IS IT SKINNER OR NOTHING?

if you believe "behavior is determined by its consequences," you'll want to read this analysis of what Skinner is saying to the training community

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The public response to B.F. Skinner's *Beyond Freedom and Dignity*[1] reveals a good deal more about the public than it does about Skinner or this work; and it reveals a good deal more about management's perceptions of training than you and I can afford to ignore.

The response has been more extensive, more uniformly antagonistic and more intensely stated than that touched off by any other book during 1971. Skinner has been the subject of a *Time* magazine cover story, a *New York Times* interview, editorial and cover book review, a *Newsweek* education column and countless other reviews. He has guest-appeared on Today, Dick Cavett, David Frost, Firing Line, and CBS Morning News. The book was widely circulated as a condensation in *Psychology Today*. The American Psychological Association gave him its annual award. *Time* quoted his colleagues' description as "the most influential psychologist in the country." The book has been number 3 on the best-seller list. But you get the idea.

This would be a remarkable achievement for any semi-technical book, but on top of that:

- The author has been almost entirely out of the public limelight since the early 1960's.

- What image did survive associated ("pigeon-holed?") him with "short step/immediate-feedback," dull rote learning, and the replacement of tail-fins by teaching machines as the nation's hardware sex symbol. Who among us has not damned him with the faint praise, "Well, at least we learned to specify behavioral objectives out of that PI thing."

- The targets of the most heated attacks are positions which Skinner presented (and presented more forcibly) years ago.

Any one of these should have given publisher Alfred Knopf great qualms. But against these odds the spectacular commercial success and critical reaction has occurred, and that suggests that somehow Skinner has struck a sensitive nerve. But this extraordinary emotional reaction has diverted attention away from the only issues that makes much practical difference *today*: How much of it is relevant to training? How much of it works? Under what conditions?

To answer that we need to examine:

1. Skinner's fundamental position on *the* cause of behavior (because that will be the acid test of your willingness to implement principles of learning which he derives from it).

2. The most consistent critical reactions (because they are the objections you and I will also encounter) and an imputed Skinnerian rebuttal (because we can't overcome those objections with just our own fancy footwork).

3. The principles of learning which he has developed experimentally and what they tell us about designing training (because if we can't use this technology to increase our reliability in predicting and delivering behavior, we are not about to go very far in the business world).

SKINNER ON LEARNING

At a Training Research Forum seminar in 1971, Dr. Skinner brought literally every learning principle he has ever stated back to a six-word premise:

"BEHAVIOR IS DETERMINED BY ITS CONSEQUENCES"

Period. That's it. Either you buy that or you don't. If you don't, stop reading — there is not much here you can use effectively. If you do, then the other controversial, painful conclusions in *Beyond Freedom and Dignity* follow inescapably from it. Perhaps a lot of the emotionalism about behaviorism springs from discomfort with that unforgiving go/no-go switch. Even if you say, "I believe that *some* behavior is determined by its consequences," the kindly

doctor will shoot from the hip with five quick questions and you're dead — shot with your own bullets. "Face it," the man says, "Thursday's behavior is caused by Wednesday's consequences of Tuesday's behavior?

If behavior is determined by its consequences, then the way to change behavior is to change the consequences and rearrange the "*contingencies* of the reinforcement." The question is not only "what *is* the consequence," but "in what way (by what contingency) is the consequence (reinforcement) *related* to the behavior?"

This represents a significant change in emphasis for Skinner, and in fact, much of the current criticism is still aimed at the "stimulus-response" straw-man of the early 1960's. He is concerned by that misperception, because it clouds what he now sees as a more critical concept, the role of *consequences* as the only real shaper of behavior. He now emphasizes that "Learning does not occur because behavior has been primed (stimulated); it occurs because behavior, primed or not, is *reinforced.*"

CRITICS ON SKINNER

Unfortunately, the critical response to the book has focused on the academic issue of whether man is inherently autonymous and whether it is ethical to "manipulate" him (just in case it turns out he wasn't autonymous after all). That focus is unfortunate, because the argument leads nowhere and draws attention away from the real issue:

> what evidence is there that behavior is controlled by its consequences, and how can that make us more effective in helping people to learn, and more reliable when we make commitments to develop a specific level of human performance?

Time's definition of behavioral technology may be the most rational summary statement made by the press: "Behavioral technology is a developing science that aims to change the environment rather than people, that seeks to alter actions rather than feelings, and that shifts the customary psychological emphasis on the world inside men to the world outside them."[2]

But from that point on, there is a high content of emotional static because "Skinner's program runs counter to the traditional humanist image of man as an autonymous individual possessed of a measure of freedom and personal dignity."[3] Novelist Arthur Koestler's not-very helpful response is typical: "(Behavioral technology is) . . . a pseudo-science . . . a monumental triviality that has sent psychology into a modern version of the dark ages."[4] You do have to agree that, if the Koestlers see that much power in behavioral technology as a "triviality," it's certainly understandable that they would not want to recognize it as having any great substance.

The most consistent specific criticisms seem to derive from the autonomy hang-up:

1. "You shouldn't have to bribe or manipulate people with frequent and scheduled bursts of reinforcement."

Skinner attributes much of the criticism of his work, and, for that matter, much of the ineffectiveness of our social programs, to the non-scientific concept, "should." John Cline, project director for Project Alpha (one of the performance contracts in public education) expressed his own exasperation with criticism of his use of rewards in the classroom to reinforce learning: "We hear from people that the kid should *want* to succeed. Well, goddamn yeah, he *should.* But he *doesn't.*"[5]

2. "People aren't pigeons."

As far as I know, Skinner has never admitted to an inability to discriminate people from pigeons. What he does say is that "what is common to pigeon and man is a world in which certain contingencies of reinforcement prevail. The schedule of reinforcement which makes a pigeon a pathological gambler is to be found at a racetrack and a roulette table — where it has a comparable effect."[6]

3. "Even if there is some validity to Skinner's position, he makes it impossible to deal with because he insists that his is the only truly scientific way to study behavior and learning."

Well, Skinner argues, what are its alternatives? "Let's evaluate behavioral technology . . . only in comparison with what is done in other ways. What, after all, have we to show for non-scientific good judgment or common sense or the insights gained through experience?" If you believe, with Skinner, that we have here the rudiments of a new science-based technology, then is there any more reason to accept *other* explanations for his experimentally-derived results than the physicist has for agreeing with Aristotle's view that an object falling toward earth increases its velocity because it became more "jubilant" as it neared the ground? Once you have documented the relationship between behavior and its consequences, can you allow for other superstitions and theories which propose undocumented counter positions.

But then, even the critic goes on to say that "the most terrifying thing about Skinner's claim is that he is probably right . . . the behavioral technology capable of eliminating man's inner core of subjectivity is for all practical purposes currently available."[7]

4. "Even though man is autonymous and can't be controlled by others, it's still unethical to do so."

Skinner takes the usually acceptable scientific position that he is merely a systematic observer of what is already going on, the everyday reality which is already much as he describes it. People may be unaware of what they are doing, but conditioning and reconditioning of behavior is going on all the time. "The fundamental mistake" which he attributes to the humanists and inner-man devotees, "is to assume that their methods leave the balance of control to the individual, when in fact they leave it to other conditions."

WHAT'S IN IT FOR US TRAINING TYPES?

Two things:

- We need to get better operational control of Skinner's conclusions about how people learn, because we're not going to become reliably productive in the business world until we do.

- Skinner's critics have done us a service, by verbalizing in a cogent manner the partially-hidden assumptions our top-management people often have about the whole concept of planned behavior change.

TRAINERS AND UNRELIABILITY

Seven years have slipped away since Colonel Ofiesh asked, "Can the science of learning be applied to the art of pedagogy? . . . Can the studies of learning be applied to training and education? . . . the effort to apply what we know (?) about learning to the art of teaching has been a colossal failure."[8] And I would argue that we're not much further ahead in 1972.

Let's stop looking at this as a rhetorical question — it isn't. The value of a science is that it permits one to predict outcomes. In the corporation, the success of the marketing or production vice president is based on his ability to predict (budget) and deliver some quantified economic value. The issue of whether he does so on the basis of "science" doesn't come up because he usually predicts tolerably well and seldom is asked to produce a scientific basis for his prediction. If we want to play with the big boys, the name of the game is *predict* (i.e., take accountability for) results and deliver. By and large, we can't do that very well now, and the only light spot on the horizon I see is the opportunity to harness learning theory. If we don't soon command some learning theory and its applications to reliable predictions, we've got about the same chance of getting management to entrust the training department with vital responsibility as has the employees' picnic committee.

Aside from the emotional fluff, what is there in Skinner's work that the trainer can use to increase his reliability and effectiveness? Back to catechism lesson one:

"BEHAVIOR IS DETERMINED BY ITS CONSEQUENCES"

The progression of logic continues as follows:

1. Behavior change (learning) can be achieved only by changing the consequences and their contingent relationship with the behavior in question.

2. The task of teaching thus becomes arranging contingencies of reinforcement.

3. The role of training in an organization can then be defined:

> Training is the function in an organization which identifies, develops and maintains those behaviors required for the organization to reach its goals. Where changes in behavior are required, they are achieved by arranging the contingencies of reinforcement under which people learn. This may be accomplished through traditional training porgrams, or through changes in the operating system if that happens to be where the controlling contingencies are located. This function may be dispersed throughout the organization (to line supervisors, to other staffs, etc.) depending on their natural access to the contingencies involved.[9]

4. Learning manifests itself only when an organism modified its behavior in response to a given stimulus.

5. Learning proceeds with three kinds of responses:

a. Discrimination (between classes)

b. Concept formation (i.e., generalization among classes based on similarity of some characteristic).

c. Chaining (a series of responses in which the reinforcer of one response becomes the stimulus for the next response).

6. Behavior which has reinforcing consequences (reward) is more likely to occur again.

7. Behavior which has aversive consequences (punishment) is less likely to occur again; but the relative power of punishment in changing behavior is miniscule compared with the power of positive reinforcement.

8. Behavior which goes unreinforced is eventually extinguished.

9. Confirmation to the learner that he has modified his behavior toward a desired outcome is reinforcing to him.

10. The major difference between learners is the rate at which learning occurs, not the way in which it occurs.

11. One of the critical contingencies is the time lapse between behavior and its reinforcement. When the consequences of behavior occur immediately, the chances of that behavior occuring again are greater than if there is a delay of as little as one day. "No one is ever actually reinforced by remote consequences, but rather by mediating reinforcers which have acquired their power through some connection with them." Since most of the reinforcers in the business world are not very immediate (compensation, promotion, formal acclaim), a central task of training is to *mediate the remote reinforcers* (make the ultimate consequences of behavior more immediate).

For example, the ultimate reinforcer of newly-trained selling behavior is sales closed and other follow on rewards. Usually these occur some days after the behavior is introduced in the sales training session, and are relatively weak reinforcers of behavior occuring in training. A Skinnerian solution would be to simulate reality by paying the salesman off in cash or other tangible values right in the training setting as he exhibits each new approximation to the desired behavior.

In fact, we could generalize from this to say that Skinner's approach to the problem of transfer would put the highest emphasis on simulating the job

situation — its stimuli, its reinforcers, the contingency relationship between response and consequence, and any other important inputs to the individual in that job.

Communications skills are often "taught" by taking the trainee through an example or a role play. The trainee may indeed engage in the behavior which someone defines as "effective communication," but "if the behavior is entirely under the control of the instructor or role partner, it is probably not being brought under the control of stimuli which will be encountered in similar problems on the job."

12. While the *transfer* of behavior to the job depends on bringing it under the control of stimuli in training that are similar to those on the job, the need to provide for the *maintenance* of that behavior over long periods of time imposes another requirement. Even if the learner's supervisor is supportive of the new behavior, he is not a very reliable reinforcer for two reasons:

First, he has neither the skills nor the time to discriminate and reinforce the desired behavior on an effective schedule.

Second, his predictability as a reinforcer is pretty shaky because his own behavior will change in response to the effect his reinforcement has on the learner. The supervisor and learner may start an escalation of mutual reinforcement that is impossible to predict and allow for.[10]

Because of this, Skinner stresses the importance of "making a person dependent on *things* rather than on other people." In other words, build into the environment mechanisms which are triggered when reinforcible behavior occurs. For a salesman, for example, the ideal built-in reinforcer would be a firm order on those calls in which he uses the appropriate behavior. That ideal can in fact be realized if the salesman has been prepared in training to maintain the behavior even if it is reinforced in only a small percent of the occasions in which he uses it.

Where the sales trainer lacks the confidence to rely on that ideal situation, others must be built in. If, for example, the salesman files a written contact report on each call, he might indicate the calls on which he felt he had done a better than usual job of using the particular skill. The sales managers' secretary could be trained to recognize reinforcible reports (a far simpler task than recognizing the degree of the behavior itself). She would flag it for the sales manager who would send it back to the salesman with a short comment recognizing the specific behavior and encouraging him to continue and develop its use.

13. In addition to the accuracy and immediacy of the reinforcement, the other major contingency is the "*schedule* of reinforcement." This concept recognizes that it is impractical (and often undesirable) to reinforce *every* appropriate response, and offers several alternative schedules of the relationship between behavior and reinforcement. Two special situations are worth knowing about:

THE VARIABLE-RATIO SCHEDULE.

This is the gambler's schedule and the most powerful of all behavior shapers. Reinforcement of the desired behavior occurs randomly. Since the learner does not know which response will be reinforced, he will make the response (put the quarter in the slot machine or keep each production unit within specs) many, many times regardless of the infrequency of reinforcement (a jackpot or a satisfactory quality control check). He is "hooked" as they say, and a bare minimum of reinforcement will sustain that behavior for long periods of time.

STRETCHING THE RATIO.

This technique ought to be a central objective of any training design. It also deals with the problem of sustaining behavior on the job with the relatively small number of reinforcements available there, as opposed to the 1-1 ratio which is possible in the training situation. Stretching the ratio means that the 1-1 training ratio is gradually stretched to 5-1 or 100-1, or whatever approximation of the job condition can be achieved — *before the learner leaves the training experience.*

14. And this gem: "To *acquire* behavior, the learner must *engage* in behavior." Read that one again.

APPLICATIONS TO TRAINING DESIGN

These learning principles can be used to design and evaluate training by examining the following variables:

1. The stimuli presented on the job.
2. The responses to those stimuli.
3. The consequences of those responses.
4. The contingencies of reinforcement/consequences (their relationship to the response).
5. Items 1 — 4 in the *training* experience.
6. Items 1 — 4 in the redesigned job situation.

The questions the behaviorist asks about these variables include:

1. Are the descriptions of each element clear enough to discriminate whether or not it has occurred?
2. Do the elements in the learning situation approximate as closely as possible those of the redesigned job situation?
3. To the extent that the training stimulus and response cannot simulate the work stimulus and response, does the training develop behavior which will enable the worker to adapt to these discrepancies on the job?
4. Have the punishing or interfering consequences of the behavior on the job been minimized?

A WAY TO BEGIN

Probably the most successful application of reinforcement theory with dollar payoff has been the work of Ed Feeney, Vice President, Systems Performance, at Emery Air Freight. Feeney's process and spectacular results have been documented elsewhere for ASTD members. For our purpose, a short probing sequence which is the key to his success is a good starting point. Given evidence that some specific performance indicator needs to be improved, Feeney asks:

1. What is the standard of performance?
2. Does the employee know the standard?
3. How well does the employee *think* he is doing?
4. How well does his supervisor think he is doing?
5. What aversive consequences of the desired behavior may be suppressing it?
6. What is reinforcing the undesired behavior?
7. What natural or contrived reinforcers are at hand in the immediate work environment to begin reinforcing the desired behavior?
8. What aversive consequences of the undesired behavior are at hand?
9. What learner responses are already available in embarking on a program of progressive approximation to the desired behavior?
10. What schedule of reinforcement is most efficient for developing and maintaining the desired behavior?
11. What reinforcers are available to reward the worker's supervisor for reinforcing the worker's new behavior?

An important benefit of this approach is that it sidesteps the philosophical issue about autonymous man. It comes across as a straight-forward, workmanlike business problem analysis. If the jargon is left out, managers don't feel uncomfortable in proceeding this way, and Emery Air Freight has over $2,000,000 in increased profit, tied directly to this approach, to prove it.

AUTONYMOUS MAN AND YOUR CHIEF EXECUTIVE OFFICER

Not all company situations, however, will let you get that far without raising the issue of whether man is or ought to be controlled by things outside himself. If an organization has been infected by the "motivation" virus it will be more difficult to overcome the religious fervor about "building a fire under a man" to get him to "realize his potential," and like that.

I like Tom Gilbert's analysis:

"These programs have been sold through articulate and appealing rationales. Mostly, their appeal has been the historical appeal of the "psychology of personality" — theories about the "inner man." They promise to show the executive how to better understand the basic and innermost motives and attitudes of himself and others — and they also seem to promise that such intimate knowledge will lead the executive to being a more effective manager. The appeal of motivational hierarchies, sensitivity training, attitudes that can be plotted on a grid, and the like, has been similar to the appeals of psychoanalysis and religion — these programs really began with Freud and modern theologists who have promised power and peace through inner knowledge. But if the appeal has been as great, the success is equally hard to evaluate . . . We don't get very far by choosing attitudes and inner motives as variables, not because those things don't exist, but because we can't directly manipulate them — and perhaps we have no business trying to. Thus, we look to what we can directly affect: a man's environment . . . his patterns of reinforcement, the feedback of information, those events that interfere with his performance, and the quality of the stimuli to which he is expected to respond . . . This may have the side effects of changing a man's attitudes, his motivation — but these results are in fact side effects, not directly manipulable materials.[11]

At the Training Research Forum Seminar, we asked Skinner to illustrate the difference between his position and those of the various human relations and motivation alchemists. Their problem, he responded is that "they try to deal with things *in the person.* Our 'knowledge' of people keeps us from looking scientifically at the shaping factors which occurred in their past." Graphically, he sees behavior as the starting point for both himself and motivationalists.

But, they make the mistake of trying to infer from the behavior "what is going on inside" the person that "motivates" him to behave so. "These attempts to explain behavior by recourse to inner-man attributes are no explanation *until someone explains the explanation.*" Skinner has very little patience with the cognitive (or as he calls them, the "mentalism") group. To him, "the important objection to "mentalism" is that the world of the mind steals the show. Behavior is not recognizable as a subject in its own right." What's more, he says, "those who object most violently to the manipulation of behavior make the most vigorous efforts to manipulate minds."

"THE WAY I DID IT"

The immediate problem which mentalism presents to the training man is that it seems to be widely shared by businessmen generally and by successful (top-level) managers especially. The successful executive likes to attribute his success to his own volition, hard work, perserverence, spirit, etc., and often assumes that people, being autonymous, are responsible for their own develop-

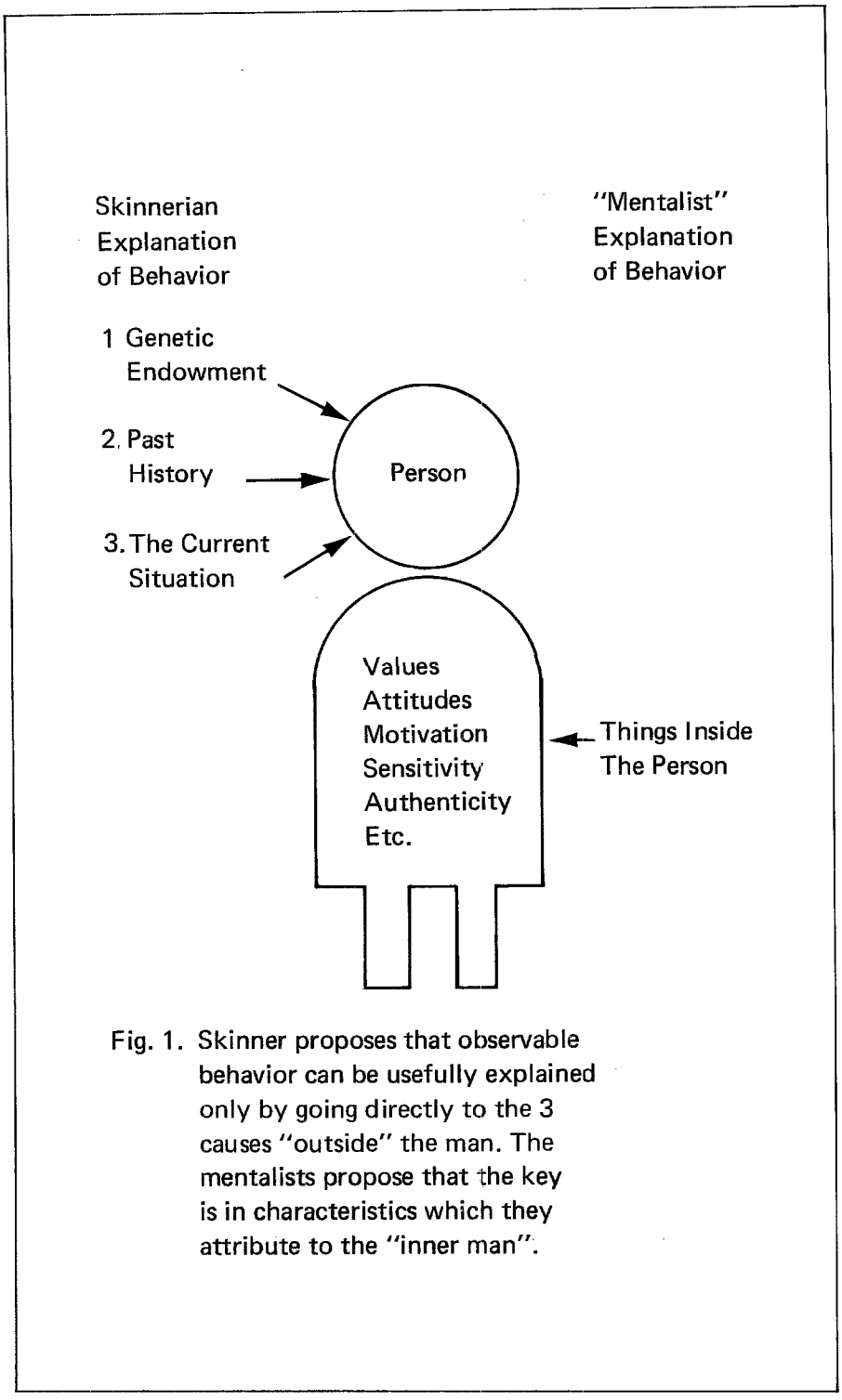

Fig. 1. Skinner proposes that observable behavior can be usefully explained only by going directly to the 3 causes "outside" the man. The mentalists propose that the key is in characteristics which they attribute to the "inner man".

ment — or lack of it. You really can't change behavior in any fundamental way, except that maybe you can "motivate" people to see the light (definition: "the way I did it.") by appealing to that inner-man potential we all are supposed to have. The consequence of this view for management's confidence in training is clear to us all.

Now the issue has spectacular visibility again because Skinner's critics have convincingly articulated the autonymous man concept and presumably reinforced that belief of our top management people. We need to recognize the intensity of that view and find a strategy for dealing with it, or *we are not going to be given the chance to use behavioral technology* extensively as the basis for improving our reliability and effectiveness.

One response to the humanists/mentalists, on their own terms, has been made by Geary Rummler of Praxis Corporation. He points out that the so-called "humanists" have, in fact, less concern for the human than the behaviorist. Referring to Skinner's diagram of the causes of behavior, Rummler says that the behaviorist "proceeds on the assumption that the employee basically wants to do a good job, and given half a chance and reasonable support will probably do so."[12] (What's that? You didn't know that Skinner was the original theory Y man)? The trainer's task is to construct contingencies of reinforcement which can help him learn the job behavior and others which help him maintain it.

The humanist, on the other hand, sees a performance gap and "instantly jumps right on the *man.* "Let's find out what's *wrong with him.* Let's fix him up inside so that he has good values and attitudes." This seems to be not only a less optimistic view of man than the behaviorist approach, but it is what leads us to our irrelevant and ineffective attempts to "motivate" this troublesome person. The focus on the *consequences* of the person's behavior is more effective since the whole point of behavioral research is that *that* is what causes behavior. As Skinner says, "No one directly changes a mind . . . what we change in each case is a *probability of action.*"

Or, as an anonymous psychologist put it, "How do I know what I think until I feel what I do?"[13]

We began with three questions, "How much of this is relevant to training? How much of it works? Under what conditions?

HOW RELEVANT?

Skinner's learning theory is relevant to training in direct proportion to your acceptance of our behaviorist definition of training. If you are comfortable with that approach, then this theory of reinforcement is not only relevant, it is probably the only way to carry it off.

HOW MUCH OF IT WORKS?

If you can accept the proposition that "Behavior is determined by its consequences," then any change in the consequences (and contingencies of reinforcement) of behavior "works" in the sense that it will change behavior. How *well* it works depends on your skill in getting answers to the Skinner and the Feeney analysis questions.

UNDER WHAT CONDITIONS?

Aye, there's the rub.

The necessary conditions are not scientific or esoteric. They are about the same ones that make or break our present programs:

1. You have to know what you are doing. With reinforcement theory there's no "winging it." Only Dr. Fred can shoot from the hip without shooting himself in the foot. So, learn baby, learn!

2. You need access to the consequences of the present and the desired behavior — wherever they fall in the organization structure.

3. You will want to assure that your management people have some knowledge of what you are doing and your basis for it. Don't try to implement these concepts behind a smoke screen of pretending you're not. That means you will need to deal with the "inner-man motivation" beliefs which are so comfortable to top management.

4. Since the three preceding requirements are tough ones, the fourth is what the humanist will call "courage" and "tenacity," and what B.F. Skinner would call "arranging enough positive reinforcement for yourself to neutralize the aversive consequences of a lot of hard work and high risk."

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