

OF CARROTS AND STICKS: A REVIEW OF  
DECI AND RYAN'S INTRINSIC MOTIVATION AND  
SELF-DETERMINATION IN HUMAN BEHAVIOR<sup>1</sup>

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Most teachers have had the experience of presenting some particularly interesting or stimulating material, only to hear the most dreaded words in education: "Will this be on the test?" Such questions often set the occasion for overt and covert comments on the academic values of "today's" students and complaints about the dreadful educational environments that produce such a concrete perspective on knowledge and education. Those who have been concerned about that issue or related situations should consider the material discussed by Deci and Ryan in this volume. They argue that environmental determinants of that perspective can be identified in many social contexts of great concern to behavioral psychologists, including schools, industrial and managerial settings, clinical work, and even sports.

Reading *Intrinsic Motivation and Self-Determination in Human Behavior* will involve some pain for behavior analysts, however, because Deci and Ryan identify contingent delivery of rewards as the major pollutant in the behavioral environment of our culture. They describe a conceptual system based on perceptions of personal autonomy that prevents people who receive rewards from enjoying the same activities without rewards, and they cite extensive research to support their general contention that the presence of contingencies is a direct cause of the phenomenon.

It would be easy and convenient for behavior analysts to reject this body of work outright on any of a number of grounds. The argument is unabashedly mentalistic, with an emphasis on a variety of mental states both as causal elements and as the primary measure of interest. Their discussions of behavioral psychology are frequently disparaging and based on minimal sources, and there is a consistent preference for research methods and measures that sample behavior rather than analyze the conditions that produce it. There exists, however, a behavioral phenomenon that these authors and many others have reported, and this book presents a serious treatment of one way of discussing that phenomenon.

One reason for consideration of this book is that behavior analysts should be familiar with the arguments most often used to undermine their potential influence in academic and community settings. Countering those arguments may be preferable to merely ignoring them or to offering disparaging comments in return. A second reason for reading this work is to bring our conceptual analysis into contact with data from other areas of psychology. Instead of denying or dismissing the observations that drive the conceptual analysis in this book, behavior analysts should offer a behavioral account of the conditions that lead to changes in the actual or perceived value of activities. A third reason to read this book is to consider the unusual and interesting values that are articulated in the course of the discussion. The authors assert some alternative social values in the process of discussing the area, and those goals are worth considering even when there is substantial disagreement on the appropriate course for achieving them. Behavior analysts interested in public policy having to do with learning,

<sup>1</sup> Deci, E. L., & Ryan, R. M. (1985). *Intrinsic Motivation and Self-Determination in Human Behavior*. New York: Plenum. 371 pp.

I am grateful to Alyce Dickinson for many productive interactions on this topic. Correspondence should be directed to Daniel J. Bernstein, 209 Burnett Hall, University of Nebraska-Lincoln, Lincoln, Nebraska 68588-0308.

socialization, and management of human resources should be prepared to address the concerns raised by this book.

This review first describes the authors' intellectual perspective and the phenomena they offer as evidence for their position. Second, it critically reviews some major empirical points in research on this topic. Third, it presents an example of how one behavioral perspective can offer an account of the basic phenomenon based on concepts from behavior analysis. Last, it comments on the social values and philosophy of psychology offered by the authors, with an eye toward the implications of the assembled data and arguments for implementing social policy with regard to human learning and performance.

### THE SELF-DETERMINATION POSITION

Several elements comprise the heart of the position offered in this volume. First, a variety of empirical phenomena result from the scheduling of consequences for normally enjoyable activities. Most of these results indicate that human participants devote less time to activities after the delivery of presumably valuable consequences. Second, an extensively articulated psychological theory describes a cognitive evaluation process that yields an ongoing, updated value for each activity available to the participant. This theory shares many intellectual roots with attribution theory, a conceptual account of how people make inferences about personal cause. Third, there is a philosophical posture that asserts primacy for human autonomy both as a fundamental property of human nature and as a desirable state of human experience. Fourth, the authors elaborate the implications of this position for social policy in education, clinical work, and management, three areas in which the self-determination position has received a good bit of attention.

#### *The Empirical Phenomenon*

The basic procedure for most of the research in this area is quite simple. People are allowed to divide their time among a set of ordinary play activities during a brief period of free-access baseline. Following that time the experimenter states that a valued material consequence (e.g., money, toys) will be delivered

if the participant continues to engage in one of the most preferred activities. After another usually brief period in which the consequence is delivered for performance of the specified high-value activity, the participant again has free access to the original set of activities without any scheduled consequences. Many researchers have found that participants devote less time to the target activity in the second baseline than they did in the first, and this change is described as undermining intrinsic motivation for the target activity. The participants also provide self-reports of the value of the target activity, either in addition to or in lieu of observation of time actually devoted to the activities. These subjective reports also typically show diminished interest in the target activity after a period in which consequences are delivered.

The basic research finding is robust and has been documented in many contexts (see Dickinson, 1989, for a review). Most research has been conducted in school settings at many age levels, but some has been conducted in workplace and recreational settings as well. For example, money has been delivered for completing newspaper headlines, solving chess problems, assembling small machines, and doing artwork. In all these instances, the time devoted to the task in a follow-up baseline was less than the time devoted in the initial baseline. Many other consequences have been used, including avoiding an aversive buzzer, receiving awards from teachers, playing with preferred toys, and eating food treats. All have been shown to reduce performance and/or subjective evaluation after the reward was discontinued. It is important to note, however, that delivery of the consequences often does not increase the time devoted to the target activity during the contingency. As noted by Williams (1980) and Dickinson (1989), all discussion of the phenomenon must make a distinction between procedures for delivery of reward and reinforcement, which includes effective change in the target behavior.

#### *Cognitive Evaluation Theory*

Based on the accumulated research reviewed in this volume and elsewhere (e.g., Deci & Ryan, 1980; Lepper & Greene, 1978), the authors postulate a general account of the process that results in the undermining of initial interest in an activity. This theory is

based on the assumption of separate but complementary innate needs for competence and for self-determination (autonomy). Events that increase a person's perceived competence or perceived self-determination increase intrinsic motivation for an activity, and events that decrease perceived competence or self-determination decrease that intrinsic motivation. The theory focuses on the person's experience of the activity and addresses changes in a person's interest in a particular activity rather than overall intrinsic motivation. Deci and Ryan argue that self-reports of motivation are more important than observations of the amount of time devoted to an activity, but most research projects also measure intrinsic motivation by observing the frequency or duration of the target activity.

Deci and Ryan identify three features of the delivery of consequences that may influence a person's later behavior through effects on perceived self-determination and competence—a controlling aspect, an informational aspect, and an amotivational aspect. A controlling event is one perceived as an attempt to determine the person's choice; it diminishes the autonomy component of intrinsic motivation. An informational event is one that provides positive feedback indicating the person is skilled in performance of a task; it enhances the competence component of intrinsic motivation. An amotivational event is one that provides negative feedback indicating lack of skill; it diminishes the competence component of intrinsic motivation. The present discussion will refer to the two types of feedback as information relevant to perceived competence and controlling and noncontrolling events relevant to perceived autonomy.

Although behavior analysts may perceive the intrinsic motivation position as uniquely hostile to reward delivery, it should be noted that Deci and Ryan identify several other procedures that have a controlling component, such as surveillance, deadlines, critical evaluation, imposition of goals, and competition. An entire class of procedures that are perceived as controlling have been demonstrated to decrease performance; reward procedures are only the most visible target of criticism. It is also interesting to note that the current formulation of cognitive evaluation theory has expanded to include controlling events described as originating within the individual

as well as events originating in the external environment. Internal events such as self-monitored contingencies and feedback given to oneself based on performance criteria can have the same features (controlling or informational) as external events and therefore can have the same effects on the individual.

Deci and Ryan explicitly note that cognitive evaluation theory has certain parallels with social psychological theories of personal causation. In particular the work of Fritz Heider (1958) stimulated a great deal of research on the conditions that lead to attribution of cause to personal (internal) sources or to environmental (external) sources. As conceived in the current literature (e.g., Schneider, Hastorf, & Ellsworth, 1979), people assign action to a variety of sources such as variability in effort, ability, and luck. It is assumed that people are constantly evaluating the origins of their own actions and attributing intentions to those people with whom they interact. From the perspective of cognitive evaluation theory, the variables that determine those attributions are critical determinants of the impact of consequences on intrinsic motivation.

### *Philosophical Perspective*

The position put forth in this volume makes two explicit meta-theoretical or philosophical assumptions that are critical in the development of the theory. The primary starting point is an assumption that human behavior originates from internal sources and is not simply externally controlled by systematic environmental and genetic variables. This perspective is by no means unique to this volume, but cognitive evaluation theory relies heavily on the assumption that people experience the unfolding of their behavior in these terms and engage in actions necessary to preserve this sense of autonomy. A second major element is the commitment to an idiographic (as opposed to nomothetic) conception of the meaning or value of events. According to this perspective, stimuli cannot be assumed to have the same function across people, so the essential features of a consequence, for example, cannot be determined from stimulus form, prior responding, or intent of the delivery agent. For a consequence to have detrimental effects on performance, for example, the person receiving it need only perceive it as a controlling event, regardless of its actual

controlling effect. Dickinson (1989) offers an account of these and other assumptions in this model using the conceptual language of behavior analysis, but the above version is sufficient to follow the argument made by Deci and Ryan.

#### *Implications for Social Policy*

Deci and Ryan prefer a world with no competition among people, no goals set by leaders, no arbitrary time lines for completion of work, and no coercive consequences. In the absence of clearly external controlling elements, people would attribute their actions to internal sources and experience greater competence and autonomy, and this in turn should lead to more subsequent activity and greater satisfaction. For behavior analysts, the most important implication is that the imposition of contingencies on performance would be either eliminated or limited to those that are not perceived as controlling. Because contingency analysis is the primary tool in the behavior analyst's repertoire, this recommendation has generated considerable controversy (cf. Dickinson, 1989).

### EMPIRICAL EVALUATION OF THE THEORY

There are many ways to comment on the position that Deci and Ryan take. The first focuses on the experimental phenomenon itself, taking note of the limits of the supporting data and placing them in the context of an interaction between external validity and different scientific strategies. Much of the research in this area lasts an hour or two, and the long-term studies typically extend only a few weeks. Some limitations on the durability of the phenomenon may result from brief exposure, and other limitations may diminish the conceptual generality of the phenomenon.

#### *Limits on the Phenomenon*

*Necessary antecedents.* Whereas social psychologists often discuss the detrimental effects of reward delivery in broad terms, the data in the area reveal limitations on the phenomenon, even as presented by supporters of the position. As noted clearly by Deci and Ryan (1980), a certain combination of antecedent conditions is needed to produce the

expected change in intrinsic motivation. First, the target activity must be a highly preferred member of the set of alternative activities; using consequences to increase nonpreferred activities will not produce a further lowering of the value of those activities. Second, the delivery of a consequence must be stated before the reward period begins. The process appears to operate while the rewarded activity is occurring, so unexpected consequences delivered after the behavior has occurred will have no effect on later performance of the target task.

A third limitation is that the consequence must have some material value, as with food or toys, and the strongest effect comes from delivery of money. Delivery of consequences such as praise or attention does not reduce later play. Fourth, the consequence must be contingent on engaging in the target activity, but it cannot be contingent on the quality or amount of the target activity. If anything in the delivery of the consequence provides feedback on the quality of the performance, the person's interest in the target activity does not decrease.

Many researchers identified these limitations on the necessary conditions for observing a change in the target (for reviews see Deci & Ryan, 1980; Dickinson, 1989). This documentation is valuable, and the list of necessary conditions identifies the contexts in which the phenomenon will likely be observed. Although some token economy programs might meet the full range of conditions, very few systematic, real-world attempts to encourage target activities with reward would be likely candidates for trouble. Although material consequences are often expected in school or work settings, most of the time these consequences indicate the quality of performance. In addition, many activities selected as targets for consequences in applied settings are among the least preferred activities available to the participant, and interest in them is unlikely to be affected by the delivery of material consequences. Taken as a whole, the list of necessary antecedent conditions suggests that the phenomenon may be robust in carefully constructed laboratory settings but that many natural settings would not produce the effect. It is apparently difficult to produce an attribution of purely controlling intent, and many real-world consequences include enough information on competence

to overcome any effects of the controlling component of the procedure.

*Variability across participants.* One important measure of the relative importance of any behavioral phenomenon is what percentage of people show the effect. In most human research there is substantial variability across different participants and across time for a single participant. Considerable within- and between-participant variability is seen in all of the studies, suggesting strong unidentified variables. Mawhinney (1979) analyzed the individual data from an early Deci study and discovered that the averaged performances for both the rewarded and the nonrewarded control participants did not represent the behavior of individuals. The mean performance of rewarded participants decreased more than that of nonrewarded participants, but 58% of the rewarded participants had no decrements following reward termination. The average decrement appears to have resulted from very large decreases for 3 participants, and direct examination of the data suggested that the effect was typically small and that relatively few people were affected.

*The stability of decrements over time.* Evaluating the importance of the undermining phenomenon may be tied to the durability of the effect. If extrinsic rewards weaken intrinsic motivation for extended periods (or permanently), the potential problem is more severe than if the decrements are temporary. Some researchers have consistently reported that decreases in task performance persist as long as 2 to 4 weeks after rewards have been terminated (e.g., Greene & Lepper, 1974; Ross, 1975), whereas other researchers have reported that when decrements occur they are transient and disappear within one to two sessions (e.g., Feingold & Mahoney, 1975; Reiss & Sushinsky, 1975). Dickinson (1989) reviewed a number of procedural differences that may account for the varying duration of the phenomenon, but it is safe to say that not all observed decreases in value last for extended periods of time.

*Effective versus ineffective rewards.* Many reward procedures used by researchers who find decreases in performance are not reinforcement procedures, because that term is reserved for those contingent events that increase behavior. The term reward is used

to mean any presumably pleasant contingent consequence given, whether it changes behavior or not. In fact, Lepper (1981) stated that many researchers have avoided using rewards that increase task performance, because any subsequent performance decreases might be due to incidental factors related to the increased task performance, such as satiation or fatigue. Although this practice means that subsequent decreases cannot be attributed to differences in performance of the target activity, it also means that the rewards did not function as reinforcers.

A study by Williams (1980) separated the contingency procedure into components to identify which part was responsible for any decrement that occurred. Two groups of subjects were asked to perform the target activity and were also given a reward; one group was promised an "attractive" reward and the other was promised an "unattractive" reward. A third group was asked to perform the activity but no rewards were promised; this group served as a control for the effects of asking per se. The rewards functioned as expected, with target performance increasing only in the attractive reward condition. Participants in the attractive (and effective) reward group did not decrease postreward performance, whereas participants in the unattractive (and ineffective) reward group decreased performance in the postreward baseline. The participants who were simply asked to perform the task performed virtually identically to the unattractive reward group. These data suggest that the constraint implicit in a performance request was sufficiently coercive to produce a decrement when combined with an ineffective reward, although an effective reward had sufficient impact to neutralize the controlling aspect of the contingency. The distinction between rewards and reinforcers may explain the conflicting results of studies conducted by different researchers; some procedures have used effective rewards that increase the frequency or strength of the behavior whereas others have not.

*Contrasting scientific strategies.* The limitations outlined above call into question the external validity of the phenomenon being studied. Indeed, behavior analysts tend to dismiss this area of research as identifying a transient effect that occurs only under very limited conditions (e.g., Dickinson, 1989). The

argument about generalization of the research to reward contexts outside the laboratory cannot be readily settled without comprehensive data on the nature of the contingencies actually used by parents, teachers, coaches, and managers in contemporary life. It is entirely possible that coercive contingencies based on material consequences are used regularly in our natural human environment, and the necessary antecedents for decreases in postreward performance are prevalent. In the absence of data from domestic cultural anthropology focusing on contingency use, we cannot say whether we live in the land of the carrot and the stick or whether we are becoming a kinder, gentler nation.

The matters of transience and inconsistency across subjects, however, need not depend upon identifying the world to which we generalize. Behavior analysis is built upon replication across subjects to rule out alternative hypotheses and upon identifying conditions that generate performance maintained at a steady state; neither of these conditions is typically met by research in this area. Despite that lack, it may not be appropriate for behavior analysts to dismiss the findings out of hand. The empirical phenomenon is robust and has been replicated in many different laboratories and in varied specific contexts. Researchers studying intrinsic motivation typically adopt a different set of scientific conventions from those characteristic of behavior analysis. The goal of such research is to ask whether there exist any conditions under which a phenomenon (or process) reliably occurs, not necessarily to identify the range of all possible conditions under which the effect remains constant. Having once found that a phenomenon occurs, researchers often make the assumption that expansions of the procedure to a more extended preparation might show similar results. Certainly behavior analysis has a long history of presenting work on key pecking by pigeons and assuming that it is representative of basic processes that will also operate in more complex contexts.

With regard to the present phenomenon, it has been argued that the effect disappears within 48 hr (Reiss & Sushinsky, 1975) or 2 weeks (Feingold & Mahoney, 1975). These data, however, are based on an intervention that lasted less than an hour in one case and for several days in another. It is worth re-

membering that the study by Williams (1980) that supports a behavioral account of the phenomenon was also done in a brief format. Suppose that the researchers were able to conduct an experiment that imposed coercive, material contingencies for many hours a day, day after day, month after month. Is it unreasonable to assume that a history of several years of such contingencies might produce a change in behavior that would last much longer than 2 weeks? Is it more likely that a strong intervention of that kind would affect a larger percentage of the people exposed to it? Such data have not been collected, by behavior analysts or other researchers, and it may be premature to dismiss the effect as weak. The research done to identify the phenomenon is based on a model of science that asks only whether a reliable phenomenon can be demonstrated, and the existence of an effect is evident. Extension to more intrusive and complex contexts is often left to others, and that task is still to be done.

*Critiques of the behavioral account.* In this same vein, we can consider Deci and Ryan's rejection of the operant perspective as also premature. In Chapter 7 they suggest that a behavior-analytic perspective requires a return to baseline levels following termination of reward, and that deviations from baseline levels seriously challenge the principles of operant psychology. First, the critique of behavior analysis does not distinguish between the effects of reward procedures and contingencies producing reinforcement. When the reward contingency produces a reliable increase in the target task, postcontingency performance does not decrease. Second, given the data available, the critique suffers from the same weakness as the behavioral rejection of the basic phenomenon. When small interventions are studied over periods as long as several weeks, there is evidence that postreward decrements disappear, suggesting no permanent deviation from baseline performance. Until someone studies extended application of intrusive interventions, there is no empirical basis for assertion of permanent baseline changes.

It is not unreasonable from a behavioral perspective that intrinsically motivated performance of tasks maintained in the ways just considered could be altered by external events, but Deci and Ryan do not acknowledge

existing behavioral accounts of external events that might alter postreward performance. As reviewed by Dickinson (1989), research by behavior analysts suggests that task success, positive feedback, and praise increase subsequent task performance, whereas task failure, negative feedback, and coercion are likely to decrease subsequent task performance. Ma-whinney (1979) pointed out the relevance of the frequency and pattern of performance when dealing with this issue, arguing that constraints can disrupt the natural pattern of an activity and interfere with performance even after the constraint is removed. An activity may also be affected if it is paired with either a pleasant or an aversive event. Dickinson (1989) also offers an account of the potential effects of associating either punishment or potentially coercive contingencies with the delivery of rewards. Lepper (1981) and Williams (1980) have argued similarly that the coercive aspects of the contingencies are responsible for the decrements observed. The coherence of the operant perspective cannot be said to stand or fall on the basis of the brief but interesting studies presented by Deci and Ryan, and their account does not recognize the ways that behavior analysts differentiate among contingency procedures.

### A COMPLEMENTARY BEHAVIORAL ACCOUNT

Having examined the empirical support for the phenomenon, this review offers one account of the effect in behavioral terms. Even accepting the basic phenomenon as an empirical given, it does not follow that one must use the language system proposed by Deci and Ryan. There are several ways in which cognitive and behavioral perspectives make similar predictions, and a conceptual description of the phenomenon in behavior-analytic terms may be useful.

#### *Origins of Self-Perception of Private Events*

One of the basic emphases in the Deci and Ryan work is the importance of individual experience; each person's perception of the value of activities is both a source of future actions and an important product in its own right. Even from a behavioral perspective, however, one may expect that people will

devalue an activity because it has been the object of a certain kind of contingencies. Skinner (1945) addressed the difficult problem of introspection by focusing on the interaction between the language community (the listener) and those learning the language. Normally the development of naming objects in the world is accomplished by feedback from adult language users; if the conventional label for an object is used, appropriate consequences of various forms will follow. As long as the referent for the language use is public and clear, there will be straightforward and consistent feedback from listeners. All members of the community can recognize a red object and provide appropriate feedback for using the word "red." It is less obvious how the language community offers feedback on labels of events that are not public, such as thinking or perceiving. Skinner argues that the community must infer the nature of a private event (having a toothache, being hungry, liking a toy) and must provide encouraging feedback if the self-descriptive (introspective) label used agrees with the observation made by the listener.

If a child plays alone and happily with a set of balls for an hour, most observers would say that the child likes playing with balls. At the conclusion of the hour, a statement from the child such as "I like playing with these balls" will likely receive feedback appropriate to a correct self-description, whereas the statement "I hate playing with these balls" might encounter a correction or other feedback implying an inappropriate self-description. Given this analysis, it is critically important to identify the determinants of the listener's feedback for the child's verbal behavior. At least initially, to obtain appropriate feedback the child needs to use the same referents for labeling that the parent uses, so the child uses publicly available stimuli as the source of information for correct self-description. Skinner (1945) notes several ways in which control over those introspective labels transfers from public to private stimuli, but for an extended period a child's verbal behavior describing private events is influenced by the same discriminative stimuli (what the child did and the conditions under which it occurred) used by the listener to provide feedback.

Working on the topic of attitude formation

and change, Bem (1972) applied Skinner's (1945) analysis to self-perception of attitudes. Bem argued that people sometimes use their own behavior as a discriminative stimulus for verbal reports of attitudes, specifically citing Skinner's analysis of the acquisition of self-descriptive labels. Borrowing also from research on attribution of personal motives (cf. Schneider et al., 1979), Bem noted that the inference drawn from behavior must take into account the context in which it occurs. When a person does something that is distinctive and without apparent external constraint, most people describe the action as congruent with appropriate private events; when a person does something that everyone else does under similar circumstances or that is clearly constrained by external influence, most people make no inference of congruent private events. Bem suggested that perceptions of self follow the same general pattern; when behavior appears to be unconstrained and not due to external influence, people report "liking" or other attitudes that endorse their own actions. Although there are limits to the generality of Bem's account, his research demonstrated some conditions under which self-descriptive verbal behavior is under partial discriminative control by people's own actions and the context in which they occur.

The relevance of Bem's (1972) position to the present topic is clear in Williams' (1980) study of the phenomenon. Those results implied that the constraint component of the contingency is responsible for the postreward decrement, a view consistent with general findings in self-perception. When one's own behavior is under external influence, self-descriptive private events will not endorse the action. The second major finding in Williams' study was that the decrement occurred only when the consequence did not produce an increase in the target activity. An account based on Bem's (and Skinner's) analysis would not find this result surprising. If a person describes a private event based on an amount of behavior and no constraint, a certain amount of "liking" will be reported. If later the person is asked to account for the *same amount* of behavior but there is a clear external source for the activity, it is not surprising that self-descriptive verbal behavior reflects private endorsement of less intensity. Given that a member of the language community would

similarly report diminished intrinsic interest, the behavioral account of acquisition of the vocabulary of private events anticipates that an actor will (to some extent) use the same public cues for self-description.

The conceptual link still missing from a behavioral account is one that would sustain a change in intrinsic interest beyond the reward period. One possible mechanism is a version of the argument made with regard to the transience of the phenomenon. If these conditions were present for many years, the impact on self-description could be very long lasting simply due to intensity. An alternative version, however, links intrinsic interests to extended action through rule-governed behavior. There is evidence that, at least under some conditions, people's self-descriptions can compete effectively with reinforcement contingencies for control over behavior (cf. Catania, Matthews, & Shimoff, 1982; Lowe, 1983). If there were extended exposure to coercive contingencies that did not increase performance, one might anticipate (given the Skinner/Bem version of self-description) some well-formed verbalizations about the lack of intrinsic interest in the rewarded activity. As long as these self-generated descriptions continued, a continued decrease in interest that had its origins in a history with certain specific forms of contingent reward would be expected. At least in some regards, then, a behavioral perspective can provide an understanding of the phenomena reported by Deci and Ryan within the context of the behavior-analytic tradition.

#### AN ALTERNATIVE SET OF VALUES

One final reason for reading this book is to consider the fundamentally radical social values that are embedded in the text. It is unlikely that there will be much movement in either camp on the background issues of free will and determinism, so there will be an irreconcilable difference on the origins of people's experience of freely chosen, intrinsically motivated activities. Whereas Deci and Ryan value and seek to create behavior perceived to be free, behavior analysts will persist in identifying the environmental conditions that produce that perceived state. However, if one is interested in the phenomenology of



everyday life, regardless of its origins, there is much to be contemplated in this book. The authors propose trying to create a world in which people will experience competence in what they do and the opportunity for action without perceived external constraint. In their view, primary among the changes needed to produce such a social context is elimination of coercion through consequences. They hold that behavior maintained by feedback that identifies competence will be better sustained in the absence of social contingencies than is behavior that was generated by competition for resources used to control people's choices. It is worth noting that these values are also found in behavioral quarters; Sidman's (1989) *Coercion and Its Fallout* takes a number of similar positions on matters such as coercive contingencies and competition, although the rationale is based on research in the operant tradition.

Although not all contingencies are coercive and a source of perceived constraint, there certainly are any number of coercive contingencies in most people's lives. Many faculty have watched with despair, for example, as academic colleagues who denounce behavioral psychology in classes use crudely formed and clearly coercive contingencies to increase faculty rates of writing articles, grants, and books. These are the kinds of conditions that lead Deci and Ryan to write as they do, and the impact on professional academics is apparent in many contexts. Recently, a department faculty at the University of Nebraska expressed outrage when asked to consider some reworking of their undergraduate teaching methods; the chair noted that such changes are requested often, and without compensating resources it could not be done. Are administrators' most dreaded words, "Will this be in the budget?" In the end, students' attitudes that teachers dislike may similarly be a product of the typical contingencies used by faculty. Perhaps all contingency operators in academic settings would do well to read Deci and Ryan's book, along with reviews of contemporary behavior-analytic research focused on the same question.

If nothing else, research such as that reported in this book will remind behavior analysts that one product of any contingency system imposed on human behavior is the verbal self-description of the performer. Re-

ports of diminished interest in rewarded activities may or may not be the product of reward per se, but anyone planning to institute contingencies should consider the issues addressed in this body of research. The goals of the people with authority to establish contingencies are certainly an important part of any assignment, but the effects on the recipients should also be included. To the extent the one generates intrinsic interest, there may be improved generalization to contexts without explicit contingencies. It seems like an oxymoron, but behavior analysts could include the engineering of perceived freedom among their goals. If Skinner's (1945) analysis is correct, then people we see as constrained will likely call themselves constrained also. To the extent that their self-descriptions influence behavior, the long-term impact of those contingencies will be minimized. Although the Deci and Ryan volume does not describe the phenomenon in terms comfortable for behavior analysts and does so while disparaging the behavior-analytic philosophical position, behavior analysts interested in human performance should become familiar with the data in this area. Reading the book will be thought provoking and will provide a stimulating complement to the behavioral writing available on the topic.

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