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ABSTRACT

The effects of a comprehensive program for the treatment of cigarette addiction were investigated. Subjects were 18 university students and 12 community members. Abstinence levels of 40 percent, verified by expired air carbon monoxide tests, were achieved in a six to nine month follow-up period. A partial component analysis revealed that the comprehensive program was not significantly more powerful than a principle component, i.e., the focused smoking technique. (Author)

Partial Component Analysis of a Comprehensive Smoking Program

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Abstract

This study evaluated the effects of a comprehensive program for the treatment of cigarette addiction. Forty percent abstinence levels verified by expired air carbon monoxide tests were achieved in a six to nine month follow up period. A partial component analysis revealed that the comprehensive program was not significantly more powerful than a principle component--the focused smoking technique. Revisions in the program are suggested.

Partial Component Analysis of a Comprehensive Smoking Program

Inspite of the fact that some 29 million Americans have given up smoking without professional assistance (Mausner, 1973), reviews of the smoking treatment literature indicate that virtually any program can be expected to produce a low-moderate success rate (26% abstinence) which will inevitably decay to practical insignificance (13% abstinence) if a six-month follow up is conducted (McFall & Hammen, 1971; also Bernstein, 1969; Hunt & Matarazzo, 1973). The principle exception to this pessimistic generalization is the technique known as "rapid smoking" which has produced rather consistent and durable effects. Essentially, rapid smoking is an aversion conditioning procedure in which cigarette addicts take a normal inhalation every six seconds until they are no longer able to do so (see Bernstein & McAlister, 1976; Danaher, 1977; Lichtenstein & Danaher, 1976).

Unfortunately, the hazard potential of the rapid smoking procedure has created considerable controversy (Horan, Hackett, Nicholas, Linberg, Stone, & Lukaski, 1977; Horan, Linberg, & Hackett, 1977; Lichtenstein & Glasgow, 1977). Thus, an unequivocably safe tachnique known as "focused smoking" has been suggested as an alternative to rapid smoking. In focused smoking cigarette addicts sit facing a blank wall and smoke at their normal rate while concentrating on the aversive aspects of smoking. Preliminary data indicates that focused smoking generates comparable levels of discomfort and treatment success as does rapid smoking (Hackett &

Horan, 1978).

On another front, the counseling literature has witnessed a gradual shift in emphasis from a search for one-shot cureall techniques to the development of comprehensive treatment programs for a variety of client problems (e.g., Hackett & Horan, 1977; Hackett, Horan, Stone, Linberg, Nicholas, & Lukaski, 1977; Horan, 1973, 1979; Lando, 1977; Mahoney, 1973). The rationale for this particular trend is essentially that while the application of any given technique might result in statistically significant differences between large groups of clients, practical improvements are best effected by multifaceted intervention packages which address client problems on several fronts.

The purpose of the present investigation was two-fold. In the first place we were attempting to determine the practical utility of a comprehensive program for the treatment of cigarette addiction as evidenced by the percentage of clients abstinent in a delayed follow-up period. Secondly, we were attempting to conduct a partial component analysis of that comprehensive program. Specifically, we wished to isolate the utility of the focused smoking technique by comparing three experimental conditions: 1) Comprehensive program without focused smoking, 2) Comprehensive program with focused smoking, and 3) Focused smoking alone.

Method

Subjects

Thirty clients (19 M, 11 F) averaging 23.87 years of age (SD=6.02)

were recruited from newspaper announcements. Eighteen were university students, 12 were members of the surrounding community. All had smoked regularly for an average of 6.70 years and reported over a pack per day habit. The clients were required to place a $10 deposit to be refunded upon completion of the program.

Procedure

The clients were randomly assigned to one of three experimental conditions and then treated in small groups of five by one of the authors (G.H.). The experiment was conducted in two flights with approximately equal numbers of clients represented in each treatment condition during each flight. Final follow-up data was gathered six months later for the first flight. An intervening summer vacation necessitated a nine month final follow-up period for the second flight.

The specific procedures for each experimental condition were as follows:

Comprehensive Program Without Focused Smoking. Eight treatment sessions extended over a period of five weeks following one week of baseline. The clients met four times during week one, twice during week two, and once in the third and fifth weeks. These sessions lasted approximately 90 minutes with the first 30-40 minutes devoted to the following counseling strategies: peer and family contracting, thought stopping, cognitive restructuring, and cue-controlled relaxation. [The rationale for these techniques has been detailed elsewhere (Hackett & Horan, 1977)].

During the remaining portion of each session the clients underwent

a placebo component known as "discussion smoking" in lieu of the focused smoking technique. Discussion smoking involved seating the clients in a circle and having them smoke at their normal rate while discussing topics irrelevant to the smoking program. The explanation for this placebo procedure was twofold: 1) The "cold turkey" requirements of the comprehensive program would be eased by permitting some smoking in a restricted time and place. 2) Stimulus control of smoking would be shifted to the treatment sessions alone, which in turn would be phased out. Clients in this condition attended an average of 5.7 sessions, and smoked an average of 1.5 cigarettes in 7.65 minutes during each session.

Comprehensive Program With Focused Smoking. This experimental condition was identical to the last except that clients were given the focused smoking treatment component in the time period allotted for discussion smoking. Focused smoking essentially involved having the clients seated and facing a blank wall while smoking at their normal rate and being cued by the counselor to focus on the discomforts of smoking. Negative sensations initially cued by the counselor were a burning in the throat, bad taste in the mouth, light headedness, and feelings of nausea. As treatment progressed other unpleasant feelings reported by the clients were added to the list. These included a dull headache, shakiness, sweating, an uncomfortable, heavy, tired feeling, and difficulty in breathing. Reminders to concentrate only on the effects of smoking were repeatedly provided. Clients in this condition attended

an average of 6.2 sessions and smoked an average of 3.22 cigarettes in 15.98 minutes during each session.

Focused Smoking Alone. In this experimental condition the clients received only the focused smoking treatment in their counseling sessions. The clients attended an average of 6.5 sessions and smoked an average of 3.5 cigarettes in 16.1 minutes during each session.

Measures

The clients self-reported the number of cigarettes smoked before and 48 hours after treatment, and again at follow-up intervals of one, three, and finally six months (Flight 1) or nine months (Flight 2). Program success was defined as abstinence from all forms of tobacco for at least six months following completion of the program. Abstinence was verified at the posttest and final follow-up periods by the expired air carbon monoxide (CO) technique (cf. Lando, 1975; Horan, Hackett & Linberg, 1978). An Ecolyzer (Energetics Science, Inc., Elmsford, N.Y.) was used to measure CO concentrations.

After each session the clients exposed to focused smoking were given a self-reported-discomfort rating scale consisting of seven points anchored at the low and high ends respectively with the phrases "this procedure had no effect on me" and "this procedure was the most unpleasant experience in my life." Clients in the comprehensive program with focused smoking rated the aversiveness of the technique as 5.4. Those in the focused smoking alone condition rated it as 6.1.

Results

Statistical Effects

Table 1 presents the means and standard deviations of numbers of cigarettes smoked by the clients in each treatment condition on each testing occassion. Abstinence levels are also reported.

Insert Table 1 about here

A 3 x 5 (treatments by repeated measures) analysis of variance yielded a significant repeated measures effect [$F(4, 108) = 46.59$, $p < .001$], but no treatment [$F(2, 27) = .59$, $p = .59$] or interaction [$F(8, 108) = 1.73$, $p = .10$] effects. Tukey WSD post hoc analysis revealed that all baseline, posttest, and follow-up periods differed from each other with the exception of immediately adjacent testing occassions following treatment (see Table 1). The pattern of results suggests that all experimental conditions had an enormous effect on smoking levels reported 48 hours after treatment, and that gradual relapse occurred throughout the follow-up period.

Practical Effects

All experimental conditions had profound practical effects on the clients' smoking behavior. In the 48 hours following treatment 80% of the clients in the comprehensive program without focused smoking were abstinent. The two experimental conditions which incorporated focused smoking produced an initial abstinence rate of 90%. These latter two

conditions apparently resulted in more durable effects. Forty percent of the clients involved in each were fully abstinent in the final follow-up period. The success rate of the comprehensive program without focused smoking, on the other hand, decayed to 10%.

Discussion

The results of this study lend support to the utility of a comprehensive approach to the treatment of cigarette addiction. Although the 40% abstinence rate achieved during the final follow-up period was somewhat lower than the 57% success rate achieved in an earlier test of the program (Hackett & Horan, 1978) intersample fluctuations are to be expected. The most important finding of this study, however, is that the comprehensive program as presently construed was not shown to be more effective than its key component, the focused smoking technique. Thus a revision of the comprehensive approach may be in order.

Because focused smoking appears powerful enough to enable most clients to obtain initial abstinance, there is perhaps little to be gained by bombarding all clients with training in a host of other techniques at the outset of counseling. Rather, it would seem more appropriate to delay application of the comprehensive program until after the focused smoking technique produces initial abstinence and to then redirect the goals of the program to maintenance once abstinance has been achieved. Early application of the comprehensive program would only be appropriate for those very few clients who are not responsive to the focused smoking technique.

Table 1

Daily Smoking Levels Reported By Clients In Each Experimental Condition On Each Testing Occassion

Experimental Condition	Baseline			Posttest (48 hours)			1 month			Follow-up 3 months			6-9 months		
	$\bar{X}$	SD	% abstinent	$\bar{X}$	SD	% abstinent	$\bar{X}$	SD	% abstinent	$\bar{X}$	SD	% abstinent	$\bar{X}$	SD	% abstinent
Comprehensive Program Without Focused Smoking	19.5	2.01	0	1.8	5.34	80%	7.5	8.07	30%	14.3	9.33	10%	16.9	7.44	10%
Comprehensive Program With Focused Smoking	21.5	8.30	0	1.0	3.16	90%	4.2	6.89	60%	7.3	8.92	50%	8.5	9.25	40%
Focused Smoking Alone	23.3	12.34	0	0.1	.32	90%	8.0	11.59	50%	8.0	11.59	50%	13.7	15.96	40%
Total[a]	21.43			.96			6.57			9.87			13.03		

N = 30

[a]Underlined means are not significantly different.

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