REWARD INDUCED RESPONSE COVARIATION: SIDE EFFECTS REVISITED

PETER D. BALSAM AND ANDREW S. BONDY

BARNARD COLLEGE OF COLUMBIA UNIVERSITY AND DELAWARE AUTISTIC PROGRAM

Epstein (1985) raises two concerns about our article, "The negative side effects of reward" (Balsam & Bondy, 1983). First, Epstein questions the validity of arguments suggesting that reward procedures might produce negative side effects. Second, he is concerned over the practical-ethical implications of the paper's title. We respond to each of these concerns within the context of restating our basic argument.

RESPONSE COVARIATION

Response covariation refers to the observation that changes in the frequency of one response are often correlated with changes in the frequency of other responses (Kazdin, 1982). Besides affecting the occurrence of target behaviors, behavioral interventions affect nontarget responses. Nontarget behaviors that covary with changes in a target response may do so for two reasons. Interventions themselves may directly affect the occurrence of nontarget behavior; alternatively, the structural and functional linkages between response classes may be the source of the observed covariation. These processes may result in some responses changing in the same direction as the target response and other responses changing in a direction opposite that of the target. One practical aspect of this change in nontarget behaviors is that therapeutic interventions may produce undesired changes in nontarget behavior, even while producing desired changes in target behaviors. In our 1983 article, we hoped to stimulate research on the mechanisms of response covariation by generating concern about the possible detrimental aspects of these processes in therapy. It had already been recognized that aversive control procedures may produce response covariation that includes unpleasant and therapeutically detrimental behavior. Our focus on appeti-

tive procedures was to establish the generality of these issues and to suggest several underlying mechanisms.

KINDS OF SIDE EFFECTS

Whether changes in nontarget behaviors should be considered positive or negative side effects of a particular intervention depends on one's definition of positive and negative. Epstein (1985) writes, "If reinforcement and punishment produce similar but opposite effects, and if punishment produces *negative* side effects, then reinforcement should produce *positive* side effects." He is, therefore, classifying behavior into positive and negative categories on the basis of whether they were induced by appetitive or aversive control procedures. This method of categorization defines away the concept of negative side effects of reward.

On the other hand, we did not classify side effects as either positive or negative on the basis of the procedure that induced them. Nor is this categorization based on a response property such as frequency or affect. Rather, side effects were defined in terms of the relationship between nontarget responses that change as a result of an intervention and a therapeutic goal. When a behavior is induced that interferes with a therapeutic goal, it would be classified as a negative side effect. If the behavior were consistent with the therapeutic goal, then it would be considered a positive side effect. Hence, punishing a child might induce crying (unpleasant affect and behavior), but it would only be classified as a negative side effect if crying interfered with the therapeutic outcome. Rewarding a child might induce approach and affection. This might, in fact, be pleasant but it is a negative side effect if it interferes with the performance of a target response. Reward and punish-

ment may affect behavior in symmetric ways; however, this, symmetry does not logically imply that "if punishment produces *negative* side effects, then reinforcement should produce *positive* side effects" (Epstein, 1985).

REWARDS AND REWARD PROCEDURES

Epstein distinguishes between "the effects of reinforcers on the one hand and the effects of *contingencies of reinforcement* and *schedules of reinforcement* on the other." What is the distinction between the effects of reinforcers and the effects of a particular reinforcement procedure? Alterations in procedure will influence the kind, intensity, and frequency of target behaviors as well as the kind, intensity, and frequency of nontarget behaviors. For example, the eliciting properties of a stimulus are affected by its intensity, duration, frequency, and relation to other stimuli. Elicited changes in behavior are, therefore, attributable to procedural factors as much as they are attributable to the effects of a particular stimulus. Because Epstein does not identify the properties of behavior that are invariant under changes in procedure but that do vary with changes in stimulus, per se, it is not obvious how the effects of reinforcers and reinforcement procedures can be distinguished.

Even if one could maintain this distinction, its utility is not clear. Epstein implies that problems associated with the use of reinforcers should be attributed to improper procedures, not to the reinforcers. To say that that side effects are not properties of the stimuli per se, however, does not change the fact that they exist as concomitants of an intervention program. Side effects do arise from properties of procedures. They need to be analyzed and understood.

ETHICS

Epstein (1985) asserts that focusing attention on potential negative side effects of reward obscures an ethical issue related to choosing between appetitive and aversive control procedures. He would emphasize the dangers inherent in misapplications of punishment without mentioning any dangers in the misapplications of rewards. This

emphasis reflects a deeply ingrained belief that ethical issues only arise in the case of aversive control. Ethical questions arise when choosing between reinforcement and punishment procedures, and they remain, once a choice has been made. Even though one may sometimes prefer a reward procedure to a punishment procedure for ethical reasons, that does not imply that reward should always be preferred. The belief in the asymmetry of ethical concerns obscures the questions of values inherent in all therapeutic interventions. Raising the problem of response covariation in appetitive control was not intended to (nor should it) diminish concern about this problem in the case of aversive control. We suggest that it is important to know about the nature of response covariation in *both* appetitive and aversive procedures.

ADVICE FOR DR. B.

Lastly, we wish to supplement Epstein's advice to Dr. B. We agree with Epstein that things are complicated and that "... Dr. B. ... was a poor behavior modifier ... the victim ... of inadequate training in the principles of behavior." His training was inadequate because principles to deal with the problems produced by response covariation have not been developed. Unlike Epstein, however, we would not send Dr. B. back for a refresher course in applied behavior analysis. We would send Dr. B. back to the laboratory and the field with a way of conceptualizing the negative side effects problem and with the mission of analyzing the mechanisms of response covariation so that others could be adequately trained in behavior principles.

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