WHAT IS BEHAVIOR-BASED SAFETY, ANYWAY?

Properly applying this overall intervention approach—in incentive programs and in other ways—will cost-effectively improve performance.

Photo by Joe Griffin

In recent years, the term "behavior-based safety" has become quite popular among safety professionals and consultants. It's commonly used to reflect a proactive approach to safety and health management. In other words, unsafe or at-risk behaviors are recognized as a frequent cause of both minor and serious injuries, and thus an obvious upstream approach to preventing injuries is to reduce the occurrence of unsafe behaviors. However, I'm afraid there is much confusion among safety professionals regarding the meaning of behavior-based safety. It's more than believing that behavior change is important for injury prevention.

At a recent two-day seminar, a majority of the participants indicated that they had some previous experience with behavior-based safety. When I inquired more specifically about their particular exposure, it was clear that behavior-based meant different things to different people. Most participants believed that if the training or intervention process attempted to change behavior, the approach was "behavior-based safety." In this article I'll explain why this is not correct and give criteria for distinguishing behavior-based approaches to safety management from other approaches.

Some Perspectives Are Too Broad

Confusion regarding "behavior-based safety" is reflected in the title of a recent book dealing with the human aspects of occupational safety. The main title of this text by Rudy Yandrick (Jossey Bass, 1996) is "Behavioral Risk Management," which suggests a focus on behavior-based safety. But a different direction is reflected in the subtitle, *How to Avoid Preventable Losses from Mental Health Problems in the Workplace.* While this book is an interesting expose of the human dynamics of occupational safety, the overly broad and discrepant perspectives or intervention approaches reflected by the book's title are not explained.

Similar confusion regarding behavior-based safety can be found in the recent safety management book edited by Richard Lack ("Essentials of Safety and Health Management," Lewis Publishers, 1996). The three chapters on human dynamics advocate behavior change as key to injury prevention. However, the intervention approaches discussed in two of these chapters are far from behavior-based. More specifically, these chapters (one by Michael Topf and the other by Rosa and Steven Simon) propose that increasing awareness or insight regarding the cause of injuries is key to changing behavior. This viewpoint implies that attitude change should precede behavior change, and runs counter to a basic premise of behavior-based safety. Michael Topf, for example, writes that "managing safety performance through the use of behavior modification techniques is an idea whose time has come" (p. 535), and then proceeds to propose an "awareness approach" that deviates far from the research-supported principles of behavior-based safety.

The strength of behavior-based safety is that its principles implicate specific cost-effective procedures for increasing safe behavior and decreasing at-risk behavior directly. Although the chapters by Michael Topf and Rosa and Steven Simon advocate behavior change, neither chapter offers a specific intervention tool or process a

reader could use to benefit organizational behaviors or attitudes. I believe this is partly because these authors' perspective on behavior-based safety is too ambiguous and broad.

Some Perspectives Are Too Narrow

While ambiguous latitude has added confusion and misunderstanding to the domain of behavior-based safety, so has the narrow perspective that behavior-based safety is "one more instrument in the safety-management toolbox." This quote is from the June 1996 editorial in *Safety + Health* magazine written by Gerard F. Scannell, president of the National Safety Council. The editorial was written in response to an article in the same issue, "Does Behavior-Based Safety Work?" Unfortunately, author Mick Hans did not explain the behavior-based approach to safety, but rather detailed a particular tool derived from the principles of behavior-based safety. As a result, the author portrays the behavior-based approach as one rather narrow set of procedures marketed by a particular consulting firm to improve safety-related behaviors. No wonder the editorial reaction to this article gives the impression that behavior-based safety is merely one tool or program to benefit safety management.

This article reports several reactions from consultants and readers that are consistent with Mr. Scannell's reaction and a narrow frame of reference. Consultant Steve Simon says, "A reduction in unsafe behaviors is certainly well and good, but it doesn't produce a fundamental cultural shift." Likewise, Don Ostrander (the director of the National Safety Council's consulting division) reportedly "regards the behavior-based approach as a potentially useful tool but cautions that it is not a magic bullet . . . (and) the all-consuming focus on employee behaviors can mask management inadequacies that otherwise might come to light."

Readers' reactions to this article also reflect problems inherent in a narrow viewpoint of behavior-based safety. Ronald Nagle (safety manager of New Pig Corp.) reports that his "biggest reservation about behavior-based safety is that it concentrates solely on employee actions and not on outside factors that control these actions," and Phil Hanson (plant manager of C.H. Hanson Co.) writes that "Behavior-based safety management is just another buzzword program that tells unenlightened managers it's OK to work with other employees." Both Max Blackburn (risk manager for the city of Denton, Texas) and Gary Hahn (vice president, risk management services for National Farmers Union Insurance) question the cost-effectiveness of the behavior-based procedure described by Mick Hans; Hahn proposes the addition of "other elements such as incentive programs."

These negative reactions to behavior-based safety are quite relevant, given the narrow perspective presented in the article and marketed by some safety consultants. Such commentary is irrelevant, however, for behavior-based safety as founded on systematic research and theory in behavioral science. Behavior-based safety is not a tool, but an approach toward cultivating an injury-free culture. It can be used to

derive effective injury-prevention procedures, processes, and tools.

The *Safety + Health* article by Mick Hans reports only one tool derived from a behavioral science approach to safety. In my book "The Psychology of Safety," I refer to this tool as behavior-based coaching for safety. But there are many other ways to apply the principles of behavior-based safety to coaching; and the principles of behavior-based safety can be used to develop numerous other tools. For example, the behavior-based approach to safety has proven effective when applied to injury investigation, education and training, ergonomics, evaluation, and the development of incentive/reward programs.

Each of the successful applications of behavior-based safety adheres to seven key principles. In fact, these principles, as described below, should serve as guidelines when developing a behavior-based tool for safety management. The principles are broad enough to encompass a wide range of practical operations, but they are narrow enough to guide the development of cost-effective procedures for managing the human element of safety and health. I propose these as a map or mission statement against which to check your attempts to improve behaviors and attitudes in the workplace as well as in your home and community. And they are certainly applicable to improvement domains beyond health and safety.

1. Focus Intervention on Observable Behavior.

The behavior-based approach to safety is founded on behavioral science as conceptualized and researched by B.F. Skinner. Experimental behavior analysis, and later applied behavior analysis, emerged from Skinner's research and teaching and laid the groundwork for numerous therapies and interventions to improve the quality of life of individuals, groups, and entire communities. Whether working one-on-one in a clinical setting or with work teams throughout an organization, the intervention procedures always target specific behaviors in order to produce constructive change. In other words, the behavior-based approach focuses on what people do, analyzes why they do it, and then applies a research-supported intervention strategy to improve what people do.

Beneficial change results from *acting people into thinking differently* rather than targeting internal awareness or attitudes so as to *think people into acting differently.* This latter approach is used successfully by many clinical psychologists in professional therapy sessions, but it is not cost-effective in a group or organizational setting. To be effective, attitude-focused intervention requires extensive one-on-one interaction between a client and a specially trained intervention specialist. Even if time and facilities were available for intervention to focus on internal and nonobservable person states, few safety professionals or consultants possess the educational background, training, and skills to implement such an approach.

2. Look for External Factors to Understand and Improve Behavior.

B.F. Skinner did not deny the existence of internal determinants of behavior (such as personality characteristics, perceptions, attitudes, and values). Rather, he rejected such unobservable inferred constructs for *scientific study* as causes or outcomes of behavior. Certainly we do what we do because of factors in both our external and internal worlds. But given the difficulty in objectively defining internal factors, it's far more cost-effective to identify the environmental conditions that influence behavior and to change these factors (even system-wide) when behavior change is called for.

3. Direct with Activators and Motivate with Consequences.

This principle enables understanding of why behavior occurs and guides the manipulation of external factors (or interventions) to change behavior. It runs counter to common sense or "pop psychology." When people ask us why we did something, we make statements like, "Because I wanted to do it," "Because I needed to do it," or "Because I was told to do it." These explanations sound as if the cause of our behavior precedes it. And this perspective is supported by a multitude of "pop psychology" self-help books and audio tapes that purport we motivate ourselves with self-affirmations, positive thinking, optimistic expectations, or enthusiastic intentions.

The fact is, however, we do what we do because of the consequences we expect to get for doing it. As Dale Carnegie put it in 1936 in his classic best seller ("How to Win Friends and Influence People"), "Every act you have ever performed since the day you were born was performed because you wanted something." Incidentally, Carnegie referred to the research and scholarship of B.F. Skinner as the foundation of this motivation principle.

The important point here is that activators (or signals preceding to behavior) are only as powerful as the consequences supporting them. In other words, activators tell us what to do in order to receive a consequence, from the ringing of a telephone or doorbell to the instructions from a training seminar or one-on-one coaching session. But, we will follow through with the particular behavior activated (from answering a telephone or door to following a trainer's instructions) to the extent we expect doing so will give us a pleasant consequence or enable us to avoid an unpleasant consequence.

This principle is typically referred to as the ABC model or three-term contingency, with A for activator, B for behavior, and C for consequence. Proponents of the behavior-based approach to safety use this ABC principle to design interventions for improving behavior at individual, group, and organizational levels. More than 40 years of behavioral science research has demonstrated the efficacy of this general approach to directing and motivating behavior change. The next principle provides more specific direction for intervention design.

4. Focus on Positive Consequences to Motivate Behavior.

B.F. Skinner's concern for people's feelings and attitudes is reflected in his abhorrence of the use of punishment (or negative consequences) to motivate behavior. In his classic 1971 book, "Beyond Freedom and Dignity," Skinner writes, "The problem is to free men, not from control, but from certain kinds of control." He goes on the explain why control by negative consequences must be reduced in order to increase perceptions of personal freedom. Think about it. When do you feel more free or empowered—when you are working to avoid an unpleasant consequence or working to achieve a pleasant consequence?

To be sure, the same situation can be viewed as control by punishment or control by positive reinforcement. Some of the students in my university classes, for example, are motivated to avoid failure (e.g., a poor grade), whereas others are motivated to achieve success (e.g., a good grade or even increased knowledge). Which of these groups of students feels more in control of the class grade and thus has a better attitude toward my class? You know the answer to this question because you can reflect on your own feelings or attitude in similar situations where you perceived your behavior as influenced by positive or negative consequences.

The important point of this principle is that we can often intervene to increase one's perception that he is behaving to achieve success rather than behaving to avoid failure. Even our verbal behavior directed toward another person, perhaps as a statement of genuine approval or appreciation for a task well done, can influence motivation in ways that increase perceptions of personal freedom and empowerment. Of course, we can't be sure that our intervention will have the effect we intended. Therefore, we need to measure objectively the impact of our intervention procedures, as implicated in the next basic premise of behavior-based safety.

5. Apply the Scientific Method to Improve Intervention.

Continuous improvement requires continuous evaluation. I'm sure you've heard the saying, "Feedback is the Breakfast of Champions." Well, that's really what this principle implies. The scientific method, not common sense, can provide the kind of objective feedback necessary for improving intervention programs.

Common sense is based on people's selective listening and interpretation, and therefore is necessarily biased. It is usually founded on what sounds good to the individual listener, and not necessarily on what works. In contrast, systematic and scientific observation enables the kind of objective feedback needed to know what works and what doesn't work to improve behavior. Skinner rejected unobservable inferred constructs (such as intentions and attitudes) for scientific study because it is very difficult (if not impossible) to apply the scientific method to these internal constructs and obtain practical feedback for continuous improvement.

The occurrence of specific behavior can be objectively observed and measured before and after the implementation of an intervention process. This application of the scientific method provides feedback with which improvement can be developed. My associates and I use the acronym "DO IT" to teach this principle of behavior-based safety to employees who are empowered to intervene on behalf of their coworkers' safety and want to continuously improve their intervention skills. The four steps of the DO IT process are reflected by each letter: D = Define the target behavior to increase or decrease; O = Observe the target behavior during a preintervention

baseline period to understand natural environmental or social factors influencing the target behavior (see Principle 1), and to set behavior-improvement goals; I = Intervene to change the target behavior in desired directions; and T = Test the impact of the intervention procedure by continuing to observe and record the target behavior during the intervention program.

After a DO IT process, an intervention can be objectively evaluated for unbiased decision-making. Comparisons between observations taking during baseline and during the test phase might indicate to continue the intervention, implement another intervention strategy, or define another behavior for the DO IT process. The systematic evaluation of a number of DO IT processes can lead to a body of knowledge worthy of integration into a theory. This is reflected in the next principle.

6. Use Theory to Integrate Information, Not to Limit Possibilities.

While much, if not most, research is theory-driven, Skinner was critical of designing research projects to test theory. Theory-driven research can narrow the perspective of the investigator and limit the extent of findings from the scientific method. In other words, applying the scientific method merely to test a theory can be like putting blinders on a horse. It can limit the amount of information gained from systematic observation.

Many important findings in behavioral science have resulted from exploratory investigation. That is, systematic observations of behavior occurred before and after an intervention or treatment procedure to answer the question, "I wonder what will happen if...," rather than "Is my theory correct?" In these situations, the investigators were not expecting a particular result, but were open to finding anything. And they modified their research design or observation process according to their behavioral observations, not a particular theory. In other words, their innovative research was data-driven rather than theory-driven.

This is an important perspective for safety professionals, especially when applying the DO IT process described above. It's often better to be open to many possibilities for improving safety performance than to be motivated to support a certain process. Numerous intervention procedures are consistent with a behavior-based approach to safety, and an intervention process that works well in one situation will not necessarily be effective in another setting. So make your best guess at what intervention procedures to use at the start of a behavior-based safety process, but be open to results from a DO IT process and refine your procedures accordingly.

After many systematic applications of the DO IT process, you will likely see distinct consistencies. Certain procedures will work better in some situations than others, with some individuals better than others, or with some behaviors better than others. You might summarize relationships between intervention impact and specific situational or interpersonal characteristics. In this way you are developing a research-based theory of what works best under given circumstances. You are using theory to integrate information gained from systematic behavioral observation. Skinner

continued on page 35

continued from page 30

approved this use of theory but cautioned that premature theory development can lead to premature theory testing and limited profound knowledge.

7. Design Interventions with Consideration of Internal Feelings and Attitudes.

As discussed above, B.F. Skinner was certainly concerned about unobservable attitudes or feeling states. This is evidenced by his malice toward punishment because of its impact on people's feelings or perceptions. This perspective also reflects a realization that intervention procedures influence feeling states, and these can be pleasant or unpleasant, desirable or undesirable. In other words, internal feelings or attitudes are influenced indirectly by the type of behavior-focused intervention procedure implemented, and such relationships require careful consideration by the developers and managers of a behavior improvement process.

The rationale for using more positive than negative consequences to motivate behavior was based on the differential feeling states provoked by positive reinforcement versus punishment procedures. Similarly, the way we implement an intervention process can increase or decrease feelings of empowerment, build or destroy trust, or cultivate or stunt a sense of teamwork or belongingness. Thus, it's critical to assess feeling states or perceptions that occur concomitantly with an intervention process. This can be accomplished informally through one-on-one interviews and group discussions, or formally with a perception survey.

Decisions regarding which intervention to implement and how to refine existing intervention procedures should be based on both objective behavioral observations and subjective evaluations of feeling states. Often, however, it's possible to evaluate the indirect internal impact of an intervention by imagining yourself going through a particular set of intervention procedures and asking the question, "How would I feel?" Perhaps in this case, basic common sense is as good as any evidence you could gather from subjective evaluations of other persons' feeling states.

In Conclusion

I have discussed seven basic principles that define an intervention approach developed from behavioral science research that is used widely to improve human performance. Systematic applications of the scientific method have shown this approach to be cost-effective in varied situations and with numerous types of behaviors. The application of these principles to improve safety performance is commonly referred to as behavior-based safety.

Researchers, consultants, and safety professionals have used these principles to develop procedural steps or tools to deal with various aspects of safety improvement, from injury investigation to employee training and motivation. For example, incentive programs based on these principles identify specific safety-related behavior to motivate, and then use activators (incentives) to direct the desired behavior and consequences (rewards) to motivate it. Behavior-based safety coaching typically involves a behavioral checklist to observe performance and then to give specific supportive and corrective feedback. Actually, both incentive and coaching programs based on behavior-based safety incorporate observation and feedback, and should be refined periodically according to regular evaluation of their behavioral impact. Such refinements could lead to useful theorizing regarding which procedures to use under particular circumstances.

When a particular set of procedures does not result in the desired outcome, it is likely the procedures were ineffective rather than the principles. The principles on which behavior-based safety is based have led to success stories over 40 years of rigorous research. So failure to make a beneficial difference with a tool derived from behavior-based safety is likely to be the result of an inappropriate or incomplete translation of principle to process, rather than disconfirmation of a principle. Thus, behavior-based principles serve as a set of standards or guidelines to follow when designing and evaluating a behavior-based tool. Safety professionals need to distinguish between behavior-based safety as an overall approach to safety management, versus a specific translation of principles into a set of procedures for a particular application. OHS

E. Scott Geller, Ph.D., is featured in the video "Making Safety Incentives Work" and is a senior partner in Safety Performance Solutions of Blacksburg, Va. He teaches at the Virginia Polytechnic Institute and State University.