group of no-treatment controls.

Streltzer and Koch (1968) had 30 women role-play a cancer patient with either a high status person (an M.D.) or a low status person (a coed). Nobody in any group quit smoking.

Systematic Desensitization Therapy (SDT)

Morganstern and Ratliff (1969) reported the results of SDT on eight subjects. Only four either stopped or greatly reduced their smoking by the end of the five to six weeks of treatment. The other "reductions" were slight, no more than a six-cigarette-per-day difference from the first week to the last week of therapy. The only other cases encountered of SDT used on smokers were those reported by Kraft

and Al-Issa (1967). They used hypnosis to induce relaxation on four of their five patients and drugs to induce relaxation on the fifth. The patients were all treated at St. Clement's Hospital, London, where four of the five were inpatients and all were either alcoholics or dependent on alcohol in social situations. Four of the five were between 19 and 23 years old and the fifth was 32. All were treated for social anxiety with the observed decrease in smoking noted only as a sign indicative of better social adjustment. The results of this study are particularly difficult to analyze. They could be due to SDT, the youth of the patients, the patients' alcohol dependency, or other factors.

Pyke, Agnew, and Kopperud (1966) compared: 1) an "enriched" group receiving SDT and group sessions for "discussion, information dissemination, and feedback" (p. 198), 2) a group which monitored its smoking for the eight weeks that the enriched group was treated, and 3) another group which monitored its smoking only during the first and eighth weeks. All groups declined significantly over weeks, and although the groups did not significantly differ, a groups-by-weeks interaction obtained significance with the SDT group showing the sharpest decline in smoking. A 21-week follow up of the enriched group showed a substantial increase in smoking.

The importance of the monitoring control is emphasized here by the success of the monitoring groups in reducing smoking. McFall (1970) has explored this variable and noted differences between covertly obtained smoking base rates and those obtained by self-report monitoring. When he asked college student smokers to record each cigarette, covert monitors reported the subjects increased their smoking rate.

One other study that may fit under the rubric of SDT was done by Gerson and Lanyon (1972). They used SDT for discomfort when not smoking, paired with covert sensitization to smoking (relaxing subjects and then reading them scenes of nausea and vomiting associated with cigarette smoking). This sensitization-desensitization group was contrasted with a group which participated in sensitization discussions of smoking. A \$20 deposit was required. At the end of the ten hours of treatment, both methods reduced smoking by more than 50% as recorded by the subjects on record sheets. However, at the end of a 13-week follow up subjects' postcard reports of smoking for the past week indicated a considerable relapse in both groups, but the sensitization-desensitization group was still smoking significantly less than base rate.

The only study encountered comparing SDT to other treatments is the previously reported Koenig and Masters (1965) work that found SDT, shock, and supportive counseling indistinguishable.

Covert Operant Control

Homme (1965), in a theoretical paper, suggested that control over smoking could be obtained through application of Premack's (1959) principle. The smoker would take a covert behavior that is incompatible with smoking, e.g., repeating to himself "Smoking causes cancer," and increasing the frequency of this covert behavior by pairing it with some high frequency act such as drinking water or coffee and thus decreasing smoking. The covert behavior which is incompatible with smoking would then occur so often as to reduce the number of occasions when smoking would be possible.

Keutzer (1968), as mentioned above, compared the use of the above procedure to the following treatments: 1) Breath holding, i.e., "Whenever you feel the need for a cigarette, hold your breath until it becomes painful." 2) A "massed practice" condition where the subject lit and smoked three cigarettes in succession, inhaling on cue, while the experimenter read a script describing the evils of smoking. This was repeated three times per session, thus the subject smoked nine cigarettes each session. 3) A drug placebo control condition. All groups were seen once-a-week for three weeks of treatment. All of these groups were better than a no-treatment control group, but none of these treatments was significantly better than any other treatment. This study had many good features in that all treatment groups were seen for the same amount of time, a \$20 deposit was required to curtail excess attrition, and there was a large number of subjects ($N = 146$). However, the short length of treatment is a crucial flaw in the massed-practice group. Smoking 27 cigarettes under these conditions over a period of three weeks can hardly be considered "massed practice."

Gardner (1971) compared groups with which confrontation and suppression covariant strategies were tested. These groups were compared to appropriate pseudo-conditioning controls. The confrontation group received weekly sessions in which they listened to their hearts and lungs on a stethoscope while smoking three cigarettes. This group was then told: 1) to imagine what they had heard in these sessions every time they had the urge to smoke and to do this every time they engaged in some high-probability smoking-related behavior, e.g., answering the phone, and 2) to engage in this sequence at least five times in succession at night. The control group for this condition

was to do everything the experimental group did except that the high-probability behavior was to be in no way connected to the urge to smoke. The suppression group was asked: 1) to imagine all of the positive things they got from smoking every time they had the urge to smoke, 2) to do this frequently every day and to follow it with some low-probability behavior, and 3) to practice this five times in succession every night. The control group for this condition was to attempt to gain insight into each urge to smoke and to drive it out of their minds by any means possible.

Five of 28 subjects in the first experimental and control groups combined were not smoking at the end of four months.

Steffy, Meichenbaum, and Best (1970) rather systematically explored the variable of coverants in relation to smoking. They had four conditions: 1) overt verbalization-action (OVA), 2) covert verbalization-action (CVA), 3) overt verbalization-no action (OVNA), and 4) an insight-control group (IC).

Covert verbalization-action (CVA) entailed the subject imagining a situation in which smoking was probable while actually smoking. He would be shocked at any time during this sequence if he did not either refuse to smoke or quickly put the cigarette out.

Covert verbalization-no action (OVNA) entailed the same procedure as overt verbalization-action without the cigarette.

The insight-control (IC) group searched out internal causes of smoking as a control for the advice given the subjects in the other groups.

Each of the groups was divided into two subgroups of six. These subgroups received their treatment in a group fashion. The

experimental groups were seen twice-a-week for four weeks. The IC group was seen once-a-week for four weeks. The reason for the control group being seen for half as much time as the treatment group was that the authors thought of the IC group as a control only for the advice given in the treatment groups, and not for the amount of time spent with the subjects.

The treatments differed significantly. All groups showed an improvement over time, but the CVA (covert verbalization-action) group was superior and increased its superiority in the second- and sixth-month follow ups. At six months after treatment this group was smoking at 40% of its operant rate.

Steffy, et al., explain their unexpected results (they expected that the OVA would be superior) in terms of the idiosyncratic thoughts and fantasies of the CVA smokers being punished by shock and thus being better able to generalize outside the laboratory than the stereotyped vocalizations the OVA group were asked to utter. One might add that in this sense the CVA group was more "natural" and less "laboratory."

Sachs, Bean, and Morrow (1970) compared three groups drawn from the university community: 1) an attention-placebo condition which relied on a rather complete smoking diary, 2) self-control group whose members were told to gradually reduce their smoking from least to most difficult situations, and 3) a covert conditioning group whose members had to pair a highly desirable smoking situation with a highly aversive imagined scene. Of the 37 subjects who started with the treatment 24 completed the experiment with eight in each group. The mean base rates of each group were 15.875, 15.875 and 15.375 cigar-

ettes respectively. On a one-month follow up after the three-week treatment the two treatment groups differed significantly from the attention-placebo controls who had bounced back to within 88% of base-rate. In the covert-conditioning group the effect was due mainly to those who had successfully quit, the self-control group was apparently more successful in reducing their smoking while not quitting.

Sipich, Russell and Tobias (1974) divided 49 subjects into five groups comparing the effects of nonspecific treatments with covert sensitization. The groups were: a no-contact control who provided estimates of their smoking rates two times, a monitoring control whose members were told to continue monitoring while waiting for a "delayed" treatment, an attention-placebo group whose members were told that they were receiving subliminal messages on the tachistoscope, a self-control suggestion group and the covert sensitization group. The three treatment groups: covert sensitization, attention-placebo and self-control, were indistinguishable during and after treatment. However, all three seemed from inspection of the graph to be smoking at about 50% their base rate at the last (six-month) follow up. The three treatment groups were significantly lower on follow up than the two control groups. The three treatment groups were followed up on a weekly basis for the first ten weeks after treatment and at the six-month point.

Assorted Studies

Placebo Base Rate

Lichtenstein, Paussaint, Bergman, Journey and Shapiro (1967) administered placebos to 63 patients and noted that 22% of those completing four to six weeks of treatment had stopped or significantly

decreased smoking at the end of six months. This result is also supported by Hunt, Barnett, and Branch (1971) who reviewed the evidence pertaining to relapse rates in not only cigarette, but alcohol and heroin treatment programs too. They found practically identical relapse curves for all three addictions, curves which leveled off at between 25% and 20% abstinence at the end of six months to a year. Their curves were plotted on the basis of 100% abstinence at the end of treatment.

Locking Cigarette Case

Azrin and Powell (1968) devised a cigarette case which would lock shut for a preset period after the extraction of a cigarette. For as long as the timer was in operation the device reduced smoking, but as soon as the timer was no longer set, allowing unrestricted access to the cigarettes, smoking rates leaped to previous levels.¹

Therapist Style

Weir, Dubitzky and Schwartz (1969) in a study of three counselors used in the Schwartz and Dubitzky (1967) study reported below found that the most directive therapist had the greatest immediate success. However, at a four-month follow up all counselors' groups had the same, approximately 20%, abstinence rate.

Cases and Combined Treatments

Nolan (1968) reports he eliminated smoking in his wife by first restricting her smoking to a particular chair that faced away from both

¹ It may be of interest to note that the Russian leader Leonid Brezhnev is reported to carry a similar locking case and that he also carries an extra "cheater" pack in another pocket.

the other chairs in the living room and the TV set. He then moved the chair to the basement. Each of these moves was followed by a reduction of smoking, but failed to stop her smoking entirely. The desired result did not come about until she complained about her inability to stop one day and suddenly quit the next.

Roberts (1969) in essence replicated Nolan's work on himself by restricting his smoking to the bathroom, then adding the restrictions of not reading or talking while smoking. These measures were followed by reductions in smoking, but he did not quit until forced to bed with an illness.

Tooley and Pratt (1967) report extinguishing smoking in a married couple by using two methods. First they used covert sensitization, that is, the subject was to pair a high probability behavior, for example, drinking coffee, with low probability behavior such as repeating, "Smoking causes cancer." Covert sensitization was followed by reduction in smoking rate, but the smoking stabilized at the lower level and was not extinguished. The second procedure was then introduced, the subjects being asked to sign contracts to eliminate smoking. This final measure was followed by a cessation of smoking for both subjects. No follow up reports were given.

Elliott and Tighe (1968) used a number of treatments to get 20 Dartmouth undergraduates and five older university employees to quit smoking. They were: 1) All subjects posted a \$65 cash bond to be returnable in installments. 2) Signed a legalistic pledge to quit. 3) Agreed to have their names published in the campus paper as ex-smokers. And 4) read the self-written obituary of a Hawaiian reporter who died from lung cancer. The treatment lasted for three to

four weeks and all but four of the 25 were abstinent at that time. On a three- to 17-month follow up, only 37½% were non-smokers.

Schwartz and Dubitzky (1967) administered a questionnaire to one-seventh of a population of 8,284 Kaiser Health Plan participants. With an aggressive follow up, they received replies from 80% of their sample and were able to select 288 subjects from a pool of 396 who had been given physical examinations. The large number of subjects made possible a sophisticated factorial design controlled for social class and comparing the effects of individual counseling combined with those of tranquilizers or placebos; to subjects receiving group counseling combined with either tranquilizers, placebos, or no drug; to groups receiving just tranquilizers, placebos, or no drug; to groups receiving just tranquilizers or just placebos. It is difficult to determine if the results presented are at the end of treatment or at the four-month follow up, but treatment success, defined as an 85% to 100% reduction in smoking, was ordered as follows: individual counseling > group > drugs alone, and placebo > tranquilizers > no pills. The high group, with a success rate of 50% was, of course, the individual-counseling-placebo group, and the low group was the drugs-alone-tranquilizer group with a success rate of 16.7%. The average treatment yielded a success rate of 32.9%.

Chapman, Smith and Layden (1971) treated cigarette smoking with a variety of methods including shock, information, recording, social reinforcement, covert rehearsal, role playing, outside observers and other measures specifically tailored to the individual. In addition, a \$100 deposit was used to reduce attrition. In the first study they report, all but one of the 12 non-college subjects completely stopped

smoking at the end of the five treatment sessions. However, at the first follow up one month later only 33% were nonsmokers and at the three-, six- and 12-month follow ups only 25% were abstinent. Their second study was similar in format to the first except that the subjects were asked to record daily cigarette intake for 12 weeks instead of three weeks as in study I, the outside observers were asked to make the same daily count for the same 12 weeks, treatment was extended to 10 sessions if abstinence did not come before that and subjects were expected to return for booster sessions if they relapsed during the first week after treatment. One of the 11 subjects was not abstinent at the end of treatment and the follow ups of one, three, six and 12 months showed respectively one, two, five and five of the 11 subjects to be smoking at these follow up points. Although the results of at least the second study are impressive, it is impossible to dissect out of the many methods used which methods or combinations were effective.

A summary chart of the more important studies that have been reviewed follows:

<u>Author</u>	<u>N¹</u>	<u>Follow Up</u>	<u>% Abstinance</u>	<u>% Base Rate</u>	<u>Subject Source Obtained Via</u>
Aversion					
Carlin & Armstrong (1968)	30	none		50-60	Mass media
Whitman (1972)	158	6 mo		70-83	Mass media
Koenig & Masters (1965)	42	6 mo		75-84	Students
Whitman (1969)	73	3 mo		67-80	Mass media
Ober (1968)	60	1 mo		20-25 ¹	Students
Berecz (1972)	111	6 wk		46-92 ³	Students

¹ Where follow ups were done, this number reflects only those subjects who could be reached for the follow up.

² Estimated from a graph.

³ Significant difference between groups.

⁴ Subjects were from previous research projects.

<u>Author</u>	<u>N¹</u>	<u>Follow Up</u>	<u>% Abstin- ence</u>	<u>% Base Rate</u>	<u>Subject Source Obtained Via</u>
Grimaldi & Lichtenstein (1969)	29	1 mo		50-66 ²	4
Resnick (1968b)	60	4 mo	20-63 ³		Students
Schmahl, et al. (1972)	25	6 mo	57		Students
Marsten & McFall (1971)	63	6 mo		64-78 ²	Students
Information					
Lawton (1967)	9	15 mo	11-20		Mass media
Hypnosis					
Moses (1964)	50	4-17 mo	26		Patients
Von Dedenroth (1964a)	50	4-13 mo	96		Patients
Graff, et al. (1966)	24	3 mo	0-88		Mass media
SDT					
Pyke, et al. (1966)	15	19 wk		83	Students
Gerson & Lanyon (1972)	21	13 wk		65-85 ²	Students
Covert Operant Control					
Keutzer (1968)	146	none	3-33		Mass media
Gardner (1971)	28	4 mo	18		Mass media
Steffy, et al. (1970)	48	6 mo		40-100 ^{2,3}	Students
Sachs, et al. (1970)	24	1 mo		43-88 ³	Students & Mass media

¹ Where follow ups were done, this number reflects only those subjects who could be reached for the follow up.

² Estimated from a graph.

³ Significant difference between groups.

⁴ Subjects were from previous research projects.

ANALYSIS OF THE SMOKING TREATMENT LITERATURE

From the review that has preceded several points become evident. First and most obvious is that very few of the treatments worked better than the 25% abstinence base rate after six months (Hunt, Barnett & Branch, 1971). In fact, very few of the studies even reported their results in the percent abstinent format. It is Lichtenstein's (1971) opinion based on "anecdotal and empirical evidence" (e.g., Azrin & Powell, 1968; Lichtenstein & Kautzer, 1971) that smokers who do not quit but simply reduce their smoking are very likely to return to their pre-treatment smoking rate. Among the few studies that may have exceeded this abstinence base rate are Resnick's (1968b) and Von Dedenroth's (1964a & b). Resnick found 63% of his subjects claimed abstinence when called four months after treatment and Von Dedenroth (1964a) claimed 96.5% of his patients were abstinent at follow ups of from four to 13 months.

Resnick's results are not clear because he made no effort to ascertain if his subjects actually did follow his instructions. When Marston and McFall (1971) performed a modified replication of his work, they found that most of their subjects did not follow the regimen. However, neither did they get Resnick's high abstinence rate and the question still remains as to whether the treatment works when it is followed. It will be remembered that when Schmah, et al., (1972) combined hot, smoky air with rapid smoking and prohibition of smoking outside the laboratory, they got a 57% abstinence rate at a six-months' phone follow up. Inasmuch as the group that got hot, smoky air and rapid smoking

did not differ from a group that got mentholated air and rapid smoking, it would seem reasonable to conclude that the rapid smoking may have had some part in the success of the treatment. However, Schmahl, et al.'s, (1972) treatment requires an elaborate laboratory setting with exhaust fans and smoke blowing equipment that is not available to the average clinician. Thus, if a tighter test of Resnick's more simple procedure would show that his method, when followed, could yield comparable success to Schmahl, et al., (1972) it would be a boon to the practicing clinician.

Von Dedenroth's (1964a & b) work is also in need of a tighter experimental test. His work was essentially a compilation of case studies, with very little data being given about possible attrition rates, specific follow up periods, follow up procedures, or the nature of the populations with which he dealt. For example, were his subjects suffering from serious medical conditions that could have been caused or exacerbated by smoking? Given these methodological shortcomings and the suspiciously high abstinence rate of 96.5%, Von Dedenroth's work would seem in need of replication and explication.

Two other reasons for the consideration of Von Dedenroth's work are that: 1) his treatment occurs in the smoker's natural smoking setting and, 2) can be integrated, at least temporarily, into the smoker's life. Other writers (Hunt, 1973; Hunt & Matarazzo, 1973; Mausner, 1971, 1973) have felt that the lack of these two related factors has been a cause of failure in previous smoking treatments. It should be noted that Resnick's work also meets these two criteria.

The Resnick and Von Dedenroth procedures occur beyond the walls of the laboratory in the subject's normal environment. The only part

of either's procedure carried out in the consulting room, aside from instructions, is the hypnosis in Von Dedenroth's work, and it is such a small part of the treatment as to raise questions of its necessity.

Both treatments are also able to be integrated into the smoker's life. In neither case is there a piece of cumbersome apparatus to be carried about and in neither case is there a great expenditure of time that might prove disruptive to the subject's daily routine.

Another feature of Von Dedenroth's treatment is that it fills the smoker's life with things to do instead of smoking and thus must surely enhance feelings of self-control.

There is, however, a further reason for examining these two works that springs from more abstract and less pragmatic considerations. By appealing to clinical lore and observation, it could be noted that, for the mature smoker at least, smoking behavior seems to be cued by a large number of stimuli and that these stimuli are often idiosyncratic in nature. Thus, it would seem reasonable to assume that any treatment which is capable of breaking up a large number of the bonds between these stimuli and the smoking response would be a candidate for a successful treatment. In other words, if smoking can be thought of as a response which has been conditioned to a large number of triggering events in the smoker's life, then any treatment which is capable of disrupting these bonds should be successful.

Inherent in this statement is a theory of how smoking is learned. It is felt that the smoker may be impelled to smoke as a young person for relatively few reasons. For example, he may start smoking to look more mature, to "be one of the gang," or to "have something to do with my hands at parties." However, with repeated practice

smoking may become associated with a large number of cuing situations and may serve many functions for the smoker. For example, some smokers report always lighting up when someone whom they expect to be disagreeable walks into the room; others never smoke when reading, driving or engaging in other specific activities; other smokers may be very conscious of time factors in their smoking and thus always smoke immediately on rising, when they take their 10 o'clock coffee break or just before retiring. Thus, there are many things that may trigger smoking, these cues may vary from smoker to smoker and may be of a very idiosyncratic nature depending upon the learning history of the individual.

The effective smoking treatment then should be one which operates in the smoker's natural smoking environment where these cues exist, and one which is somehow broadly disruptive of a great number of stimuli for smoking.

It appears that both Resnick's and Von Dedenroth's methods apparently meet these criteria. If the smoker follows Resnick's plan and doubles his smoking rate, his actions could be viewed as forcing him to either find twice as many events which would normally trigger his smoking or he must start smoking simply to meet his quota for the day. With this, the new habit of smoking to meet a quota would be established and the individual may be smoking whether or not those events which previously cued his smoking are in the environment or not. Smoking would, thus, be conditioned to everything and discrimination would break down. Also, with this treatment it could be seen that in time the very act of smoking might become obnoxious as the smoker gets twice as much stimulation of his throat, lungs, and nervous system as he previously found pleasant. Thus, as the treatment week wears on it could be said that

not only will the events which previously cued smoking be disrupted, but the response itself will be punished.

Likewise with Von Dedenroth's treatment the smoker's life for the time of the treatment is filled with other things to do instead of smoking. The smoker is busy repeatedly brushing his teeth in the mornings, ignoring cues to smoke at specified times of the day, engaging in the incompatible behavior of listing reasons why he should not smoke, etc.

Hypothesis

Given the above considerations, this study sought to explore the disruption variable in these two treatments. It is specifically hypothesized that subjects who are given instructions to disrupt their smoking maximally will show higher abstinence rates and smaller percent of baseline smoking rates than groups which are given instructions intended to minimize the disruption of their smoking.

METHODS

The Search for Subjects

The search started on March 6, 1974 with a 28-column-inch story (with a photograph of the smiling "smoking researcher") on page five of the Wichita Eagle (see Appendix I) opposite the editorial page. The story evidently caught the fancy of an editor at the Eagle as Robert Heaton, one of top feature writers of the Wichita Eagle and Beacon newspapers, was assigned by his editor to participate in the study and write about it. There followed from this assignment a series of usually accurate and often amusing stories over the course of the experiment, including two front page stories. The total newspaper coverage by Wichita's two daily papers was in excess of 130 column inches (see Appendix I).

The radio and television media of Wichita were also generous in giving publicity to the project. On the afternoon of March 8, the investigator was interviewed on the KAKE-TV noon news program; on the morning of March 13, excerpts from an interview the night before were aired on the KWBB radio morning newscasts; and spot public service announcements were arranged for and, hopefully, aired on five radio stations. The experimenter went through the requisite procedures for having a public service announcement aired on the aforementioned five radio stations, but he cannot verify that the spots were indeed aired.

These measures failed to yield the hoped-for 80 subjects at the first organizational meeting, therefore, the start of the program was postponed for a week in the hopes that continuing publicity would flush out more subjects. However, when the necessary preliminaries

were completed, only 27 people were ready to start the treatment phase of the program. Twenty-six of these 27 persons actually completed the treatments. Although disappointing, such a small return for a large effort is not uncommon in smoking treatment research (Mausner, 1966; Gutmann & Marston, 1967).

Because 26 subjects were far fewer than hoped for, another smoking clinic was offered after the completion of the first through the good offices of a Wichita Methodist minister who was a subject in the first run of the experiment. He assured the experimenter that many of his parishioners had expressed a desire to quit smoking and that a story in his church newsletter plus the continuing publicity in the Wichita daily papers would yield many additional subjects. Four new subjects were obtained by this means. Six attended the initial meeting, one never was seen or heard from since, and another tapered off and quit in the baseline period. The remaining four were divided in half and assigned to two of the treatment groups. The treatment given these later subjects differed from the earlier subjects only in that there was no waiting period between the end of the baseline period and the start of the treatment period.

Pre-treatment Procedures

Heavy cigarette smokers (smoking greater than 20 cigarettes per day) were solicited as subjects, but when the shortage of subjects became acute, four persons whose base rate was less than the requisite one pack per day were allowed to remain in the study.

When prospective subjects initially contacted the experimenter, they were informed who the experimenter was and why this research was

being conducted, of the time and place of the orientation meeting, and that they should bring a \$40 deposit. They were also told the deposit would be returned in stages upon successful completion of each phase of the program. It was explained that this measure was designed to reduce attrition. In the first and second orientation meetings the basic outline of the research was explained and the following points were covered:

1. Personal data cards were passed out and the prospective subjects were asked to complete them (see Appendix II). These cards contained questions about the prospective subjects' smoking histories and health. The health items consisted of a list of diseases which physicians at the Wichita Veteran's Administration thought could be exacerbated by double smoking. The persons at this initial meeting were asked to check those diseases from which they suffered. Those persons who were so afflicted were asked to obtain a physician's waiver before participation in the program. As any person could be assigned to the doubling condition, those who had one of the above ills and could not obtain a medic's waiver were excused from the program.

2. All prospective subjects were asked to collect smoking base rate data for one week prior to the start of treatment and were told they would be asked to return questionnaires and three-day diaries of smoking at three and six months after the end of treatment. Smoking diaries were passed out on which the subjects were asked to record the time and situation of each cigarette as they smoked it during the base rate and treatment phases of the experiment. The diaries were sized to fit into an ordinary cigarette pack (approximately two by three and one-half inches) and the subjects were asked to carry the diaries slid

under the cellophane of their cigarette packs. They were cautioned to record all cigarettes, even borrowed cigarettes, on the smoking diaries as the data thus obtained would be used in formulating an individualized plan for each person.

3. All subjects were asked to sign a sheet indicating they had read a description of the treatment and its attendant risks, and to certify that they were volunteers (Appendix III).

4. Questions were entertained and answered.

5. The deposit of \$40 was collected. This deposit consisted of three checks of \$20, \$10 and \$10 made out to the American Cancer Society. The deposit was refunded in installments of: 1) \$20 for completion of the treatment, and 2) \$10 each for sending in the three- and six-month follow up materials. The prospective subjects were told the deposits would be returned independently. Thus, a subject who failed to complete an earlier part of the program could still receive money back for completion of later parts of the program. If the subject did not complete one or another of the experimental tasks, the forfeited part of his deposit was contributed to the American Cancer Society.

6. The subjects were asked to return one week later with their completed smoking diaries.

7. The group was then roughly divided into four parts by dealing the personal data cards into four piles. The piles of cards were assigned one to each of the four treatment groups.

At the last pre-treatment meeting the subjects turned in their diaries which were quickly scanned to see how accurately the subjects had complied with the instructions. When this task was completed, the subjects were told when to report for their respective treatment group

meetings.

Treatment Procedures

All subjects were asked to continue keeping smoking diaries for the duration of the treatment.

Doubling-high Interference Group (D-H1)

Each member of this group was given a sheet on which his high probability smoking times and situations were printed as ascertained by inspection of his diary. The subject was then told to at least double his smoking during these times and to make certain that at the end of each day he had smoked at least twice as much as his base rate. Each subject had his base rate per day and new daily quota of double the base rate printed on his sheet. The subject was further instructed that should any other situations arise which he knew to trigger his smoking, he was to at least double during these as well. The subjects were given new smoking diaries and were told to keep them for the duration of the treatment week. The experimenter also delved briefly into the dangers of smoking and gave a short explanation of the value the procedure had demonstrated in the past.

Because of the difficulties involved in getting people to actually double their smoking rate (Marston & McFall, 1971), a great deal of stress was laid on the subjects truly doubling their smoking during the treatment week. The subjects were also asked to supply the name and phone number of some person who might reasonably be expected to have knowledge of their smoking rate. They were told the experimenter might attempt to contact this person at least once during the treatment to get an independent qualitative check on their smoking rate.

This was an empty threat as no such individual was ever contacted.

The group was told to meet for one hour or less each week day during the treatment week for support and encouragement. During these sessions each subject's smoking rate for the previous day was reviewed with laggards exhorted and successful subjects praised.

The subjects were reminded that the return of the \$20 portion of their deposit depended on their keeping their diaries up-to-date and turning these diaries in at the end of the treatment week. They were also reminded that the content of what they turned in would in no way influence the return of their deposit. They were told the experimenter was interested in accurate data and that he had no interest in fooling himself into believing that a smoking treatment worked when it did not.

Doubling-low Interference Group (D-Lo)

This group was treated in exactly the same way as the D-Hi group except their sheets instructed them to increase their smoking during periods in which they would normally not smoke, the intent being to minimize the amount of disruption of their already existing smoking habits. This proved to be a very difficult task, as it was easier to discern commissions than omissions. All other instructions and meetings were the same as for the D-Hi group.

Von Dedenroth-high Interference Group (V-Hi)

The subjects in this group had their base rate records analyzed in the same manner as was done for the D-Hi subjects. That is, high smoking periods were identified. When the group met again after this analysis was done, each subject was given a sheet of paper on which his five highest rate smoking periods were indicated.

The subjects were told three weeks from the first treatment day was "Q-day" or quitting day. They were asked to change their brand of cigarettes and to keep a notebook of reasons why they should not smoke. The subjects were asked not to smoke for one-half hour during the periods listed on their sheets and were given alternative behaviors to perform during those times. The particular form of the alternative behaviors differed depending on the time of day and the subjects' routine.

Alternative behaviors included having the subject:

1. Have a glass of water or juice to drink immediately on rising, gargle and brush his teeth while noticing the fresh clean taste in his mouth.

2. Gargle and brush his teeth after breakfast, lunch, and dinner if possible. If the urge persisted after breakfast, then he was to go to work without cigarettes or find some other activity to occupy the time.

3. Leave his cigarettes behind him, seek the company of some nonsmoking friend or colleague, and then work or talk with him.

4. Ask a nonsmoking friend to "watch my cigarettes for a while" and leave them with the friend for the duration of the period.

5. Leave the cigarettes in one part of the house and work in another.

6. Savor a cup of coffee or other beverage that the subject normally does not associate with smoking.

7. Drive home from work without cigarettes. If the subject does not drive home or drives with other smokers from whom he may be tempted to borrow a cigarette, he should recount for his passengers

or fellow commuters the most pleasant event that happened to him that day.

8. Chew gum or flavored toothpicks.

9. Make entries in a notebook of reasons why he should not smoke. This list was tailored to the individual circumstances of the subject, thus if one person's work schedule did not permit one of the alternative behaviors, new ones were suggested or behaviors normally suggested for other time periods were used. As all subjects were asked to keep a notebook of reasons why they should not smoke, making entries in the notebook served as a general backup behavior in all of the time periods of the day.

At the second session one week later, the smoker was requested to increase the length of abstinence in the previously identified periods to one hour. The subjects were again asked to change their brand of cigarettes, this time to a less desirable brand. The remainder of the session was taken up with group discussion and encouragement.

At the third session the subjects were asked to curtail or stop drinking alcoholic beverages as Von Dedenroth (1964a) felt smoking and drinking were often paired. It was also suggested that although the first puff of a cigarette would taste good, the later puffs would become progressively more annoying. These suggestions were repeated and reinforced during the discussion. On the last treatment day, "Q-day", it was stressed and restressed that the subjects had started some good habits, replaced some bad habits, and had begun to notice that for the past several weeks cigarettes had become more and more unpleasant.

Von Dedenroth-low Interference Group (V-Lo)

This group was treated the same as the V-H1 group except that its base rate records were combed for times during which the smoker did not habitually smoke. As with the D-Lo group, it proved difficult to find patterns of when a person did not smoke.

Follow Up Procedures

At three months and six months after the completion of treatment each subject was sent a mailing containing: smoking diaries sufficient for three days recording, a questionnaire, a letter of introduction asking him to record each cigarette for the next three days and to fill out the questionnaire, and a stamped return-mail envelope with which to return these materials to the experimenter. It was noted that accurate completion of this task was necessary for the return of the remainder of the deposit money.

The letters sent may be seen in Appendicies IV and V, and the questionnaires in Appendicies VI and VII, each for Follow Ups 1 and 2 respectively.

At Follow Up 1 those who did not respond in a reasonable amount of time were phoned and reminded. On Follow Up 2 another mailing containing a new letter (see Appendix VIII) and another copy of the Follow Up 2 questionnaire was sent to laggards. When these measures failed, the individual was called until a response was obtained.

RESULTS

Personal Data Cards

There were eleven potential subjects who returned their personal data cards (see Appendix II), but who did not continue with the experiment. An analysis of the responses of these eleven people versus the thirty who completed the treatment phase of the experiment should provide some indication of any differences between the treatment sample of smokers and those smokers who show some interest in a program such as this but who do not continue to the treatment phase. These differences might also provide some general outlines of the differences between the treatment sample and smokers in general.

A comparison of the two groups may be seen in Table I. The two data which are amenable to statistical analysis (age at onset of smoking and longest time off cigarettes) show significant differences on two tailed t tests. The subjects reported starting smoking later and being able to quit for longer periods of time than non-subjects. The data not amenable to statistical analysis were number of times which the person quit smoking in the past, estimated smoking rate, and mean number of diseases.

The difficulty in the analysis of the number-of-times-quit item was that a large number of subjects gave indefinite answers such as "none - sort of", "too many times to count", "25 or 30 times", etc. Of those who gave numerical answers of any sort, means were computed and used. Those people who gave figures which indicated a range were assigned the mean value of that range for computational purposes.

TABLE I
AN ANALYSIS OF SUBJECT'S AND NON-SUBJECT'S
PERSONAL DATA CARDS

		Non- Subjects	Subjects
Age at onset of smoking	$\bar{x}$	15.54	17.26 ¹
	s	3.01	1.91
Number of times quit	$\bar{x}$	3.94	1.69 ²
	Too many times to count	3 (27%)	4 (14%)
	none	3 (27%)	8 (28%)
Longest time off cigarettes (weeks)	$\bar{x}$	7.02 ⁴	21.63 ^{3,2}
	s	13.79	31.71
Estimated smoking rate per day		36.00	32.80
Mean number of diseases		1	.17

¹ p < .05

² n = 29

³ p < .01

⁴ n = 10

The estimated-smoking-rate item presented similar problems. Many people gave indefinite responses such as "about $1\frac{1}{2}$ packs" or "1 to 2 packs." Again, those people who gave ranges were assigned the mean value of the range. A comparison of the estimated smoking rates with the tallied base rates for those subjects on whom base rate data are available shows that there was a consistent tendency to overestimate smoking rates. The subjects' base rate was 27.9 as opposed to their mean estimate of 32.8. The two non-subjects on whom base rate data are available both overestimated their smoking rate by seven cigarettes each. In fact, of the total 32 persons on whom base rates were available, only two underestimated their smoking rate.

The data on number of diseases was not analyzed statistically because this variable was the reason why some of the non-subjects did not participate in the study and was thus a selection variable. Also, the absolute numbers involved were very small for both groups.

Analysis of Variance of the Base Rates

A visual inspection of Table II indicates that the V-Lo group had an apparently higher base rate than the other groups. To see if this apparent difference reached statistical significance an unequal-N's analysis of variance (Winer, 1962, p. 96) for single factor data was performed. The results of that analysis appear in Table III, showing the F statistic to be much smaller than needed for significance.

The base rates were also examined to determine if the first three days of recording were different from the last three days. This information was used in deciding if a three-day or one-week recording period should be used on follow up. A longer recording period might be

TABLE II
MEANS AND STANDARD DEVIATIONS OF ALL TREATMENT
GROUPS AT BASE RATE AND FOLLOW UP

Groups	n	Base rate		Follow Up 1		Follow Up 2	
		$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
D-Hi	7	26.96	9.78	20.33	15.45	23.09	15.41
D-Lo	8	25.45	6.99	18.59	16.95	19.50	16.88
V-Hi	6	25.45	8.15	12.05	7.45	15.93	5.88
V-Lo	9	33.52	10.98	12.73	13.83	15.51	13.40

TABLE III
SUMMARY TABLE OF ANALYSIS
OF VARIANCE OF BASE RATES

Source	SS	df	MS	F
Treatments	246.17	3	82.06	.92
Error	2299.59	26	88.45	
TOTALS	2545.76	29		

indicated if, for example, there were any short-term effects on smoking rate which spring from the recording per se. There was no statistically significant difference ($z = .75$), and the planned three-day diary-keeping time was instituted.

Treatment Smoking Rates

Figure 1 shows the treatment smoking rates of all groups. The figure indicates that the subjects who were asked to double their smoking did, according to their smoking diaries, double; and the subjects who were asked to taper off by the Von Dedenroth method did, again according to their diaries, taper in a predictable fashion. The data for the Von Dedenroth groups, in fact, show drops from the base rate to the start of treatment and at the beginning of the second week of treatment at precisely the times when the subjects were given instructions to curtail their smoking during two and one-half and then five hours of the day. The data representing each treatment day are based on varying numbers of subjects because of inconsistencies in the reporting of the data. One subject in the V-Hi group, in fact, lost the data for the last two treatment weeks. However, most of the data represent numbers of subjects either at full strength or one less than full strength.

Analysis of Variance of Final Data

Figure 2 shows the final data graphed as a mean cigarettes-per-treatment. Figure 3 shows the same data graphed in a group-percent-of-base-rate format. Both figures compare base rates versus follow up periods 1 (three to five months after treatment) and 2 (six to eight months after treatment). Table IV gives the analysis of

FIGURE 1. Mean Number of Cigarettes Smoked per Subject per Day for each Treatment Group During Treatment Compared to Base Rates and Quotas.

FIGURE 2. Mean Number of Cigarettes Smoked per Day at Base Rate and Follow Ups for each Treatment Group.

FIGURE 3. Group Percent Base Rate Smoking at Follow Up.

TABLE IV

SUMMARY TABLE OF A 4 BY 3 UNEQUAL N'S ANALYSIS OF VARIANCE
WITH REPEATED MEASURES ON MEAN NUMBER OF CIGARETTES
SMOKED PER DAY AT BASE RATE AND FOLLOW UPS

Source	SS	df	MS	F
Between Subjects				
Treatments	358.76	3	119.59	.32
Subjects within groups	9757.33	26	375.28	
Within Subjects				
Time	2194.31	2	1097.16	73.73 ¹
Time by treatment	531.43	6	88.57	5.95 ¹
Time by subjects with treatment	3452.02	<u>52</u>	14.88	
		89		

¹ p < .01

variance summary of an unequal-N's 4 by 3 analysis of variance with repeated measures over one factor (Winer, 1962, p. 374). The analysis of variance indicates the main effect for time and the interaction of time and treatments achieved statistical significance at the .01 level, while the main effect for treatments failed to achieve statistical significance. The analysis thus implies that all treatments yielded a diminution of smoking over time, but that some treatments yielded a greater drop in smoking than others.

Analysis by Post Hoc Tests

Because of their equalizing effect on whatever differences occur at base rate, percent-base-rate data have many advantages for post hoc analysis. This remains true despite the analysis of variance of the base rates which showed no significant difference between the base rates. In many senses, a clearer picture of the data are obtained whenever the differences, however small, are nulled out at the onset. However, when one divides the group totals or means at follow up by the totals or means at base rate, one has no method of obtaining standard deviations and thus cannot perform the usual statistical analyses. Therefore, analyses of post hoc data will be on the untransformed data and on a percent-base-rate measure which will be explained below.

Unequal-N's t tests were performed on the untransformed means of the following groups at the first follow up point: V-Hi versus D-Lo, V-Lo versus D-Lo, and V-Lo versus D-Hi. The results ($t = 3.36$, $df = 12$; $t = 3.08$, $df = 15$; $t = 3.68$, $df = 14$ respectively) indicate both doubling groups differed significantly from both Von Dedenroth groups at the $p < .01$ level (two tailed). No analyses were performed

comparing the means of the two Von Dedenroth groups or the two doubling groups because the apparent differences were so small. Four comparisons (V-Hi versus D-Lo, V-Hi versus D-Hi, V-Lo versus D-Hi, and D-Hi versus D-Lo) were made of the Follow Up 2 data using an unequal-N's t test as before. Only one of these, the V-Hi versus D-Hi comparison of group means, yielded statistically significant results ($t = 3.57$, $df = 11$, $p < .01$, two tailed). Although the mean value for the V-Lo group was slightly lower than the V-Hi group, the V-Lo versus D-Hi comparison failed to achieve significance because of the larger standard deviation of the V-Lo than V-Hi group.

The percent-base-rate comparisons are more difficult. One can arrive at percent-base-rate data by means other than those outlined above. One can compare each individual subject's base rate with his follow up rate and thus take means, standard deviations and, ultimately, t 's on these data. However, as a comparison of Figure 3 and 4 will confirm, the means thus obtained are not equal to those calculated by totaling each group's base rates and dividing by the total of the group under question at the appropriate follow up. This is perhaps more readily seen in mathematical form:

$$\text{Group percent base rate} = \frac{\frac{\sum_{i=1}^{n_j} \bar{X}_{1k}}{n_j}}{\frac{\sum_{i=1}^{n_j} \bar{X}_{1BR}}{n_j}}$$

FIGURE 4. Mean Individual Percent Base Rate Smoking at Follow Ups.

and individual percent base rate =
$$\frac{\sum_{i=1}^{n_j} \left(\frac{\bar{X}_{ik}}{\bar{X}_{iBR}} \right)}{n_j}$$

Where: $\bar{X}_{ik}$ = Mean number of cigarettes smoked per day by subject i in follow up k ,

n_j = Number of subjects in group j ,

$\bar{X}_{iBR}$ = Mean number of cigarettes smoked per day at base rate by subject i .

It is intuitively obvious that:

$$\frac{\frac{\sum_{i=1}^{n_j} \bar{X}_{ik}}{n_j}}{\frac{\sum_{i=1}^{n_j} \bar{X}_{iBR}}{n_j}} \neq \frac{\sum_{i=1}^{n_j} \left(\frac{\bar{X}_{ik}}{\bar{X}_{iBR}} \right)}{n_j}$$

(Hayes, 1963, p. 664)

The data thus transformed have another peculiarity: the absolute levels of the base rates are ignored. For example, a subject who drops from 20 to ten cigarettes per day is seen as equivalent to one who drops from 50 to 25 cigarettes per day. Both have percent base rates of 50%. Nevertheless, this individual transformation does give some insight as to group scores with all initial variation nulled out.

An unequal-N's t test of the first follow up showed the V-Lo versus D-Hi comparison approached a statistically significant level ($t = 1.89$, $df = 14$, $.05 < p < .10$, two tailed). The most extreme

means (V-Lo versus D-Lo) did not approach significance ($t = 1.48$, $df = 15$, two tailed) apparently because of the much larger variance of the V-Lo group. A similar unequal-N's t test on the last follow up yielded a t value of 2.14 ($df = 14$), which closely approached significance on a two tailed test ($.10 > p > .05$).

Taken as a whole, the results at the last follow up (the follow up of most interest) indicate that only the most extreme values differed.

Analysis of Raw Data

The raw data (Appendix XIV) yield three noteworthy features. One is that despite the significant interaction of treatments with time noted above, when the data are examined for percent abstinence, there are no apparent differences between the Von Dedenroth groups and the doubling groups. The number of quitters at Follow Up 1 for the doubling groups was three and for the Von Dedenroth groups was four. At Follow Up 2 there were again three quitters (although one was different than before) in the doubling groups but only two in the Von Dedenroth groups. Also, examination of the raw data shows that at Follow Up 2 only one Von Dedenroth subject was smoking at more than his base rate, while seven of the 15 doubling subjects were smoking more than their base rate. The treatment by time interaction noted in the analysis of variance must, therefore, be due to the larger numbers of subjects in the Von Dedenroth groups who were able to cut down their smoking without becoming abstinent. This finding is dissonant with Lichtenstein's (1971) assertion that subjects who do not quit are very likely to return to their pre-treatment rate. One assumes here that the six- to eight-

month follow up in the present study was more than adequate for most smokers to bounce back to base rate (Hunt, et al., 1971).

Another finding of note is that the percent abstinence rate of 23% for the first follow up and 17% for the second follow up (taken across all groups) is in the general range noted in the literature search (Hunt, et al., 1971).

Questionnaire Data

The questionnaires for Follow Up 1 (see Appendix VI) and Follow Up 2 (see Appendix VII) differed only in that Question 5 contained an additional foil in Follow Up 2 allowing the subject to report that he quit smoking for more than four months. The results of Question 1 of Follow Up 1 are seen in Table V and the results of Question 1 of Follow Up 2 are seen in Table VI. Responses to Item 1--I are listed in Appendices IX and X for Follow Ups 1 and 2, respectively. In both cases the majority of responses were for the phrases indicating the subject was "smoking the same as before the project" or "quit after the program, but started smoking again and still do." Thus, for most people the program generally had temporary, if any, effect in their eyes. Only two people reported they had been totally abstinent throughout the follow up period (7%). This finding further emphasizes the effect of the procedures on the reduction of smoking as opposed to the elimination of smoking.

Question 2 of the questionnaire yielded 23% and 17% of the subjects for Follow Ups 1 and 2, respectively, who had been totally abstinent for the past week. One subject included in the above tally reported total abstinence in a telephone contact, but returned no questionnaire. These figures, with the addition of the subject whose abstinence report

TABLE V

RESPONSES TO ITEM 1 OF FOLLOW UP QUESTIONNAIRE 1:

"HOW WOULD YOU DESCRIBE YOUR SMOKING PATTERN
SINCE THE SMOKING PROJECT?"

Foil	Number
A. Quit and haven't smoked since	3
B. Had a few cigarettes (less than one pack total)	0
C. On and off smoking	3
D. Smoking less than before the project	5
E. Smoking the same as before the project	9
F. Smoking more than before the project	1
G. Smoked a little after the program, but quit and haven't smoked since	2
H. Quit after the program, but started smoking again and still do	10
I. Other pattern (please describe)	5
TOTAL	38 ¹

¹ Total is greater than the number of subjects (30) because some subjects chose more than 1 descriptive phrase.

TABLE VI
 RESPONSES TO ITEM 1 OF FOLLOW UP QUESTIONNAIRE 2:
 "HOW WOULD YOU DESCRIBE YOUR SMOKING PATTERN
 SINCE THE SMOKING PROJECT?"

Feil	Number
A. Quit and haven't smoked since	2
B. Had a few cigarettes (less than one pack total)	0
C. On and off smoking	2
D. Smoking less than before the project	8
E. Smoking the same as before the project	14
F. Smoking more than before the project	1
G. Smoked a little after the program, but quit and haven't smoked since	1
H. Quit after the program, but started smoking again and still do	9
I. Other pattern (please describe)	3
TOTAL	40 ¹

¹ Some subjects chose more than 1 descriptive phrase.

was by telephone, completely coincide with the data on abstinence obtained from the smoking diaries.

The responses to Items 3 and 4 of Follow Up 1 can be found in Appendices XI and XII respectively. The responses to Items 3 and 4 of Follow Up 2 can be found in Appendices XV and XVI respectively. In general, for Item 3 on both Follow Ups the doublers tended to praise the diaries and the group interaction almost equally to the exclusion of other points in the program. In regards to Item 4, which asked about the least useful aspects of the program, there was a general dearth of responding in the doubling groups. The predominant response was that nothing was undesirable about the program. The other responses tended to scatter over practically all other elements of the program. The Von Dedenroth groups likewise responded that on the whole there was very little wrong with the program and what they did find wrong with the program was scattered over many different areas with no area being a special favorite. Examples of these complaints among the doublers were: they did not have sufficient will-power, the deposit was of no help, the diaries were of no help, group interaction was of no help, and the follow ups were insufficient. The Von Dedenroth groups complained of such things as switching brands, their own lack of will-power, the deposits, having to write reasons why they should quit, the tapering procedure itself, and the group interaction.

Subjects' estimates of how long they had been off cigarettes since the end of the treatment (Item 5 of Follow Up 2) may be obtained from Table VII. The data show a relatively even scatter of choices over nine foils with the average subject picking the middle foil--three weeks. Only one-sixth of the subjects report they were unable to

TABLE VII

RESPONSES TO ITEM 5 OF FOLLOW UP QUESTIONNAIRE 2:

"WHAT IS THE LONGEST PERIOD YOU HAVE BEEN OFF
CIGARETTES SINCE THE END OF THE PROGRAM?"

Foil	Number
A. Continuously	2
B. More than four months	1
C. More than two months	4
D. One month	5
E. Three weeks	3 ¹
F. Two weeks	2
G. One week	3
H. Less than one week	3
I. Never quit	5
TOTAL	28 ²

¹ One subject circled both D and E. A coin flip determined which foil was credited--D foil.

² One subject left this question blank and one subject did not return a questionnaire for this follow up.

quit at all, but only seven of 30 had periods of longer than a month of total abstinence.

Appendix XVII makes available the advice given the experimenter on Follow Up 2, Item 6. Appendix XIII makes available the advice given the experimenter on Follow Up 1, Item 6. These are heterogeneous and difficult to summarize, but some patterns do stand out. Many subjects wished for booster meetings after the end of treatment. In fact, all of the groups asked for something of this nature on the last treatment day. One group (D-Lo) actually did meet as a kind of "smokers anonymous" for over a month following treatment. Other responses to this item suggested that the group spirit had been helpful. Several consoled the experimenter for their inability to quit and pointedly assumed responsibility for their failure.

Observational Results

The study resulted in many interesting observations that were not amenable to quantification. The doubling condition was an ordeal. In fact, that was a term which some of the subjects used to describe it (see Appendices I & XIII). After the first day of doubling many of the lighter smokers became nauseous. Several reported they had to lie down after dinner to avoid vomiting. One woman was not so lucky and quite literally lost her lunch one afternoon. The heavier smokers complained of headaches. In a few days these symptoms abated and a grey dullness set in. The doubling group who looked outgoing and spontaneous in the pre-treatment meetings began to look grey, drawn and lathargic. They sat silently around the table looking at their watches and lighting their one-cigarette-per-X-number-of-minutes. (Most of the doublers had

to rigidly keep to a schedule of one-cigarette-per-X-minutes to meet their quotas). They talked about their physical symptoms: headache, nausea, dizziness, insomnia, raw tongue, etc. Two male subjects spontaneously reported episodes of impotence. In the words of one of them, "This project has ruined my sex life. And it's not because I'm not trying!"

Other than the doubling groups there were few dramatic observations to be made. All of the groups, with the exception of the V-Hi group, developed a decided "group spirit". The standard bit of advice offered the experimenter was that the groups should continue into the follow up periods. One group (D-Lc), as mentioned before, continued to meet of its own accord after the treatment was over.

The group which provided the greatest amount of trouble was the V-Hi group. They were rather argumentative with one another. Some of them missed some sessions, thus necessitating individual arrangements. They were often tardy in returning their diaries. One subject, in fact, never returned the last two weeks of the treatment diaries.

DISCUSSION

There was no apparent effect for high versus low interference. Those subjects who were instructed to apply the procedures during times when they normally would smoke cut back on smoking no better than those who were asked to apply them during low smoking times. Indeed, a casual inspection of the percent-base-rate graphs (Figures 3 & 4) might lead one to the opposite conclusion.

What then of the significant time by treatment difference? Here the various ways of analyzing the data a posteriori complicate the picture. The results vary depending on whether one is using the untransformed data or the individual-percent-base-rate data. Using the untransformed mean-number-of-cigarettes-smoked-per-day data one obtains a clean separation between the doubling and Von Dedenroth groups at Follow Up 1. The individual-percent-base-rate data show only nearly significant differences of extreme groups on Follow Ups 1 and 2. By the second follow up, post hoc analysis of the untransformed data show the V-Hi group continued to differ from the D-Hi group. The transformed data again showed nearly significant differences of the extreme groups only. Given the small numbers of subjects in this study, it may be said that a differential treatment effect has been unearthed.

What then is the nature of the differential treatment effect? The high versus low interference condition was the only planned treatment difference within the doubling and Von Dedenroth groups. Other than this manipulation, the groups were treated as much alike as the experimenter could manage. However, the basis upon which this inter-

ference separation was built was very shaky from the onset, as it was extremely difficult to find times or situations during which the subjects did not smoke. If this difficulty were as great as the experimenter perceived it, and if this manipulation were the only systematic difference within the groups, then there is no possibility of a difference between high and low interference conditions of each treatment.

If, per chance, the experimenter had greater success than he suspects in finding times when the smokers habitually did not smoke, even then there would have been little effect in the doubling groups. In the doubling treatments it was such a strain for subjects to meet their quota of double smoking each day, that, for the heavier smokers in each group, it was simply not possible to concentrate on specific periods or situations at the expense of the rest. They were chain smoking from the minute they got up to the time they collapsed gasping in bed.

For the Von Dedenroth treatments it is conceivable that for the first treatment week the five one-half hour interruptions of the smokers routine could be targeted rather specifically to smoking or no smoking periods in the subject's normal pattern. With the no smoking times increased to one hour each, as was the case for the last two treatment weeks, it becomes more difficult to separate the high interference from the low interference conditions. Thus, even if the separation between high and low smoking times were successfully made, the effect such a separation would have on the Von Dedenroth groups would have to be resultant mainly from the first week's treatment. Also, not only would one have to account for an interference effect resultant from only one-third of the treatment, but one would have to account for an effect in

the direction opposite to that predicted.

For these reasons it is argued that the observed effect was a difference between the doubling and Von Dedenroth groups which is somewhat befogged by the small number of subjects.

One variable on which this study may be compared with those which came before is the variable of percent-base-rate-on-follow-up. If one refers to the preceding literature review one will note that the percent base rate herein obtained for the Von Dedenroth groups was, on the whole, equivalent or superior to, those obtained in previous studies (Koenig & Masters, 1965; Steffy, et al., 1970; and Sipich, et al., 1974). Thus, the results for the Von Dedenroth groups in this dissertation may be viewed as rather promising in light of the previous research.

As noted in the results section, it is unusual to have a treatment which resulted in a long term diminution of smoking rate. The usual finding in the literature (as reviewed by Lichtenstein, 1971) is that the percent base rate figures are heavily influenced by the number of subjects who have quit entirely. Here too this study appears to differ from those which have come before. The Von Dedenroth groups showed a sustained drop in smoking without showing any more abstinence than the doubling groups. An explanation of these results may be had from the nature of the treatment itself. To wit, the Von Dedenroth subjects were forced to examine their smoking through an extensive diary keeping procedure and were thus able to gain a considerable degree of awareness of a habit which most reported as automatic. In addition, the subjects were provided with many alternatives to smoking. Thus both Von Dedenroth groups may have gained awareness of the peculiar stimuli which triggered their own smoking and were able to substitute

at these times any number of new behaviors. As is known from the sexual deviation literature (Freeman, 1972), it is very difficult to eliminate an appetitive behavior and expect it to remain forever absent without substituting another behavior for it. Thus, one of the valuable "treatments" provided in the Von Dedenroth groups may have been the substitutions which were available to the subject.

Whatever else may be said about these results they are most assuredly a failure to replicate Resnick (1968b). One clear difference between this work and the apparently successful increased smoking studies (Resnick, 1968a & b; Schmahl, et al., 1972) is that the present sample was drawn from a non-student population. There was only one full-time student in this population and only two persons who were attending college at the time of the study. The subjects for this dissertation consisted largely of middle-aged businessmen, middle-aged wives-of-businessmen or self-employed women.

It may be that one of the phenomena observed in both the Schmahl, et al., (1972) study and Resnick's (1968b) study is that the students obtained as subjects were aware that the experimenters were professors and were in some sense currying favor with them. Resnick (1971) specifically denied that his subjects were drawn from his classes, but this does not rule out the possibility that the students thought they might take his classes some day. Surely this variable is not operative in the present study.

The method of recruitment was a good deal different in this study also. The previous increased smoking studies, drawn from student populations, were recruited from classes or through advertisements in the student newspaper. This study relied on the general readership

and viewship of the newspaper and broadcast media.

Another difference in the populations of the present study and the previous increased smoking studies was that this population, being older, had a more lengthy smoking history than the student samples. Thus, the smoking habits of the subjects in this study were more deeply ingrained than in the studies using students as subjects. It might be that the works of Resnick and Schmahl, et al., are specifically targeted to student populations with their short experience with smoking. Thus, smoking experience, or at least subject variables generally, may be very important in the doubling treatment. It may be interesting to note that of the two doubling subjects who were able to remain totally abstinent from the end of treatment one was the youngest subject and the only full-time student in the study.

These results may also be viewed as a failure to completely replicate Von Dedenroth (1964a & b). Although these results appear to be more encouraging for the Von Dedenroth treatment than for the doubling treatment, this study surely did not obtain the fabulously high success rate reported by Von Dedenroth. A large difference between the present study and its parent work, however, can be rather clearly specified. Von Dedenroth viewed his treatment as a hypnotic treatment and induced trance states in all of the instruction periods. Thus, a factor missing in these treatments that was present in Von Dedenroth's original works was the hypnosis. Clearly if one wishes completely to replicate Von Dedenroth, hypnosis would have to be used.

The gentle reader may remember that in the analysis of the literature search the author felt this difference to be small. However, as the saying implies, the difference between mountains and molehills

is one of perspective. From this vantage point hypnosis looms rather larger on the horizon of research.

Why then was the Von Dedenroth treatment apparently superior to a doubling treatment? A possible answer may be found in the subjects common observation that they found their habit to be automatic and unthinking, and that the diaries helped to make them aware of their automatic habit. The subjects in the Von Dedenroth treatment had more time to utilize the smoking diaries than the doubling treatment. In the doubling treatments the smoker was able to observe his habits undisturbed only in the one-week base rate period. In the Von Dedenroth treatments each smoker had, in addition to the base rate period, three more weeks of observation of his habit at some level of intensity. The first of these three weeks interrupted the subjects' smoking for only two and one-half hours per day and the latter two weeks interrupted the subjects' smoking for a maximum of five hours each day.

It is felt this more intense observation of the smokers habits plus the substitutions which were available may account for the possible treatment affect. To restate a point, these substitutions, as is known from the sexual conditioning literature, (Freeman, 1972) are fruitful when dealing with appetitive behaviors. Thus, if one eliminates an appetitive behavior without substituting in its place some other behavior the subject is likely to go back to the undesirable appetative behavior. The substitutions in the Von Dedenroth treatment provided the subjects with something else to do instead of smoking. In summary, the Von Dedenroth subjects were able to observe their smoking habit for a longer period of time than the doubling subjects. They were then able to insert the various substitute behaviors which were suggested to them

when patterns in their smoking behavior were observed.

What of the generality of these results? What factors in this study are there that would point to the use of these techniques with what groups? When the subjects of this study were compared with the non-subjects who responded to the publicity, went to the initial meeting, and filled out the Personal Data Cards, it will be remembered that the non-subjects tended to be the poorer risks. They had begun to smoke earlier and tried to quit more often with less success. Thus, it might be said that the population used in this study was of highly motivated volunteers who were likely candidates for success. This, however, is no particular drawback for generality, for unless one is seeking coercive treatments which can be applied to poorly motivated non-volunteers, this is the population with which the practicing clinician would be dealing.

What of the other subject variables such as the resemblance of this population to the sorts of people toward whom a smoking treatment would commonly be aimed? Here one finds a major virtue of this dissertation. This study dealt with a group of subjects who more closely resemble people-in-general than those smoking studies which rely upon that white rat of clinical psychology, the college sophomore. The businessmen, housewives, CPA's, insurance salesmen, secretaries, nurses, construction workers, dentists, and school teachers who made up the subjects of this study provided a far more diverse group in age, education and social class than college students, and may thus be more representative of people-in-general than a college population.

Future research may be pointed in two directions by this dissertation. The first direction, as mentioned before, is the explora-

tion of hypnosis in the Von Dedenroth treatment. This dissertation asserts that the Von Dedenroth treatment may have promise. If a careful test of the full treatment, including hypnosis, shows any increase in the effectiveness of this already successful treatment, then this result may lead to theoretical insights beyond its obvious practical import.

The other direction toward which this research points is a further exploration of the interference variable. For reasons explained above, this dissertation did not adequately explore the variable of interference with the smoking habit. It awaits some new vehicle or more resourceful explorer before its function in smoking can be cleared up.

APPENDIX I

NEWSPAPER PUBLICITY OF THE EXPERIMENT

Stop-Smoking Project Needs Help From 80 Smokers Who Need Help

By JANE FLOERCHINGER

Staff Writer

Need help to quit smoking? Well, you're needed too.

A research project testing methods of kicking the habit will soon get under way in Wichita — provided the researcher comes up with subjects.

Pack-a-day smokers or better are needed — 80 of them. And to assure that the would-be non-smokers are adequately motivated, each will be required to put up a \$40 deposit which will be returned in three installments as each project requirement is completed.

Take courage though. That does not mean one loses his money if he fails to join the ranks of the weed free.

But first, meet researcher Gary Salk. Salk is working on his doctorate in psychology at the University of Louisville (Ky.) His project is being conducted under the auspices of Wichita's Veterans Administration Center, where he is interning this year.

Salk explained in an interview that he will be testing two methods of helping people quit smoking — the only two that have shown any promise, he adds. Part of Salk's interest is to find out why these approaches seem to work.

His plan is to divide the participants randomly into two groups. The first will be asked to double their normal rate of smoking for one week, then quit.

Totally? "Forever and ever," he assures.

The other group will be asked to gradually change their smoking habits; at the same time decreasing consumption. For instance, he illustrated, if a person smokes as soon as he awakens in the morning, his starting assignment might be to have a glass of orange juice, savoring its taste and feel in his mouth, before he smokes.

The demands get tougher with time.

For the latter group, Salk said, meetings will be scheduled on four consecutive Thursday evenings. The first group will meet briefly each weekday night during the double smoking period. Both groups will spend about a week gathering data about their personal smoking habits.

The initial meeting will be at 6:30 p.m. March 12 in the VA Auditorium. Interested persons are asked to call the VA psychology department in advance to leave their names. All participants are required to have their physicians' okay to participate.

Salk said both approaches have met with relative success in previous research efforts.

"Other people have gotten as high as a 60 per cent success rate with the double smoking approach. The other is not quite so clear, but probably better than chance," he said, explaining that the chance rate runs only about 20 per cent.

GARY SALK
... Smoking researcher ...

One theory behind the double smoking approach is that the person makes himself sick of it. "The guy who originated double smoking went from one to five packs a day," Salk said. "At the end of a week he couldn't stand the sight of

them and quit."

But another school of thought is that almost constant smoking wipes out the cues that cause smokers to reach for a cigarette. "Suppose a guy smokes when he gets bored or at a job well done or when angry at his boss. None of these things will be a cue to smoke any longer because he will always have a cigarette in his hand."

Why the \$40 deposit? "Smokers are notorious for starting out on these programs and dropping out," he said, "so what has been done is to ask them to put down a deposit and it's worked like a charm."

The money will be held by the VA, Salk said, and mailed to participants as they complete assignments — \$20 on completion of the treatment phase, \$10 when they turn in a followup questionnaire at the end of three months and the other \$10 upon completion of a six month followup questionnaire.

Tuesday, March 12, 1974 Page 7A

THE WICHITA EAGLE

40 Volunteers Needed Now For Project

Forty more volunteers are needed for a cigaret smoking research project here, according to Gary Salk, a psychology researcher at the University of Louisville (Ky.).

Smokers who want to kick the habit will gather at 6:30 tonight in the Veterans Administration Auditorium to participate in the research program.

The project will require 80 volunteer smokers who will be asked to deposit \$40 each with the VA. The money will be returned at intervals as research continues.

The project will divide smokers into two groups. One group will double cigarette consumption then quit "cold turkey" while the other group will taper off. These are two methods which have worked best in the past, Salk said. He hopes to find out why. Smokers with smoking related diseases will be asked to have their physician's approval for the research project.

What a (Choke) Way (Choke) to Quit

Staff writer Bob Heaton is smoking more and enjoying it less as he takes part in research to help smokers kick the habit.

By BOB HEATON
Staff Writer

Once upon a time, fellows in breechcloths performed a solemn ceremony in which fumes from smoldering plant leaves were drawn into the lungs. It was grave and fraught with dignity.

Then a tourist named Raleigh dropped by the village, traded a consignment of beads for a boatload of ceremonial leaves and left to set up a pipe shop in London.

Things haven't been the same since.

Smoking has gone steadily downhill. Once Sir Walter had addicted a few Londoners to his smoldering plant leaves, the magic died away.

Smoking has been taxed, lambasted, computerized, incorporated and mechanized.

Smokers have been bombarded with ugly names, such as "air polluter," "cigarette fiend" and worse. They have been relegated to the back of the airplane, train and bus.

But things may be looking up.

"Operation Oversmoke" opened Wednesday.

It is part of a project being conducted by Gary Salk, a psychology researcher from the University of Louisville (Ky.) in cooperation with the Veterans Administration.

Salk is investigating cigarette addiction and why some techniques for kicking the habit work better than others.

He has divided about 30 volunteers into "oversmoke" and "undersmoke" groups.

Undersmokers are using a technique which involves tapering off their habits.

Oversmokers will double cigarette consumption for seven days, then quit "cold turkey."

The oversmoke technique zeros in on "cues" which trigger the light-up response. It is a therapy designed to "shotgun" away the effectivity of the cue or habit.

For example, a volunteer who lights up a cigarette when he awakens in the morning is assigned the task of chain-smoking eight cigarettes within 45 minutes after waking up in the morning. That is difficult.

One who smokes after meals is assigned the task of chain-smoking eight cigarettes after each meal of the day.

Coming in on top of the eight wake-up cigarettes, the therapy begins to crystalize. By the end of the seventh, smoke has reverted to fumes, unpleasant ones.

By the end of the eighth cigarette after lunch of the first day, smoking has already become a tiresome chore. And with 5½ days to go, the volunteer begins to see why going "cold turkey" might not be so bad after all.

The picture of John Wayne lighting up on the range loses some of its luster.

The Marlboro man nauseates.

Winston doesn't taste so good.

You try not to think about what happens to hams in smokehouses.

By mid-afternoon with only 35 of the assigned 65 coffin nails spiked away, the task seems endless.

The six in the oversmoke group consists of three females and three males, all married.

Double-smoking means less than a pack a day for one volunteer. He quit for more than two years once, he said. This comment brought a few stares. He

The Wichita Beacon, April 1, 1974, Page 1 (continued)

added, "But I wanted a cigarette the whole time."

For one woman in the group, double-smoking means consumption of 88 cigarettes each day for seven days.

Mine is set at 65 per day... which is a lot.

Meetings are set for double-smokers each night at the Veterans

Turn to Page 5A — SMOKE

SMOKE—Choke, Choke

(Continued From Page 1)

Administration for five consecutive weekday nights. They are to check progress, Salk said.

They are also to lend moral support for puffed-out oversmokers.

After smoking more or less steadily for more than 20 years everywhere except in church, the idea of kicking the habit is interesting.

Salk stresses motivation as a critical factor.

Of course, everyone has seen the stuff put out by the American Cancer Society. It deals with lungs. It is something like the movies shown recruits by the Army in years gone by, to warn them about evil women,

Nobody really wants to become a one-lung basket case. Motivation is no problem.

Tuesday, April 2, 1974 THE WICHITA EAGLE Page 8A

'Operation Oversmoke' Smokes Smokers Out

By BOB HEATON
Staff Writer

Like any smoker of more than 20 years standing, I have regarded the possibility of kicking the habit in the same light as running the four-minute mile pushing a wheelbarrow.

However, there is hope.

"Operation Oversmoke" has been underway for the past five and one-half days. It is a simple program, designed to make nonsmokers out of nicotine fiends.

The research program is being conducted by Gary Salk, a psychology researcher from the University of Louisville (Ky.) with the cooperation of the Veterans Administration.

The program sounds terribly simple — you smoke yourself half to death for a week and then quit — cold turkey.

Doesn't sound reasonable, does it?

Well, one of these days, try doubling your cigarette consumption. Every day. For a week. Zero in on times when you most enjoy smoking, like after meals and when you wake up in the morning. "Shotgun" those periods. Chain-smoke those times to death. Six, eight, or ten cigarettes, one right after the other. Keep a gasper lit up and in your mouth or hand most of the rest of day . . . and night.

After a day or so, smoking is a chore, and a tiresome one at that. Your lungs begin to feel really heavy and your throat begins to rasp unnaturally.

Sleep, after a day making like an ecology threat, is difficult. Your body is trying to tell you something alarming.

After a few days, you'll be like the guy with the nervous underarms, telling yourself, "It's working."

Salk told the six of us in Oversmoke Group B the technique works about 60 per cent of the time—a rate for nicotine fiends, who are fanatic addicts.

My rate for the first four days was 65 cigarettes. On the fifth day, I bumped it to 80. Salk had told us discomfort does have a place in the therapy. I didn't find it with 65 cigarette a day.

I have a very high discomfort threshold.

Eighty cigarettes a day is more tiresome than uncomfortable. You have to smoke all day and half the night, non-stop. You lose your Gary Cooper cigarette-lighting technique and your John Wayne squint-in-the-smoke gaze. Any Paul Muni class goes. You just sit and work your way through an incredible pall of acrid smoke.

It's working.

At least Oversmoke B gets to stay with their regular brand. Oversmoke A had to switch.

Two more groups are gasping through the program. They are Undersmoke A and Undersmoke B. They are supposed to be tapering off.

They probably are envious of the Oversmoke folk.

They shouldn't be.

Smoke Kicker Faces 'Fresh-Air Shock'

By BOB HEATON
Staff Writer

I quit smoking four days ago.

That's a long time. Ask anyone who quit smoking four days ago. He'll tell you that's a long time.

The shock of nicotine-free living hasn't been entirely unpleasant. But more than 29 years of carefree air pollution makes for a powerful habit.

About 15 habit-kickers are cogs in an experimental machine operated by Gary Salk, a psychology researcher with the University of Louisville (Ky.). In cooperation with the Veterans Administration here, Salk is trying to find out why some ways of kicking the habit work better than others.

We called our group activity "Operation Oversmoke" because it required us to double our cigarette consumption for seven days and then quit, cold turkey.

The initial reaction to no smoke was simple relief.

But an old, old habit doesn't work up front. It's more like a low whisper from the back row, niggling and insidious.

That bout with withdrawal symptoms turned out to be a nonstop round of shadow boxing with myself -- a very difficult sort of thing to win.

Some expectations have already been confirmed.

Salk told us our sense of smell would sharpen up. He was right. Since going cold turkey, I can pick up cigarette smoke from 100 feet in any direction.

A smoker couldn't do that.

A researcher has published a study which showed night vision might be damaged by smoking. My night vision hasn't improved. Day vision may be decaying, even. The first day of Operation Smokeless, I drove my faithful Beetle into the back bumper of a pickup truck. The truck didn't even flinch. The Beetle did.

Salk suggested gum or mints might be okay as substitutes, if anyone wanted to try them.

Mints might be okay, but unless the cold turkeyite is a strong gum man, chewing could lead to "Santa Anna Jaw."

This is where you stuff about three sticks of gum in at once and work on it. About the middle of a chew, the

novice chomper may let his jaw fall out of proper alignment.

On the upswing, automatic attempts to restore alignment will rip up muscles on the ascending ramus of the mandible and possibly damage tendons there. That's right in front of the ear, at the hinge.

It isn't much different from catching a stiff right hook.

Santa Anna Jaw makes opening the mouth painful. Eating is painful. Chewing is almost impossible. It hurts.

The Alamo was over in 13 days. Texas avenged that in six weeks. We have suffered from chiele for more than a century. Santa Anna, who introduced the stuff to America, got the last laugh.

Habit kickers are better off without more handicaps than they already face.

Salk told us our sense of taste would improve. As soon as I can chew again, I'll try it. One's appetite is supposed to improve. It probably will.

Operation Nosmoke volunteers are supposed to gather at the Veterans Administration tonight for a communal nail-chew. By then it will be five days. A long time.

Survivors Compare Notes

Cigarette Kickers Complete Course

By BOB HEATON
Staff Writer

Nerve-battered survivors of Operation Over smoke gathered for a final meeting at the Veterans Administration office this week and compared notes.

A few backslides were noted.

Nail-chomping was rampant.

One brand-new nonsmoker was chewing gum and sucking mints at the same time.

A research project, now under way for several weeks, brought the group together as volunteers. The project

proposes to investigate why some methods for dumping the cigarette habit work better than others.

Gary Salk, a psychology researcher with the University of Louisville (Ky.) will use results of the study in his doctoral dissertation.

About 30 volunteers were divided into two groups. One group was assigned the task of smoking twice the normal number of cigarettes and the other was given a program in which they tapered off.

After a week, oversmokers went "cold turkey," and swore off their noxious habit forever. After a week of chain-smoking, it wasn't too

hard the first couple of days.

In their final formal meeting, oversmokers seemed brighter than before the cutoff. Color had returned to ashen cheeks. Eyes were brighter.

With six more-or-less smokeless days behind, it did indeed appear possible to live without sucking plant leaf smoke into lungs.

As Uncle Lyndon would have said, there was a light at the end of the tunnel.

One quitter said he had written out a check for \$100 and gave it to a colleague at his office. If he takes up puffing within a year, the check gets cashed.

Salk would call that positive reinforcement.

Another smoke-banner said coworkers at her office were making book on her abstinence — with long odds running all the way to 36 months.

Everyone agreed, even with a week of choking down hundreds of chain-smoked butts fresh in mind, kicking the habit is tough.

Salk listened to comments with interest. He offered suggestions and probed for insights into how the smokeless crew was feeling.

Getting down to the business of mind over matter, one smoke-banner declared, "Surely it will be better soon. I can't live like this forever."

A dozen new nonsmokers nodded in quiet desperation.

Results so far, Salk said, are incomplete. But the start looks good. Nobody dropped out entirely. Backsliding was rather general, but nobody was back on a "normal smoking rate."

Salk, whose pristine lungs have never been assaulted by cigarette smoke except second-hand during smoking research meetings, will continue the project with questionnaires at the end of three months.

The new nonsmokers exchanged names and telephone numbers and plan to meet from time to time.

Salk still doesn't have the key to why some methods work better than others, but one nonsmoker summed up a mighty powerful factor — pride.

"If a man offered to give me a cigarette right now, I'd turn him down," he said. "But I'd steal it if I could. Pride does strange things to a man."

'Operation Oversmoke'

Survivors Battered

By BOB HEATON
Staff Writer

"I'm not a nonsmoker yet. I haven't smoked a cigarette for awhile, but I'm far from being a nonsmoker."

A battered group of survivors of "Operation Oversmoke" met informally Monday night and compared notes. The seven who met were part of an experiment designed to determine why some forms of kicking the habit seem to work better than others.

Of the seven who attended, only two were "honest injun," quitters.

Of the remainder, a wide variety of excuses were proposed for backsliding.

I suggested that while fishing, nonsmokers strike out. That was why I fell off the weed wagon. Lame, dumb excuse.

Stan had an excuse beautifully tailored for the occasion.

"I was working on a computer program," he said. "It wouldn't come out. No way. I couldn't stand it. I went down to the snack bar and stared at the cigarette machine for about three minutes and talked myself out of it."

"Before I could turn around and leave, power was returned to the machine. It had been off. Someone must have fed money in the thing and pushed the button."

"Anyhow, before I could turn and leave, the machine buzzed and thumped and there was a pack of cigarettes, like magic."

"I took them and smoked them all up. I haven't smoked since then. It sure has been awful."

Joe and Max exchanged personal checks for \$100 each. The first to break down and light up is honor-bound to tell the other, who will cash his check. They haven't lit up yet.

With the approach of the three-week mark since therapy began, actual dropout rates are unknown, but backslide rates are high.

Stan is hooked on sunflower seeds. Joe and Max are hooked on food in general.

I am a mint-head.

But everyone agreed that there is nothing easy about erasing a nicotine fiend habit. It may be like forming a new "fiend" habit.

We all may have to become "non-nicotine fiends."

THE WICHITA BEACON

Tuesday, April 23, 1974
Page 16B

For Some, It's a Pipe Dream

Wichita Eagle July 10, Page 1

Volunteer Puffer Kicks Habit—Often

By BOB HEATON
Staff Writer

Operation Oversmoke is three months old. About 90 days ago, some 30 volunteers gathered in the auditorium at the Veterans Administration Center like pilgrims to a holy place and confessed their desires to kick the habit.

No information has been officially gathered about how many have fallen by the wayside, but there is at least one.

Me.

Nicotine fiends are a bit devious. And stubborn. Asking why they smoke is liable to unleash a full-blown dissertation.

Gary Salk, a psychology researcher from the University of Louisville (Ky.) is originator of the local program. He prescribed bountiful smoking for half the volunteers... double consumption. We were called oversmokers. The other half tapered off gradually. They were called undersmokers.

After a week of sucking in a cubic mile of smoke per day, we quit.

Our tar-pocked lungs thanked us.

But the nausea wore off and the old habits reasserted themselves. I fell off after about a month."

Because I want to. Right.

Of course Salk destroyed the old saw about nicotine being a relaxant or calmative.

In the morning, within six seconds of lighting up the first gasper of the day, the smoker's blood pressure jumps and the heart begins to work harder. Respiration begins to rise.

Tiny blood vessels in the hands and feet and ears constrict.

Some great men in history were smokers. So were some schnooks.

Some magnificent minds are at work in the advertising world, depicting smokers having more fun than you or I will ever have on the best day of our lives.

Some good brains also are working on scaring the cells right out of the smoking fraternity. One-lung breathing and talking through a vibrator are things smokers would rather not think about.

Since returning to the weed, another shirt (a favorite, of course) and a pair of slacks have been holed.

So, back on the wagon.

One nice thing about quitting smoking. You can do it as often as you wish.

An old brush chopper in San Antonio use to brag he quit smoking "30 or 40 times a day."

Habit kicking as a sport might be like golf...the lower the score, the better.

Pipe smoking is no answer, either. Cancer cells can warp mouth, throat and lips as easily as lungs. And after losing a \$150 gold cap to a \$2 pipe, I think it is a false economy.

Nicotine fiends are weird people. They breathe the smoke of smoldering leaves because they like it.

APPENDIX II
PERSONAL DATA CARD

Name: _____

Address: _____
_____

Phone: _____

How old were you when you started smoking? _____

How many times have you quit before? _____

What is the longest time you have quit smoking? _____

How much do you smoke each day? _____

Do you have any of these diseases:

Heart trouble	Emphysema
Chronic Bronchitis	Cancer
Raynaud's Disease	Diabetes
Peptic Ulcer	Asthma
High Blood Pressure	
Peripheral Vascular Disease	

Please write in any other lung or
circulatory disease you suffer from: _____

APPENDIX III

INTRODUCTORY STATEMENT AND CONSENT FORM

You are being asked to participate in a study to determine some new ways to help people quit smoking. Half of you will be in a treatment in which among other things you will be asked to double your smoking rate for one week. During this time you will meet for five week days with the other members of your group to see how well you are doing in this plan. The other half of you will be involved in another procedure that will take three weeks which you will be asked to gradually restrict your smoking during certain portions of the day and to do other things than smoke during these times.

As you may have guessed the double smoking conditions may be uncomfortable and perhaps even risky to people with severe lung conditions; therefore, if you have any lung conditions that would interfere with you smoking at double your usual rate you will be asked to see your physician and obtain his opinion as to whether or not this will hurt your health. If it will hurt your health in your physician's opinion, you will be asked not to participate in this study.

If you are able to continue with this procedure you do stand a good chance of being able to quit smoking. Of course we all know the dangers of smoking and the people in both groups who are able to quit smoking will enjoy quite probably much better health in the future and will be much more pleasant to their friends and associates as a result of the treatment.

At the end of the study if you have any questions concerning

any of the procedures that you are involved in please feel free to contact Mr. Salk at the Veterans Administration and he will be very happy to answer your questions. You are, of course, free to withdraw from the program at any time. However, if you should withdraw you will forfeit the portion of your deposit that you have not had returned to you by that date.

GARY C. SALK, M.A.
Psychology Intern

This is to certify that I have read the above statement and fully understand the risks, advantages and procedures involved in the study and do voluntarily consent to participate in it, and I request I be placed in this study.

Signature: _____

APPENDIX IV

COVER LETTER FOR FOLLOW UP 1

Hi!

The time has come for the three-month follow up on the smoking project. As you may remember, you will get \$10 back for completing this follow up independent of whether or not the program worked for you. I am mainly interested in accurate information and getting information from all of the people who participated in the project.

What you will have to do is to fill out the enclosed questionnaire completely, and keep a smoking diary for the next three days. The same rules as before apply to the smoking diaries: 1) record all cigarettes smoked, whether they are begged, borrowed or stolen; 2) record the time of every cigarette; 3) give a brief description of the circumstances of the cigarette; 4) give the date that goes with each record; and 5) please write legibly.

Please remember that \$10 of your deposit will be refunded when you return these completed records. You can still get your deposit back even if you did not complete the treatment and lost the first \$20, so please return your records promptly.

Thanks.

Gary Salk

APPENDIX V

COVER LETTER FOR FOLLOW UP 2

Hi!

Here I am for the last time. As before, please remember that I'm after accuracy and getting correct information. I was very pleased to hear from all of the people who completed the program last time and hope to get complete information again.

What you will have to do again is to fill out the enclosed questionnaire completely, and keep a smoking diary for the next three days. The same rules as before apply to the smoking diaries: 1) record all cigarettes smoked, whether they are begged, borrowed, or stolen; 2) record the time of every cigarette; 3) give a brief description of the circumstances of the cigarette; 4) give the date that goes with each record; and 5) please write legibly. Please remember the diary is the most important piece of information I receive.

Please remember that \$10 of your deposit will be refunded when you return these completed records. You can still get your deposit back even if you did not complete the treatment and lost the first \$30, so please return your records promptly.

Thank you very much for your cooperation in this project. I will be sending the results to Bob Heaton of the Eagle.

Gary Salk

APPENDIX VI

SMOKING QUESTIONNAIRE FOR FOLLOW UP 1

SMOKING QUESTIONNAIRE

Please fill out and return with smoking diary.

1. How would you describe your smoking pattern since the smoking project?

- A. Quit and haven't smoked since.
- B. Had a few cigarettes (less than one pack total).
- C. On and off smoking.
- D. Smoking less than before the project.
- E. Smoking the same as before the project.
- F. Smoking more than before the project.
- G. Smoked a little after the program, but quit and haven't smoked since.
- H. Quit after the program, but started smoking again and still do.
- I. Other pattern (please describe)

---

2. Have you had any cigarettes in the last week?   Yes   No

3. What elements of the program were most helpful to you? _____

---

4. What elements were least helpful to you? _____

_____
_____

5. What is the longest period you have been off cigarettes since the end of the program?

- A. Continuously - haven't had a cigarette since the end of the program.
- B. More than two months.
- C. 1 month.
- D. 3 weeks.
- E. 2 weeks.
- F. 1 week.
- G. Less than 1 week.
- H. Never quit.

6. What advice would you give me if I were starting another smoking program now?

APPENDIX VII

SMOKING QUESTIONNAIRE FOR FOLLOW UP 2

SMOKING QUESTIONNAIRE

Please fill out and return with smoking diary.

1. How would you describe your smoking pattern since the smoking project?

- A. Quit and haven't smoked since.
- B. Had a few cigarettes (less than one pack total).
- C. On and off smoking.
- D. Smoking less than before the project.
- E. Smoking the same as before the project.
- F. Smoking more than before the project.
- G. Smoked a little after the program, but quit and haven't smoked since.
- H. Quit after the program, but started smoking again and still do.
- I. Other pattern (please describe)

---

2. Have you had any cigarettes in the last week?   Yes   No

3. What elements of the program were most helpful to you? _____

---

4. What elements were least helpful to you? _____

---

5. What is the longest period you have been off cigarettes since the end of the program?

- A. Continuously - haven't had a cigarette since the end of the program.
- B. More than four months.
- C. More than two months.
- D. 1 month.
- E. 3 weeks.
- F. 2 weeks.
- G. 1 week.
- H. Less than 1 week.
- I. Never quit.

6. What advice would you give me if I were starting another smoking program now?

APPENDIX VIII

COVER LETTER FOR SECOND MAILING OF FOLLOW UP 2

Dear

This is a reminder about your smoking diary and questionnaire. I'm sure you understand my anxiety to bring this project to a close and be done with it after all these months.

Of the two pieces of information, the diary and the questionnaire, the diary is the most important. Please use the enclosed envelope to return it and the questionnaire at your earliest convenience.

Sincerely,

Gary C. Salk

APPENDIX IX

VERBATUM RESPONSES TO QUESTIONNAIRE ITEM 1, I. OF FOLLOW UP 1:

"How would you describe your smoking pattern since the smoking project? ... I. Other pattern (please describe)"

Subject 1. If at a party or out with friends, I'll bum a couple of cigarettes then I won't touch one for a week. I feel like an occasional "social smoker."

Subject 4. I have one cigarette when I wake up early (usually). At work I smoke about as I did before the program. On the weekends when I am home alone, I smoke almost as much as I did before.

Subject 5. Before program smoked strongest cigarette I could get--always--Now smoke cigarettes with filter and milder I've never smoked stronger brand since with exception of $\frac{1}{2}$ pkg. Did cut down amount of smoking for 2 or 3 weeks.

Subject 7. Hadnt had any up to 7-5-74 then smoked 1 one day then 3 next day and looks like I am fastly accelerating to old habits but still want to quit.

Subject 11. I've had periods of extreme desire for cigarettes. After smoking one or two, however, the sick feelings would return and the desire would disappear.

Subject 22. Completely quit for approx 3 weeks, then started smoking after meals. Now, have firmly limited smoking to 4 cigs per day--almost exclusively following meals and usually B-4 bed. Frequently if have evening plans will save cig following meals for evening. Of some help was telling entire office staff that I had 'quit' smoking. When started smoking after meals was ashamed to let people in office see or

know. Also had janitor remove all ashtrays from building except in waiting or lobby area.

APPENDIX K

VERBATUM RESPONSES TO QUESTIONNAIRE ITEM 1, I. OF FOLLOW UP 2:

"How would you describe your smoking pattern since the smoking project? ... I. Other pattern (please describe)"

Subject 11. Smoke zero during day--smoke 4-5 in evening.

Subject 17. I did not have a cigarette for apx. $3\frac{1}{2}$ mts after project.

However, of late I have been smoking about 20 cigarettes every three to four days.

Subject 29. I smoked on and of but had cut down and have quit since the first of October.

APPENDIX XI

VERBATUM RESPONSES TO QUESTIONNAIRE ITEM 3 OF FOLLOW UP 1:

"What elements of the program were most helpful to you?"

Subject 0. (control) I think, if I had continued, breaking the pattern of my smoking would have helped. I gained quite an insight to my smoking habits by keeping the diary.

Subject 1. Double smoking and having to keep a diary so that I was aware of what I was doing.

Subject 2. Double smoking killed my desire to smoke at first, but as that ghastly experience faded, it fell to personal motivation for continued abstinence, which is where I fell off.

Subject 3. Group support.

Subject 4. I hadn't realized how much I was a creature of pattern. I'm still trying not to build new habit patterns, but they are creeping up.

Subject 5. Using an approach with a method that made good sense and one I believed in (still do). Meeting once each day with others intending to quit smoking. Annoyance of writing down each cigarette and sometimes smoking when I really didn't want to. Excitement at idea of "Maybe it's possible."

Subject 6. The group sessions were the most effective part. The encounter with your fellow smokers added to the internal conscience to make the desire to quit stronger.

Subject 7. Group meetings.

Subject 8. Meeting with a group of people who wanted also to quit. Very much enjoyed my group during both smoking and non-smoking periods. Pub-

licity in newspaper should score on positive side as it helped educate peer groups and served as an additional incentive. (as did the checks made out to Cancer Society).

Subject 9. Group therapy and our own private group afterwards.

Subject 10. The fellowship of the others that were trying to quit.

Subject 11. The oversmoke principal was a major factor, as were the nightly meetings. Our own weekly meetings also helped greatly for encouragement.

Subject 12. The double smoking definitely made quitting for first few days much easier.

Subject 12. The oversmoking made it very clear to me what effect smoking was having on me. I thought the group sessions were very helpful and would have helped greatly in the time when I was trying to do with out.

Subject 14. I believe the recording of each cigarette smoked--and the doubling up on the first period--recording was so monotonous--doubling so sickening--and the daily reports and meetings with you at V.A.'s time censuring and expensive for a darned cigarette.

Subject 15. Doubling.

Subject 16. Meeting as a group and knowing that we were all going through the same "misery".

Subject 17. (1) Changing brands of cigarettes. (2) Discussion with other individuals attempting to stop smoking. (3) Keeping the diaries.

Subject 18. Smoking diary very helpfull.

Subject 19. Keeping the smoking diary and being around other trying to quit.

Subject 20. Mostly the group meetings and discussions. Generally hear-

ing other people's methods of quitting.

Subject 21. Smoking diary and group effort, plus the non-smoking periods helped break the automatic smoking habit.

Subject 22. Knowing that other smokers experienced the same difficulties as myself when trying to stop or control quantity of cigarettes.

Also keeping the diary was helpful. I smoked so much it was impossible to establish a pattern, but helped make aware of just how many cig's I actually lit in one day.

Subject 23. Knowing that other people were suffering same things. The nuisance of the diary which made you aware you were going to smoke.

Subject 24. That of discussing what the other people substituted for smoking.

Subject 25. Group discussion and motivation. Smoking diaries.

Subject 26. Meeting with the people and talking about it. And keeping the diary.

Subject 27. Filling out the smoking diaries. It gives you a chance to "self-analyze" your habit.

Subject 28. I feel that keeping a diary of all cigarettes smoked was a deterrent, but it is a big headache to continue from here on out.

Subject 29. Knowing I wasn't the only one trying, keeping track of cigarettes.

Subject 30. Diary.

APPENDIX XII

VERBATUM RESPONSES TO QUESTIONNAIRE ITEM 4 OF FOLLOW UP 1:

"What elements were least helpful to you?"

Subject 0. (control) Since I didn't continue I couldn't say.

Subject 1. I have mixed feelings about the group meetings. I enjoyed them, but they weren't worth travel time and distance for me.

Subject 2. Least helpful were elements your program had nothing to do with----such as living with a smoker.....when a would-be quitter is exposed to smoking on a more or less constant basis, resolution softens and is difficult to maintain.....of course this could be just another way to excuse returning to the weed. Motivation, as you said, is paramount. Your program requires high motivation.

Subject 4. The damn diary. As you recall, I developed a bad cough it knowing that every cigarette was going to bring it on was a mild torture--Incidentally the cough is gone.

Subject 5. Can't think of any.

Subject 6. I can't really think of any except lack of #6 below.

Subject 7. ?

Subject 8. Can't think of any--as at the time, I felt I needed all the help I could get!

Subject 9. Being told I wouldn't want a cigarette for a week after smoking double for a week.

Subject 10. The lack of follow up immediately--I had started again when Joe started his meetings.

Subject 12. That there were no meetings after the week of double smok-

ing.

Subject 14. My own unwillingness--your program very good--but personal problems haven't helped me to be strong as I should be.

Subject 15. Don't know.

Subject 16. Changing brands of cigarettes.

Subject 18. Discussion of others' trials and tribulations.

Subject 19. Everything seemed to help but after the program was over I still had the desire and not enough willpower.

Subject 20. When I switched from the menthols back to nonmenthols I liked the cigarette and smoked just as much as previously.

Subject 21. List of reasons to quit smoking, substitutions.

Subject 22. Depositing checks were of no help.

Subject 23. Can't think of anything in particular.

Subject 25. Tapering off.

Subject 26. Switching brands.

Subject 27. I feel the tapering off program was not long enough and more meetings needed to be held. I was real disappointed that the final meeting consisted of you telling me to quit.....period. I feel I could have been told that at the first meeting and been as successful.

Subject 28. Oral replacements for the cigarettes worked for a while, but you get burnt out on gum and toothpicks in only a short period of time.

Subject 29. I didn't find anything that detracted from the program.

Subject 30. None--During the project I was very aware of my smoking therefore I seemed to cut down.

APPENDIX XIII

VERBATUM RESPONSES TO QUESTIONNAIRE ITEM 6 OF FOLLOW UP 1:

"What advice would you give me if I were starting another smoking program now?"

Subject 0. (control) None, except keep up the good work!

Subject 2. For me, the program worked better than I ever imagined it would. If an individual really was determined to quit, I feel this rigorous program would provide enough impetus. Positive attitudes are pretty tough to maintain....I really had the feeling at first it wouldn't work. Then when the double smoking business began to take its toll, I felt differently about it. Finally, when the misery of it all had eroded, I found myself drifting back into smoking, pretty much the same patterns as before participation in the program.

Subject 3. Weekly group meetings.

Subject 4. Carry on with a follow up program. The one we developed was helpfull, but because we had no focal point (you) we were aimless and I soon quit going.

Subject 5. Meet every day for awhile at end of program while momentum is at peak. This could very possibly be helpful to some. All other aspects of program are excellent! Personally feel I failed--not the program.

Subject 6. Continuous follow-up for at least two months sponsored by you with these sessions being included in the term "completion of the program". The group should be continuous, because it's the peer pressure that goes the farthest.

Subject 7. Continue group meetings for at least 1 yr. or longer at individuals voluntary discretion.

Subject 8. Allow more time together (ie group therapy)--Greater stress upon desire to quit as the absolute key to quitting...rather than increasing or decreasing groups as patterns. The "ordeal" we went thru (diaries and treatment plans) helped to dislike cigarettes for a time, but ultimately, I think, it was my own choice and I could have quit whether I'd been in the increase or decrease group. It was a combination of desire and moral support that made me a non-smoker.

Subject 9. Encourage contact and meetings after quitting.

Subject 10. Longer treatment period--Maybe meetings spaced out to every 2 or 3 days, after first week, for 4 to 6 weeks.

Subject 11. To provide organized follow up meetings after the cut-off date. To encourage participants to call each other in time of need.

Subject 12. I would suggest that meetings be held for 5 nights when we quit and at least 2 times a week there after. I did not smoke (after I started again) on the sunday and monday when they had the meetings at State Farm. on monday. I think that the moral support and help during the 1 st 3 months is very important at least for me.

Subject 13. To require the participants to meet daily for the first week of quitting and then on a less often basis thru the first month.

Subject 14. Maybe visual aids of damage to lungs--Also more frequent meeting, perhaps every day for group discussion, similar to A.A. where one person helps another to refrain from the smoking--or written facts concerning damage to our bodies which isn't visable.

Subject 15. Make everybody double.

Subject 16. I feel that it should last longer or at least have the

group meet regularly and keep in contact after the program. The first week after the program I did not smoke but then I gave in as I was on my own again.

Subject 18. (1) More publicity to attract program members. (2) Better organization of initial meeting. (3) GROUP decision on time to meet.

Subject 19. I wish I could tell you, because I still want to quit.

Subject 20. (1) Have meetings after the program regarding progress and hand holding, etc. (2) Have preprinted diaries with a code so all we'd have to do is make a mark. (3) I ~~1~~ people failed in one group then go thru other program.

Subject 21. I think it would be helpful if you had the participants continue to send in the smoking diaries (of course, that then breaks the premise that no smoking will be done) for a period of time, plus follow up group meetings.

Subject 22. If smoker would prepare a more extensive diary it should be more helpful to the smoker and to you. I also would recommend showing a smoker in dollar and cents what his habit has already cost him and what it will cost him if he continues his present rate of consumption until he is 72 yrs. old. Then relate this cost to something meaningful like the cost is equal to spending uncompounded interest on \$100,000 each day. Another point I don't believe has been widely published is the fact that cig manufactures, wholesaler, vendors, etc. have discovered that selling price of cigs has very min. or no effect on long range sales and are looking toward \$1.00 per pkg in near future.

Subject 23. Feel smoking programs should possibly be something similar to Weight-Watchers programs. Smoking is used to reward yourself just

as eating is for some people. But each individual has to have his own motive for stopping.

Subject 24. I would like to see participants get to choose which method; doubling or gradually quitting, they were to use.

Subject 25. (1) Encourage continued group participation after cigarette cut-off date. (2) Longer tapering off periods i.e. longer than one hour per period. I felt that family support throughout this project was essential.

Subject 26. Have it consecutive nights for everybody and follow up weekly. Talk about emphysema. I've decided it's an individual decision.

Subject 27. Hard question to answer. My only thought is that a person who had smoked and had quit would be better able to conduct the program. (I am not telling to you should start smoking).

Subject 28. It would seem as though the best way to stop smoking would be to overdue it until you would be repulsed by them as opposed to trying to depend on will power and substitutes. Desire has to be the biggest motivation.

Subject 29. I think possibly a meeting or two at weekly intervals after the final quitting to give "moral support" or perhaps "hand spanking". Perhaps, the loss of the \$10.00 if the "ex" smoker started back during those 2 weeks after quitting. I sincerely believe if I hadn't gone home to Pensacola; although nerves are no excuse, I am extremely nervous around my family. I'm much more aware of my smoking and have "quit" off and on since the program.

Subject 30. The diary should be a continual process until the three month follow up.

APPENDIX XIV

RAW DATA

Groups	Subject	Base Rate ¹	Follow Up 1 ²	Follow Up 2 ³
D-Hi	1	17.0	1.0	14.0
	2	32.5	24.3	24.0
	3	30.3	30.7	29.3
	4	26.8	7.3	0
	5	44.7	46.0	50.3
	6	20.7	22.7	25.7
	7	16.8	10.3	18.3
D-Lo	8	20.0	0	0
	9	17.0	15.7	21.3
	10	22.2	40.7	33.3
	11	24.7	0	4.0
	12	37.1	32.0	42.7
	13	34.8	34.0	35.7
	14	24.9	26.3	19.0
	15	22.9	0	0
V-Hi	16	28.6	12.7	20.0
	17	36.0	0	5.0
	18	13.1	12.3	13.3
	19	22.3	15.3	19.0
	20	21.5	22.7	19.0
	21	31.2	9.3	19.3
V-Lo	22	52.4	3.7	9.7
	23	30.7	0	0
	24	46.0	35.3	38.3
	25	20.8	0	9.3
	26	38.7	33.0	31.7
	27	36.2	19.0	23.0
	28	21.9	0	9.3
	29	32.0	12.3	0
	30	23.0	11.3	18.3

¹ Mean number of cigarettes smoked per day during a six-day base period.

² Mean number of cigarettes smoked per day during a three-day following period at three to five months after treatment.

³ Mean number of cigarettes smoked per day during a three-day follow-up period at six to eight months after treatment.

APPENDIX XV

VERBATUM RESPONSES TO QUESTIONNAIRE ITEM 3 OF FOLLOW UP 2:

"What elements of the program were most helpful to you?"

Subject 0. (control) Keeping the diary help bring to my attention the patterns of my smoking.

Subject 1. The discipline of keeping the diary and the double smoking.

Subject 2. The group interaction, combined with the awful business of double-smoking, made the program work for a time.

Subject 3. Group support. Interested psychologist.

Subject 5. Could have been writing each cigarette and time and association with others who wanted to quit smoking.

Subject 6. The counseling sessions with its group rapport.

Subject 7. meeting with the group, as we continued to have the weekly meetings after your program stoped and long as we had the meetings I did not smoke but when we stopped the meetings, I started smoking.

Subject 8. Group encounter, open communication within the group.

Subject 9. Group discussion.

Subject 10. The meetings together.

Subject 11. Oversmoke and group meetings.

Subject 12. Double smoking help get off cigs initially.

Subject 13. group meetings--Double smoking made the effects of smoking very clear.

Subject 14. Recording of smoking (really bugs me to think I'm a slave to the habit each time I have to write it down). Also the doubling up of smoking.

Subject 15. doubling and having to keep track of all those I did smoke.

Subject 16. Group discussions and contact.

Subject 17. Keeping a diary. Changing brands.

Subject 18. Keeping the diary, seeing smoking as bringing discomfort to others.

Subject 19. At the time I think the meetings were the most helpful.

Subject 20. Meetings.

Subject 21. Smoking log.

Subject 22. Contact with people with the same desire (to quit smoking) as I had. Recording and observing the pattern I smoked.

Subject 23. Meeting with people who had the same problem. And it really helped to keep the cigarettes in a part of the house where I had to go after them one at a time.

Subject 24. Discussion with other people about their problems quitting smoking.

Subject 25. Idea of substituting various things for cigarettes.

Subject 26. probably keeping a diary and changing brands of cigs.

Subject 27. Keeping the diary and realizing how much I did smoke.

Subject 28. Learning my patterns and watching them in order to cut down my heavy smoking times. I no longer smoke at home, but still do at work although less than before.

Subject 29. Thinking of the harm of cigarettes and becoming conscious of the amount of cigarettes I smoked in a day.

Subject 30. Daily Log.

APPENDIX XVI

VERBATUM RESPONSES TO QUESTIONNAIRE ITEM 4 OF FOLLOW UP 2:

"What elements were least helpful to you?"

Subject 0. (control) Didn't complete the project, so really couldn't say.

Subject 2. My own attitude.

Subject 3. Can't think of any.

Subject 6. All were helpful but least was probably the money aspect.

Subject 10. I don't honestly feel the over-smoke was all that helpful.

Subject 12. None

Subject 16. Changing brands of cigarettes.

Subject 18. Listening to extraneous experiences of others (I realize this is not your doing).

Subject 19. I think the postponement of a smoke for a period of time after meals was the least helpful.

Subject 21. Writing down why you shouldn't smoke.

Subject 22. Deposit.

Subject 23. Can't think of any.

Subject 25. All about the same.

Subject 26. Not enough emphasis on physical addiction--reaction to quitting--diet [?] etc.

Subject 27. I felt the cutting down program WASN'T going to work from the start.

Subject 28. Other oral substitutes didn't seem to help me much.

Subject 29. I didn't find any of the program that wasn't helpful.

Subject 30. They were all very important--during the clinic I was fatally aware of each cigarette I smoked thus Biding [?] me to cut down considerably.

APPENDIX XVII

VERBATUM RESPONSES TO QUESTIONNAIRE ITEM 6, OF FOLLOW UP 2:

"What advice would you give me if I were starting another smoking program now?"

Subject 2. Lean Heavily on Necessity for self-Motivation, as well as group interaction.

Subject 3. More group follow-up, especially the first month.

Subject 5. Some meetings following program - during times when one was supposed to be "off" cigarettes. Believe this to be a great program even though I was a failure at it.

Subject 6. Follow-up sessions for a longer more closely supervised period with the chance for peer pressure to take effect more strongly.

Subject 7. Keep the weekly meetings going.

Subject 8. Would have liked to have met on a more frequent basis.

Very much appreciated the reinforcement of peer group. The publicity element was great..(The Wichita Eagle-Beacon) write ups helped educate the public & us--giving us recognition as further reinforcement.

Subject 10. To continue the meetings over a longer period. By the time I found out Joe was going on with the "follow-through" I had become discouraged & resumed smoking.

Subject 11. Longer follow up meetings & some "punishment" or treatment for cheating.

Subject 12. Have less meetings during the initial stages of Programe and increase meetings after the quit date as that is time when moral support is necessary. Also. Some descriptive photos or samples of

what a Smokers Lungs look like i.e. The Fright Phsycology.

Subject 13. Carrying the daily programs thru the initial couple of weeks of non-smoking. They are needed then even more than during the doubling period.

Subject 14. Visual aids and more concentration on the harmful effects of cigarettes at beginning of program--and maybe a longer period of meetings. I am going to continue the recording of my smoking in hopes it will irritate me so much I'll finally give up on the nicotine.

Subject 15. have everone double. They'll really get sick of them like I did.

Subject 18. Better organization & preparation of initial meeting.

Subject 19. I have no advice to give.

Subject 20. Possibly periodic Mtgs after your original program--I realize you were not attempting to insure our stopping smoking but merely a cross sectional research it really was (is) up to us.

Subject 22. More emphasis on awareness of smoking.

Subject 23. Possibly asking each person in turn to describe the past week's experience. But a person must have a real reason for quitting.

Subject 24. Let the people decided what method they would use to quit smoking. Dont let mothers talk their sons into taking course.

Subject 25. none.

Subject 26. Use a T.A. type situation-- Drawing up contract-setting time for quitting--reienforced with diet plans. No stimulants etc. I think this is going to be my approach to quit smoking. I don't think it can be an independent type transaction--because I need someone to help me set up the contract.

Subject 27. As I said before, without you ever smoking, I feel you

don't comprehend the difficulty of quitting. You need to keep the participants more involved and not rely on them doing this on thier own. Maybe meeting 2 or 3 times a week instead of once a week.

Subject 28. Make sure people have the correct attitude & intent desire to quit. Stress the need to learn their own patterns in order to find out when & where they are the most likely to smoke heavily.

Subject 29. The same as I gave in the last letter---perhaps if the smoker didn't quit \$10.00 would be given to the Cancer Society.

Subject 30. continue the daily log through a longer period than just the clinic--Possibly through the six nonth period.

REFERENCES

- Azrin, N. H., & Powell, J. Behavioral engineering: the reduction of smoking behavior by a conditioning apparatus and procedure. Journal of Applied Behavior Analysis, 1968, 1, 193-200.
- Baer, D. J. Height, weight, and ponderal index of college male smokers and nonsmokers. Journal of Psychology, 1966, 64, 101-105.
- Berecz, J. Modification of smoking behavior through self-administered punishment of imagined behavior: A new approach to aversion therapy. Journal of Consulting and Clinical Psychology, 1972, 38, 244-250.
- Carlin, A. S. & Armstrong, H. E. Aversion conditioning: Learning or dissonance reduction? Journal of Consulting and Clinical Psychology, 1968, 32, 674-678.
- Chapman, R. F., Smith, J. W. & Layden, T. A. Elimination of cigarette smoking by punishment and self-management training. Behaviour Research and Therapy, 1971, 9, 255-264.
- Cooper, K. H., Cey, G. O. & Bottenberg, R. A. Effects of cigarette smoking on endurance performance. Journal of the American Medical Association, 1968, 203, 189-192.
- Elliott, R. & Thysell, R. A note on smoking and heart rate. Psychophysiology, 1968, 5, 280-283.
- Elliott, R. & Tighe, T. Breaking the cigarette habit: Effects of a technique involving threatened loss of money. Psychological Record, 1968, 18, 503-513.
- Erickson, M. H. The burden of responsibility in effective psychotherapy. American Journal of Clinical Hypnosis, 1964, 6, 269-271.
- Eysenck, H. J., Tarrant, W., Woolf, M., & England, L. Smoking and personality. British Medical Journal, 1960, 1, 1456-1460.
- Ford, S. & Ederer, F. Breaking the cigarette habit. Journal of the American Medical Association, 1965, 194, 139-142.
- Franks, C. M., Fried, R. & Ashem, B. An improved apparatus for the aversive conditioning of cigarette smokers. Behaviour Research and Therapy, 1966, 4, 301-308.
- Freeman, W. M. The alteration of sexual preferences in the human male: A conditioning therapy for male homosexuals. (Doctoral dissertation, University of Louisville) Ann Arbor, Michigan:

University Microfilms, 1972. No. 73-5812.

- Gardner, R. A test of covert control therapy to reduce cigarette smoking: A comparative study of the effectiveness of two different strategies with a direct test of the effectiveness of contingency management. (Doctoral dissertation, University of Louisville) Ann Arbor, Michigan: University Microfilms, 1971. No. 71-29, 132.
- Gerson, P. & Lanyon, R. I. Modification of smoking behavior with an aversion-desensitization procedure. Journal of Consulting and Clinical Psychology, 1972, 38, 399-402.
- Graff, H., Hammett, V. B. O., Bash, N., Fackler, W., Yanovski, A., & Goldman, H. Results of four anti-smoking therapy methods. Pennsylvania Medical Journal, 1966, 69, 39-43.
- Greene, R. J. Modification of smoking behavior by free operant conditioning methods. Psychological Record, 1964, 14, 171-178.
- Grimaldi, K. E. & Lichtenstein, E. Hot, smoky air as an aversive stimulus in the treatment of smoking. Behaviour Research and Therapy, 1969, 7, 275-280.
- Gotmann, M. & Marston, A. Problems of S's motivation in, a behavioral program for reduction of cigarette smoking. Psychological Reports, 1967, 20, 1107-1114.
- Hayes, W. Statistics for Psychologists. New York: Holt, Rinehart and Winston, 1963.
- Homme, L. E. Perspectives in Psychology XXIV control of coverants, the operants of the mind. Psychological Record, 1965, 15, 501-511.
- Hunt, W. A. Epilogue. Journal of Abnormal Psychology, 1973, 81, 196-198.
- Hunt, W. A. & Matarazzo, J. D. Three years later: Recent developments in the experimental modification of smoking behavior. Journal of Abnormal Psychology, 1973, 81, 107-114.
- Hunt, W. A., Barnett, L. W. & Branch, L. G. Relapse rates in addiction programs. Journal of Clinical Psychology, 1971, 27, 455-456.
- Jacobs, M. A., Anderson, L. S., Champagne, E., Karush, N., Richman, S., & Knapp, P. Orality, impulsivity and cigarette smoking in men: Further findings in support of a theory. Journal of Nervous and Mental Disease, 1966, 143, 207-219.
- Kautzer, C. S. Behavior modification of smoking: The experimental investigation of diverse techniques. Behaviour Research and Therapy, 1968(a), 6, 137-157.

- Koenig, K. P. & Masters, J. Experimental treatment of habitual smoking. Behaviour Research and Therapy, 1965, 3, 235-243.
- Kraft, T. & Al-Issa, I. Desensitization and reduction in cigarette consumption. Journal of Psychology, 1967, 67, 323-329.
- Landy, E. E. Sex differences in some aspects of smoking behavior. Psychological Reports, 1967, 20, 575-580.
- Lawton, M. P. Group methods in smoking withdrawal. Archives of Environmental Health, 1967, 14, 258-265.
- Leventhal, H., Watts, J. C., & Pagano, F. Effects of fear and instructions on how to cope with danger. Journal of Personality and Social Psychology, 1967, 6, 313-321.
- Lichtenstein, E. Modification of smoking behavior: Good designs--ineffective treatments. Journal of Consulting and Clinical Psychology, 1971, 36, 163-166.
- Lichtenstein, E., Poussaint, A., Bergman, S., Journey, T., & Shapiro, R. A further report on the effects of the physician's treating of smoking by placebo. Diseases of the Nervous System, 1967, 28, 754-755.
- Marston, A. R. & McFall, R. M. Comparison of behavior modification approaches to smoking reduction. Journal of Consulting and Clinical Psychology, 1971, 36, 153-162.
- Mausner, B. Report on a smoking clinic. American Psychologist, 1966, 21, 251-255.
- Mausner, B. Some comments on the failure of behavior therapy as a technique for modifying cigarette smoking. Journal of Consulting and Clinical Psychology, 1971, 36, 167-170.
- Mausner, B. An ecological view of cigarette smoking. Journal of Abnormal Psychology, 1973, 81, 115-126.
- McFall, R. M. Effects of self-monitoring on normal smoking behavior. Journal of Consulting and Clinical Psychology, 1970, 35, 135-142.
- McGuire, J. R. & Vallance, M. Aversion therapy by electric shock: A simple technique. British Medical Journal, 1964, 1, 151-153.
- Morganstern, K. P. & Ratliff, R. G. Systematic desensitization as a technique for treating smoking behavior: A preliminary report. Behaviour Research and Therapy, 1969, 7, 397-98.
- Moses, F. M. Treating smoking habit by discussion and hypnosis. Diseases of the Nervous System, 1964, 25, 184-188.

- Murphee, H. B., Pfeiffer, C. C. & Price, L. M. Electroencephalographic changes in man following smoking. Annals of the New York Academy of Sciences, 1967, 142, 245-260.
- Nolan, J. D. Self-control procedures in the modification of smoking behavior. Journal of Consulting and Clinical Psychology, 1968, 32, 92-93.
- Ober, D. C. Modification of smoking behavior. Journal of Consulting and Clinical Psychology, 1968, 32, 543-549.
- Platt, E. S., Kraussen, E. & Mausner, B. Individual variation in behavioral change following role playing. Psychological Reports, 1969, 24, 155-170.
- Powell, J. & Azrin, N. The effects of shock as a punisher for cigarette smoking. Journal of Applied Behavior Analysis, 1968, 1, 63-71.
- Premack, D. Toward empirical behavior laws. I. Positive reinforcement. Psychological Review, 1959, 66, 219-233.
- Pyke, S., Agnew, N. M. & Kopperud, J. Modification of an overlearned maladaptive response through a relearning program: A pilot study on smoking. Behaviour Research and Therapy, 1966, 4, 197-203.
- Resnick, J. H. The control of smoking behavior by stimulus satiation. Behaviour Research and Therapy, 1968(a), 6, 113-114.
- Resnick, J. H. Effects of stimulus satiation on the overlearned maladaptive response of cigarette smoking. Journal of Consulting and Clinical Psychology, 1968(b), 32, 501-505.
- Resnick, J. H. Modification of smoking behavior: Good designs--inaccurate reporting. Journal of Consulting and Clinical Psychology, 1971, 37, 323.
- Roberts, A. H. Self-control procedures in modification of smoking behavior: Replication. Psychological Reports, 1969, 24, 675-676.
- Sachs, L. B., Bean, H. & Morrow, J. E. Comparison of smoking treatments. Behavior Therapy, 1970, 1, 465-472.
- Schmahl, D. P., Lichtenstein, E. & Harris, D. E. Successful treatment of habitual smokers with warm, smoky air and rapid smoking. Journal of Consulting and Clinical Psychology, 1972, 38, 105-111.
- Schwartz, J. L. & Dubitzky, M. The smoking control research project: Purpose, design, and initial results. Psychological Reports, 1967, 20, 367-376.

- Sipich, J. F., Russell, R. K. & Tobias, L. L. A comparison of covert sensitization and "nonspecific" treatment in the modification of smoking behavior. Journal of Behavior Therapy and Experimental Psychiatry, 1974, 5, 201-203.
- Steffy, R. A., Meichenbaum, D. & Best, J. A. Aversive and cognitive factors in the modification of smoking behavior. Behaviour Research and Therapy, 1970, 8, 115-126.
- Streltzer, N. E. & Koch, G. V. Influence of emotional role-playing on smoking habits and attitudes. Psychological Reports, 1968, 22, 817-820.
- Tooley, J. T. & Pratt, S. An experimental procedure for the extinction of smoking behavior. Psychological Record, 1967, 17, 209-218.
- Von Dedenroth, T. E. The use of hypnosis with "tobaccomaniacs". American Journal of Clinical Hypnosis, 1964(a), 6, 326-331.
- Von Dedenroth, T. E. Further help for the "tobaccomaniac." American Journal of Clinical Hypnosis, 1964(b), 6, 332-336.
- Weir, J. M., Dubitzky, M. & Schwartz, J. L. Counselor style and group effectiveness in a smoking withdrawal study. American Journal of Psychotherapy, 1969, 23, 106-118.
- Whitman, T. L. Modification of chronic smoking behavior: A comparison of three approaches. Behaviour Research and Therapy, 1969, 7, 257-263.
- Whitman, T. L. Aversive control of smoking behavior in a group context. Behaviour Research and Therapy, 1972, 10, 97-104.
- Wilde, G. J. S. Behavior therapy for addicted cigarette smokers. Behaviour Research and Therapy, 1964, 2, 107-110.
- Winer, B. J. Statistical principles in experimental design. New York: McGraw-Hill, 1962.
- Wolpe, J. & Lazarus, A. A. Behavior Therapy Techniques. New York: Pergamon Press, 1966.

VIPAE

The author, Gary Clive Salk, was born March 6, 1944 in Detroit, Michigan. His secondary education was completed in the Rochester Public School System of Rochester, Michigan in 1962. He then attended Michigan State University from September of that year until June of 1966 receiving a Bachelor of Science Degree in Psychology with honor.

In February of 1967 he attended the University of Iowa in Iowa City, Iowa and in August of 1969 he received a Master of Arts Degree from the University.

From August 1968 to August 1969 he worked for the In-Service Center of Ottumwa, Iowa on a research project teaching human relations skills to teachers. He then taught at Bennett College of Millbrook, New York for one year before entering the University of Louisville in September of 1970.

In September of 1973 he entered an internship with the Wichita Collaborative Psychology Internship Program completing that APA approved internship in August of 1974. He is currently employed as a Psychologist with Wernersville State Hospital, Wernersville, Pennsylvania.