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SELF-CONTROL OF SMOKING: THE AMOTIVATIONAL SYNDROME

DOUGLAS P. FERRARO[1]
University of New Mexico

The past 10 years have witnessed an enormous increase in the utilization, success, and popularity of behavioristic applications of animal laboratory findings to the human situation. At least two professional journals have been created to disseminate applied behavioral analysis techniques (e.g., *Journal of Applied Behavior Analysis*); new job descriptions have been written ("position open for behavioral engineer: minority race person or female preferred"); and a new jargon came into vogue ("spare the rod, use behavior mod"). As with any movement which tends to revolutionize current practices, the application of the laboratory findings and theoretical constructs of modern learning theory to the problems of everyday man has had its purist proponents and obstinate objectors.

If, in a paraphrase of the words of the recent President's National Commission on Marihuana and Drug Abuse (1972), we desymbolize, deglorify, and figuratively speaking, decriminalize the applied behavioral analysis, we still are led to a position of encouragment. For even in such a distilled form, the contributions of learning theories to an approved behavioral technology cannot be denied. Mental health centers, personality clinics, speech therapy rooms, and schoolhouses are only a few of several settings in which learning theory has had its impact (e.g., Ulrich, Stachnik, & Mabry, 1966).

In this context, it is not unreasonable to wonder about the question of why learning theory and its derivative applied behavioral analysis have not made a more substantive contribution to the control of smoking behavior (Bernstein, 1969; Keutzer, Lichtenstein, & Mees, 1968; McFall & Hammen, 1971). Surely, some contributions have been made, but successes in controlling and maintaining abstinence from smoking have not been overwhelming. Indeed, one today might not be chided as a pessimist if he were to sound a note of despair. Still there remains the conviction that a reduction in smoking behavior and, more importantly, the permanent cessation of this behavior can be behaviorally engineered.

From the papers presented at this year's conference as well as those which have gone before (e.g., Premack, 1970), it has already become apparent that the best prognosis can be made when the smoker himself is the behavioral engineer, that is, when the smoker himself controls himself by arranging the contingencies of antecedent stimuli and consequent events or, in short, by exerting self-control.

In what sense then, if any, can support be found for Skinner's (1953) position that the place of learning theory in self-control is not clear since little ultimate control can rest with the individual whether he is heading toward freedom and dignity or has gone beyond?

Models of Self-Control with Special Reference to Smoking Behavior

What is meant herein by the term self-control closely follows Skinner's (1953) meaning of the term which has been elaborated and expounded upon by others. Specifically, in a situation in which an individual's behaviors have consequences which are both emotionally positive and emotionally negative, the individual exerts control over his behavior so as to reduce or eliminate the negative consequences. It seems well established that the methods of control applied to the behavior of others are relevant to the control of oneself and that self-control responses are learnable. It is also apparent that self-control is an active

[1] Requests for reprints should be sent to Douglas P. Ferraro, Department of Psychology, University of New Mexico, Albuquerque, New Mexico 87106.

process in that explicit behaviors come to control the frequency of other behaviors, that is, of controlled responses.

Several learning models of self-control, some with special reference to smoking behavior, have been suggested over the past several years (e.g., Beneke & Harris, 1972; Ferster, Nurnberger, & Levitt, 1962; Goldiamond, 1965; Harris, 1969; McFall, 1970; Stuart, 1970; and others). A brief review of these models suggests that although several advances have been made in understanding the learning mechanisms underlying self-control, too little emphasis has been placed upon the motivational factors involved. Logan (1970) has previously suggested that breaking the smoking habit means removing the motivation to smoke. This context may be expanded to state that self-control of behavior means increasing the motivation for self-control.

A four-step program for instituting self-control has been outlined by Stuart (1967). As applied to smoking behavior, the first step would be an analysis of the smoking response to be controlled and its antecedent and consequent stimulus events. By and large, these analyses have been accomplished (cf. Hunt, 1970). Hunt and Matarazzo (1970) have emphasized the apparent autonomy of the smoking habit which results from these behaviors being overlearned in a seemingly endless variety of situations; Ferster (1970) and Jarvik (1970) have separately analyzed the range of reinforcers which maintain smoking; and Premack (1970), among many others, has described the rich variety of antecedent stimulus conditions which set the occasion for smoking.

These analyses have served as the basis for some limitations on the control and self-control of smoking behavior. For example, the wide variety of responses which have been reinforced for enabling smoking makes it unlikely that extrinsic extinction or punishment procedures can be sufficiently comprehensive to be efficacious in maintaining a reduced frequency of smoking. Similarly, the external restriction of stimulus situations in which smoking is permitted, while helpful, probably can only temper the control exerted by an otherwise multifarious and permissive stimulus environment. Moreover, although external self-control procedures, which attempt to alter the external stimulus conditions under which smoking occurs (and hopefully generate self-produced reinforcing consequences for not smoking), do hold some promise of success, it remains to be seen whether they will be adequate.

Internal Self-Control Models

If external control proves to be insufficient in isolation, then additional help from internal control will be necessary. Internal control has several possible meanings. What is intended here, all that is intended here, is control over those covert responses and stimulus events produced by an individual which are not necessarily open to public scrutiny by another individual. In the context of self-control of smoking, the internal control rubric would include such notions as: covert sensitization (Cautela, 1966); operants of the mind or coverants (Homme, 1965); covert self-punishment (Bandura, 1971); internal contingencies of humiliation (Premack, 1970); and possibly other constructs such as ultimate aversive consequences (Ferster, Nurnberger, & Levitt, 1962).

These internal, self-control models have at least one communality to most external behavior modification procedures, namely, an almost exclusive reliance on aversive contingencies. In some instances the paradigm is that of punishment in which an aversive consequence, such as the thought of vomiting or of the health hazards of smoking, is made contingent upon or shortly follows a response—most often the thought of smoking a cigarette (e.g., Cautela, 1966; Homme, 1965). These internal punishment models have as their intention the suppression of thinking about smoking and presumably the consequent behavior of smoking (but see Hunt & Matarazzo, 1970). When an avoidance paradigm is assumed (e.g., Premack, 1970), the thought of smoking itself is presumably made aversive and the individual may then avoid the negative consequences by actively not thinking about smoking or by thinking of something else.

The phenomena and parameters derived from the learning laboratory for the external, aversive control of another organism are applicable to internal, aversive self-control. Thus, the amount of punishment suppression as well as the permanence of this suppression should

be a function of the conditions and schedule (Logan & Ferraro, 1970) of the aversive stimulus; the persistence of the punished response may be paradoxically increased if the punishment is only partially effective or does not "suit the crime" (Logan, 1969); extinction of the avoidance response will occur if the nonoccurrence of the avoidance response is not followed by the appropriate aversive stimulus; and so on. These aversive self-control models do, however, have advantages and disadvantages which are peculiar to their internal status. One advantage, noted by Premack (1970), is that the punishing agent (i.e., oneself) is ever present to detect a transgression. One disadvantage is that the punishing agent may not be ever ready to do so!

MOTIVATION FOR INTERNAL SELF-CONTROL

Oversimply stated, every individual is eventually faced with the choice of smoking or not smoking. If he already smokes, the individual's choice is to continue smoking or to control his smoking behavior. If he is to do the latter, some motivation for self-control must exist.

The problem of motivating self-control stems from the now indisputable fact that more often than not, smoking behavior has immediate reinforcing consequences and considerably delayed aversive consequences. If choice behavior in this situation were solely a function of the relative magnitudes of the conflicting consequences, presumably there would be no smoking problem. This assumes, rightfully so in most instances, that the magnitude of the aversive consequences of smoking would be sufficiently large to outweigh the reinforcing consequences. Unfortunately for the present problem, the dynamics of choice behavior are such that the value of an alternative decreases as an increasing function of its delay. And indeed, the aversive consequences of smoking are often so much delayed as to have been rarely, if ever, experienced by a large majority of current smokers. (The health hazards of smoking are too serious to suggest, even facetiously, that self-control would be achieved if smokers were actually to experience the ultimate aversive consequences of smoking).

The models of internal, aversive self-control mentioned previously attempt to swing the balance of choice in the direction of not smoking by making the aversive consequences of smoking, or more accurately of thinking of smoking, more immediate. Clearly, a choice axiom would favor not smoking if the immediate aversive consequences were greater than the immediate reinforcing consequences. The other alternative, that of delaying the reinforcing consequences, is a theoretically possible but not a very realistic manipulation, as evidenced for example by the lack of success attributable to the use of nicotine substitutes or nonnicotine cigarettes (Bernstein, 1969). If we accept the argument that externally controlled aversive events are too easily circumvented and too situational specific so that internal self-control is implicated, then two major problems, both motivational in nature, still remain.

The first problem is how to motivate the individual to apply aversive consequences to his own behavior in the first instance. As Mausner (1972) has discussed, several writers have suggested that this is accomplished when the individual makes a commitment or a decision to stop smoking. But for the present purposes this may be considered as a regressive solution since it does not relieve us of the problem of identifying the motivational factors leading to the decision to stop smoking. It would seem more parsimonious to assume for now that considerable overlap exists between the motivational factors which determine these two types of behaviors. Other writers have failed to recognize the problem (e.g., Cautela, 1966), while still others have recognized the problem but failed to offer a solution (e.g., Homme, 1965). Bandura (1971) suggested a rationale for self-punishment which assumes the prior existence of self-generated aversive stimulation, although it is not clear how these self-generated stimuli would be aroused in the first instance in the case of smoking behavior. Indeed, no adequate solution to the initiation of aversive self-control seems apparent. This is perhaps less embarassing once it is frankly admitted that the self-initiation of behavior is a theoretical complexity in many contexts other than smoking behavior even down to the choice behavior of the white rat in a T maze. For the time being, it is only necessary to recognize that more success is achieved if aversive self-control is motivated by external

contingencies. The Ferster et al. (1962) method of training a verbal repertory about the ultimate aversive consequences is one potentially successful example. Assuming, then, that the behavior of aversive self-control is externally initiated, a second problem arises. Specifically, this problem is how to motivate the individual to maintain his behavior or to continue to apply aversive consequences to his own behavior.

The problem of the maintenance of aversive self-control is as difficult as is the problem of initiating aversive self-control. Aversive internal contingencies are probably just too dependent on external contingencies or too easily compromised to be durable. Premack (1970) has already made this point from a different orientation than that assumed here. Two examples may suffice to remake the point. It is clear that for internal, aversive self-control to be maintained, the self-control behaviors need to be reinforced. But how should this be done effectively? If reinforcement is based on the avoidance of self-imposed aversive stimuli, what mechanism exists to prevent the eventual extinction of this avoidance behavior unless some external contingency is repeatedly reapplied to maintain the emotionality of the aversive stimuli? Alternatively, if the behavior of self-punishment is in turn self-reinforced (Homme, 1965), we know from other contexts that the aversiveness of the punishment (and possibly its suppressive effects) will be compromised since it serves as an informational stimulus that reinforcement is forthcoming (Holz & Azrin, 1961). Some of these points may well be arguable. But at least there is some support for Mausner's (1972) observation that the cessation of smoking behavior may not result from a fear of the aversive consequences of continuing the behavior but rather from an increased expectation of benefits from stopping. Translated into Logan's (1970) drive-incentive motivational system, Mausner's (1972) point is that control of smoking occurs when there exists a net positive incentive for not smoking.

THE LOGAN MODEL OF POSITIVE SELF-CONTROL

Logan's (1972) analysis of self-control in terms of habit, drive, and incentive constructs makes several major departures from previous models of aversive self-control. Some of these departures are attributable to the fact that Logan cut his theoretical teeth on the Hull-Spence tradition rather than on more social-personality-oriented theorists or on the operant analysis of Skinner. No matter what the fundamental origin may be, Logan has seemingly faced the problem of motivating self-control behavior quite squarely.

With the important and singular exception that the self-control drive is originally based on the fear-producing consequences of lack of control over one's reinforcing environment, Logan's mechanism for self-control is based on reinforcing rather than on negative consequences of behavior. Thus, the model is one of positive self-control. As such it shares common characteristics with those external self-control models which attempt to alter the stimulus conditions for smoking and arrange self-reinforcing consequences for the behavior of not smoking. It differs from these models primarily by the fact that the self-control drive provides a heretofore elusive primary motivation for initiating self-control behavior. Additionally, reduction of the self-control drive provides an internal reinforcement contingency for the motivated behavior. That is, no special self-reinforcement contingency such as the performance of a higher probability response or thought is necessary. If the behavior of self-control (whatever that may be in a particular context) is emitted, it is reinforced intrinsically by a reduction in the self-control drive. In this sense, self-control is given the role of a consummatory response equal in stature to that of eating, drinking, or sexing. And, indeed, it probably should have such a status since self-control over the reinforcing aspects of one's environment is of considerable importance to the individual.

Not only does the self-control drive serve as the motivation to initiate self-control and its reduction serve to reinforce self-control behavior, it also serves as the basis for the motivation to maintain self-control behavior. The primary maintenance motivation is the positive incentive for self-control or, more explicitly, the expectation of reinforcement for the stopping of smoking. The singular problem is for the positive incentive for not smoking to

outweigh the positive incentive for smoking so that the net incentive or the incentive difference between the two behavioral alternatives is positive in favor of the choice of not smoking. Logan (1972) does not explicitly suggest how to guarantee the probability of such an outcome. Presumably this result eventually arises as a function of repeated contiguities between self-control responses and self-control drive reduction.

The Self-Control Drive

If, as Logan suggests, the natural environment of all individuals is such as to establish a drive for self-control, then the motivational mechanism of self-control initiation and maintenance would seem to be relatively straightforward. All else that would be necessary is to make requisite self-control responses available to the individual. In so doing, the incentive to use self-control over smoking would be increased and self-control would be largely self-maintaining.

Why then do so many people continue to smoke—to *not* exercise self-control over smoking? One obvious reason is that people have not yet acquired the requisite habits of not smoking. But this cannot be the entire answer. Drives have the property of maintaining or increasing in strength when they are not satisfied. Thus, a drive remains ever present until a response effective in reducing it occurs. In a sense, a self-shaping of responses pertains. One important corollary point here is that any response which reduces a drive or keeps it at a low level will satisfy the drive.

With respect to the self-control drive, any self-control response will tend to reduce the drive. Any self-control response would include the self-control of eating, of drinking, of sexing, as well as of smoking. The self-control drive demands satisfaction but it is indiscriminate as to how it is satisfied. To the extent that the self-control drive is satisfied through means other than not smoking, the drive for self-control of smoking should be lessened. The converse should also hold. Self-control of smoking should somewhat reduce the self-control drive and thereby lessen the drive for other avenues of self-control. This discussion has the ring of presenting a learning-motivational mechanism for the more analytical construct of symptom substitution. Perhaps so, but perhaps it is the case that the individual will always maintain a tendency to perform some intrinsically rewarding response which is not in his own best interest.

We then, so to speak, have a matter of priorities. Of the total population of self-control behaviors, which ones are the more probable to occur; which are the more important to exercise? Translating this question into the vocabulary of the experimental analysis of behavior, we may ask, Which self-control responses are more likely to be reinforced or less likely to be punished, and by whom?

The relative priorities of self-control behaviors may be viewed as a matter of conscience, morality, legality, or other comparable constructs. Implicit in such a view, however, is the broader notion of control by the institutions of society since it is these establishments which instill conscience; discriminate between morality and immorality; and write laws which may be obeyed or broken.

THE ULTIMATE CONTROL OF SMOKING

It seems as if we are full circle with respect to the control of smoking. External control, in isolation, has not yet effectively reduced smoking behavior. Accordingly, we look to self-control as a means of reducing behavior which in the long run is harmful. Still further, we seek means of internal self-control in which the controlling contingencies are internalized. The problem which then confronts us is how the implementation of these internalized self-control behaviors is to be motivated in the absence of external influence. Even if the solution to this motivation problem is the recognition of a self-control drive, there exists the problem of what responses should be given priority in satisfying this drive. The answer to this seems to be derivable only from the control exercised by our society in general. It seems necessary then to affirm once again à la Skinner (1953) that ultimate control does not yet rest with the individual. This does not necessarily mean that learning theory has little to say about self-control but rather that what it has to say about self-control may become circuitous. Learning theory may well have to turn outward toward society before it can turn inward toward the individual. Obviously if this route

is chosen, arrival at the final objective of self-control of individual human behavior may be somewhat delayed; it remains to be seen whether the objective will be more effectively achieved.

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