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ABSTRACT

There is a considerable body of research that involves covert antecedents and consequences of behavior, and how these factors tend to influence overt behavior. As is frequently the case in new areas of endeavor, overenthusiastic claims have been made for covert conditioning procedures, often based on poorly controlled experiments or clinical observations. Despite these setbacks, however, there appears to be research support for the notion that covert responses can be altered by punishment and reinforcement, and that covert processes do exert an influence on overt behavior. The problems with such support however, is that most of it comes from examination of case studies. It thus becomes apparent that the crucial test of covert conditioning must ultimately come from comparative group studies using clinical problems as dependent variables. (Author/PC)

NEED FOR REPLICATIONS OF KEY STUDIES IN COVERT CONDITIONING

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Introduction

Explicit attempts to alter a client's thought processes as a means of changing naladaptive behavior and emo ion have long been ignored by behaviorally oriented clinicians. Largely because of both metaphysical and methodological considerations, behavior modifiers have left "private events" to traditional psycho-therapists and have directed their therapeutic efforts to manipulating the external environment. However, as behaviorists have come to recognize that complex human behavior is a function of internal as well as external environments, the clinical utility of attempting to alter private events has begun to be explored.

Recently, Cautela (1967;1971) has suggested that private or covert behaviors (thoughts, images, and feelings) can be influenced by contiguous association with other covert stimuli (thoughts, images, and feelings). Thus, therapists working with alcoholics to decrease positive thoughts and images about alcoholic beverages, would pair images of very aversive events with thoughts of alcohol. Conversely, if clients wished to increase certain thoughts, e.g., thoughts of assertive behavior, therapists would insure that pleasant images are made contingent on such thoughts. Based on this very simplistic notion, there is a burgeoning anecdotal literature suggesting that covert conditioning, as Cautela calls it, is an extremely effective therapeutic tool. Specific techniques included within the covert conditioning paradigm include covert sensitization, covert positive and negative reinforcement, covert extinction, and covert modeling. These techniques have been employed

in the successful treatment of numerous client problems, ranging from sexual deviancy (Curtis & Presly,1972) and heroin addiction (Wisocki,1973) to interpersonal problems (Susskind,1970) and test anxiety (Suinn,1972).

The clinical applications of these techniques, however, has advanced well beyond supportive empirical research. Comparative group studies have failed to demonstrate the efficacy of covert conditioning in reducing smoking (McCallum,1970; Sachs, Bean & Morrow,1970; Wagner & Bragg,1970; Fuhrer,1971). Equivocal results have been reported in the treatment of obesity (Manno,1970; Sachs & Ingram,1972) and alcoholism (Ashem & Donner, 1968). Modification of maladaptive approach behaviors has proved more successful. Phobias (Flannery,1972) and test anxiety (Wisocki,1973) have been successfully treated, and attitudes have been altered (Cautela & Wisocki,1969; Cautela, Walsh & Wish,1971). Further, several well-designed n=1 studies support the effectiveness of covert conditioning (Barlow, Leitenberg, & Agras,1969; Maletzky, 1974). However, many comparative group studies have lacked appropriate controls, and the efficacy of covert conditioning procedures, although promising, appear to be modest at best.

A handful of studies have attempted to directly test the assumptions underlying covert conditioning (Wish, Cautela & Steffen,1970; Ascher & Cautela, 1972; Ascher,1973; Epstein & Peterson,1973). These assumptions are (a) that covert behavior is functionally identical to overt behavior, i.e., that it is subject to the same learning principles, and (b) that covert responses can influence overt responses in a predictable manner. The results of these investigations are largely supportive, although they cannot be construed as conclusive.

Mahoney (1972;1974) and others (e.g.,Johnson & Elson, 1974) have suggested

that replications, to include improvements in design, of some of the more important covert conditioning studies be undertaken. The fact that these procedures continue to be widely used demands that controlled and expanded research, as well as replications, be initiated. Replications will help to establish the clinical utility of the procedure and begin to delimit the parameters which circumscribe its effectiveness.

Key Covert Conditioning Studies

The assumptions which underlie covert conditioning are crucial to its applicability to human behavior. Certainly, if covert behavior is not influenced by contiguous covert events, as are overt behaviors, (the continuity assumption), then conditioning procedures cannot be extrapolated to encompass cognitive activity. Further, if changes in covert events do not generalize to and influence specific overt behavior, (the generalizability assumption), then attempts to directly alter covert events are futile for behaviorists. Finally, much of covert conditioning rests on the notion that a particular behavior can be influenced by events which follow it, even though the behavior was not instrumental in producing those effects, (the automaticity assumption; see Mahoney,1974). Empirical support for these assumptions would lend credence to the conceptual aspects of covert conditioning and would provide the outlines from which further applications could be drawn.

The Continuity Assumption

No less a behaviorist than B.F. Skinner (1969) has argued that "events within the skin"...do not have "any special nature or must be known in any special way. The skin is not important as a boundary; private and public events have the same kinds of physical dimensions (p.228)". Mahoney (1974) notes that this assumption is based more on logical inference than on experimental

evidence. However, there is evidence suggesting that "at least some... (covert) processes seem to parallel those observed in overt phenomena (p.63)."

In a paired-associate learning task, Mahoney, Thoresen, and Danaher (1972) were able to increase or decrease subjects' use of imagery. This was done by giving or withholding small monetary rewards following self-reported use of imagery as an associative method. Because the use of imagery is known to facilitate paired-associate learning, the researchers used recall performance on the learning task in providing some verifications of the subjects' self-reported use of imagery. However, changes in imagery were influenced by overt, monetary consequences rather than by other covert events.

Several other studies have lent indirect support to the continuity assumption. Rimm & Litvak (1969), Proctor and Malloy (1971) and Russell and Brandsma (1974) have established that covert events can serve as antecedent stimuli in eliciting emotional arousal. Further, Weiner's (1965) investigation of imaginal token rewards, as well as other studies discussed in the next section support the notion that covert consequences can influence antecedent behavior.

The Generalizability Assumption

Perhaps the most crucial assumption in terms of the clinical relevancy of covert conditioning is the assumption that contingently applied covert events can influence overt responses. Several studies have been undertaken by Cautela and his associates to test this assumption.

Wish, Cautela, and S-effen (1970) attempted to influence subjects' estimates of circle diameters' sizes through covert reinforcement. Subjects, depending on their experimental condition, were asked to generate reinforcing images whenever they over-or under-estimated, relative to their baseline, the sizes

of diameters of circles. Four other groups were included to control for imagery training and experimenter cueing. Results indicate that covert reinforcement does, in fact, influence simple overt operants.

A similar study is reported by Epstein and Peterson (1973). These researchers attempted to influence subjects' selection of numbers (0-100) ending in one, two, or three or seven, eight or nine. Subjects received training in positive and negative imagery. These images were later made contingent on the emission of certain numbers. Results again support the generalizability assumption.

Ascher and Cautela (1972) attempted to test covert negative reinforcement. Subjects were first trained to produce aversive images on command and then to shift to the image of a bell ringing when the E said the word "bell". Later, the word "bell" was used to influence circle-size estimates in a task identical to Wish, Cautela and Steffen's (1970) described above. Although this experiment was only an indirect test of covert negative reinforcement--note that the word "bell" was assumed to have acquired secondary reinforcing properties as a result of the earlier escape training-- it is taken as evidence for the efficacy of covert negative reinforcement.

Two other studies by Ascher (1973; Ascher & Cautela,1974) have attempted to establish the generalizability assumption in covert conditioning. One study (Ascher,1973) was specifically investigating covert positive reinforcement, while the other was designed to test covert extinction. Results in the predicted direction were obtained in both studies, giving additional support to crucial covert conditioning assumptions. However, both studies can be criticized for failing to include neutral imagery as an information control. Thus, the adequacy of the conditioning explanation of the results can be

challenged.

With the exception of the Wish, Cautela, and Steffen (1970) study, all the studies described in this section have yielded ambigious results, because needed control groups have not been included. Therefore, future research should not only include attempted replications of these studies but also the incorporation of appropriate control groups in the design.

The Automaticity Assumption

To date, the automaticity assumption in covert conditioning has not been directly tested. Support for this assumption has been borrowed from animal laboratory research (see Mahoney,1974). If responses can be modified by consequences unrelated to those responses, it seems likely that consequences which have been produced by the responses themselves might provide an even more powerful influence. Innovative research procedures are needed to explore this assumption and its implications for covert conditioning.

Purpose of Replications

Repeated inferences have been made to the need for replication of these key studies but in order to do so successfully, clarification as to the exact meaning of this term is necessary.

Statistician's are familiar with within design replications and a full treatment of experimental design is beyond the scope of this paper. There are, however, three types of replications, As Lykken (1968) points out, that researchers should be cognizant of.

> "Literal Replication which would involve exact duplication of the first investigator's sampling procedure, experimental conditions, measuring techniques, and methods of analysis;...
>
> In Operational Replication...,one strives to duplicate exactly just the sampling and experimental procedures given in the first author's report of his research.

> In the quite different process of Constructive Replication, one deliberately avoids imitation of the first author's methods. To obtain an ideal constructive replication, one would provide a competent investigator with nothing more than a clear statement of the empirical "fact" which the first author would claim to have established... (pp.155-156)."

With these definitions in mind a cautious eye can be turned toward questions which should be considered before beginning to replicate a research project. Borg and Gall (1971) propose three such questions;"(a) Does the project to be repeated make a significant contribution?,(b) Will replication clear up doubtful points in the original study? and, (c) Are there reasons to doubt the accuracy or validity of the results of the original study?(pp.44-45)".

The aforementioned factors, hopefully, clarify what is meant by the term replication and point out rather serious considerations that should be made prior to replication studies.

Reasons for replicating studies are multitudinous , for example, all one needs to do is pick up a copy of a professional journal and note research reporting significant findings that are in conflict with the results of previous studies or theory. The fact that a paper such as this is being written emphasizes the equivocal results of covert studies and further suggests and supports the need for replications. Furthermore, as Watson (1960) and Bauernfeind (1968) suggest, replications have been largely ignored consequently there are very few things that psychologist and educators can feel sure about.

Throughout the years individuals such as Kessen (1960), Spires (1960) , Reif (1961), Rosenthal (1966) and McGuigan(1968) have pointed out factors

which tend to inhibit individuals from replicating studies. Despite these adverse factors we must keep in mind that if one's contribution to scientific research are to be considered valuable then replications are a necessary element to point out that the results are in fact a true phenomena.

Summary

Throughout this paper there has been reference to a considerable body of research that involves covert antecedents and covert consequences of behavior and how these factors tend to influence overt behavior. As is frequently the case in new areas of endeavor there have been overenthusiastic claims made for covert conditioning procedures. These claims have been based on poorly controlled experiments or clinical observations and later there were disappointments when the claims were subjected to rigorous experimental tests. Despite these setbacks there appears to be research support for the notion that covert responses can be altered by punishment and reinforcement and that covert processes do exert an influence on overt behavior. The problem with the support lies in the fact that the majority of it comes from reports of case studies.

It is at this point that it becomes apparent that the crucial test of covert conditioning must ultimately come from comparative group studies using clinical problems as dependent variables. However, laboratory tests of the assumptions of covert conditioning procedures are also needed. Further, replication of several key studies should be undertaken. If previous results can be duplicated by different experimenters, drawing subjects from different populations, while also controlling for nuisance variables not included in

the original studies, the utility of covert conditioning will be further established. Thus, both operational and constructive replications are needed to provide a solid empirical base for further exploration in this area.

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