

Three Keys to Safety Success

Behavior-based safety is founded on the principles and procedures of a particular subdiscipline of psychology — applied behavior analysis. And I sincerely believe this domain of psychology has more potential than any other to improve quality of life on a large scale. At Virginia Tech, I teach my students how to actively care with applied behavior analysis in many different situations. In this article, I use three words to summarize the basic principles of applied behavior analysis and illustrate their application to achieving safety excellence. The three words are “shape,” “sell,” and “study.” They are key to the effective use of behavior-based psychology for achieving continuous safety improvement.

Shape

Shaping represents a particular set of procedures developed more than 40 years ago in animal research laboratories, and used extensively by behavior analysts to improve human performance. Before describing the key aspects of shaping, let me tell you how I demonstrated this process 30 years ago to a large class of college students taking introductory psychology. At the time, I was a graduate research assistant at Southern Illinois University in Carbondale.

One day, I intentionally arrived to class before the instructor, hopped up on the stage, and announced to the students that we were going to shape the professor, Dr. Neil Carrier, to walk off the stage. I said it would be easy if they paid attention and listened intently to my quick instructions. They were all ears.

Here's what we do. Whenever the professor steps closer to the end of the stage, show undivided attention by looking at his face and smiling or nodding your head to indicate sincere approval and appreciation. When the instructor steps back from a position close to the stage, give your normal

reaction to his lectures. Take this opportunity, for example, to write down your notes or to check your other notes, if appropriate. Please, do not cause any disruption at these times. Act normal. The important thing is to give more than usual attention whenever Dr. Carrier gives a closer approximation to our target behavior -- walking off the stage.

Perhaps you're thinking that I was not very safety conscious in those good old days. You're absolutely right. Fortunately, Dr. Carrier did not step off the stage, but he came darn close. Within 15 minutes, the professor was delivering his lecture at the very end of the stage, and everyone of the more than 400 students in the classroom had their eyes glued on him, with some smiling and others nodding their head to show understanding or approval. The teacher was shaped to perform an at-risk behavior, apparently without his awareness.

After maintaining the target behavior for about three minutes, Dr. Carrier stepped back from the edge of the stage and noted an obvious change in the students behavior. Then, he stepped up to the edge and noted the increased attention-related behaviors of the class. He stepped back, and again observed decreased eye contact from many students. Then with a smile, he shouted, Geller, what did you do? Nothing, sir, I replied from the back of the room. Pointing to the students, I continued, It was your students. They used basic shaping techniques to influence your behavior without your knowledge. Wasn't that a great demonstration?" He could not disagree.

Although I certainly don't recommend this technique to get professors or other people to perform unsafe acts, the key aspects of the shaping process reflect pivotal aspects of applied behavior analysis directly relevant to improving safety. Specifically, shaping consists of the strategic use of positive consequences to increase the rate that a desirable behavior occurs. The

focus is on observable and desirable behavior rather than undesirable behavior and unobservable attitudes. Plus, positive rather than negative consequences are used in the management process. Note also that the person receives a positive consequence for closer and closer approximations to the target behavior. You can't shape by waiting for perfection. Instead, you observe closely for improvement and support it with reward or recognition procedures.

My earlier *ISHN* papers on designing effective incentive/reward programs (November, 1992) and on giving and receiving recognition (December, 1996 and January, 1997), offer guidelines for delivering positive consequences in a shaping process. Here I want you to notice the key aspects of shaping that make it a primary application process for behavior-based safety. This single word means: target the behavior you want, observe carefully for successive approximations to the target, and use positive consequences to reward improvement.

Sell

Profound knowledge doesn't win, marketing does. The most beneficial management procedures are not necessarily practiced, only the ones known to those doing the managing. The most effective safety programs are not always used, only those disseminated most broadly and effectively. And, when it comes to applying psychological principles to help ourselves or others, we apply those that sound good. Too often these come from speeches and self-help books, audio cassettes, and videotapes developed by pop psychologists to reflect common sense rather than science. Remember, common sense is subjective and vague, and gained through uncontrolled and biased experiences; whereas science is objective and specific, and based on reliable and systematic observations from controlled experiments.

Essentially, only researchers, university teachers and their students read the science behind the various psychological procedures and techniques used by practitioners and

consultants to improve peoples behaviors and attitudes. Where do the practitioners and consultant get their information? Im afraid most of them do not take the time to read the technical science published in research journals, but instead read translations in the popular press. Many rely on common-sense ideas presented in self-help books and audio cassette tapes to build their tool boxes rather than the research-based theories and techniques reported in scientific journals.

Thus, there is a substantial gap between science-based technology and pop-psychology application. Such a gap is especially prominent in the safety field, because the application of psychology to improve industrial and community safety is relatively new and attempted by many consultants without sufficient background in psychology. Obviously, behavioral scientists with profound knowledge relevant for improving safety-related behaviors and attitudes need to help narrow the gap between science and application. In other words, behavioral scientists need to adopt the marketing strategies of the pop psychologists, and thereby help sell the most cost-effective approaches for improving behaviors and attitudes.

Selling includes talking about a behavior-change technique or process in ways that sound good. The scholarship of many behavioral scientists, including B. F. Skinner himself, was not written for public acceptance and consumption. As a result, many people have been turned off to the principles and procedures of behavior analysis because of the language used to discuss them. Words like behavior modification, brainwashing, and rat psychology for example, have been used to refer to behavior-based approaches to solving human problems, including the human dynamics of safety. As a result, many people view behavior-based safety as restrictive, controlling, and even dehumanizing instead of the liberating and dignity-producing approach it actually is. But, if we want people to appreciate and accept something, we need to talk about it

with the kind of language that does it justice. Proper marketing of behavior-based safety is needed to get the intervention process started with necessary participation and support.

Thereafter the observable benefits of this approach will do the selling, naturally.

Study

I've already lamented the undue influence of "pop" psychologists and consultants with insufficient education in research-based psychology. This third word reflects the only way to gain profound knowledge beyond that contained in the popular press. Study means learning the right stuff for continuous improvement in a certain domain of influence or control. In the realm of human dynamics, this means learning principles and practices from knowledge gained from applications of the scientific method. The critical components of study can be remembered with four words beginning with letters that spell ROLE -- **R**ead, **O**bserve, **L**isten, and **E**valuate.

Read. It's been estimated that the average U.S. adult reads one book a year, including fiction. That rate of reading is clearly not sufficient to remain on the leading edge of a field, even if the one book is nonfiction and pertinent to one's area of expertise. But since books are several years out of date, it's much more important to read professional research journals in one's area of expertise.

It seems professionals stop reading research after they leave an institution of higher learning. Even consultants who are supposedly capable of providing the most relevant and up-to-date advice in a particular domain seem to read much less than an adequate amount of research to remain on the cutting edge. Frankly, it's neither easy nor enjoyable to read research articles, so we rely on reviews in the popular press to keep us up-to-date. Or, we attend professional development conferences and hope the speakers or workshop leaders have been reading the right stuff and can teach it to us.

Observe. Research relies on objective, systematic, and reliable observation of events in situations where certain variables are controlled or manipulated. Proper evaluation and interpretation of research observations allow people to transcend their common sense and add to their profound knowledge. Indeed, as explained above, experts or consultants need to stay informed of the latest research observations in their area of expertise.

My colleagues at Safety Performance Solutions and I teach people how to conduct safety-related observation processes at their work sites in order to evaluate proactive progress toward injury prevention and pinpoint behaviors that need support or correction. We call this process “DO IT” to represent the following four components:

- 1) **Define** one or more target behaviors to monitor for possible improvement;
- 2) **Observe** the target behavior(s);
- 3) **Intervene** to improve the target; and
- 4) **Evaluate** your observations before, during, and after the intervention to determine the impact of your attempts to improve the target behaviors(s).

The DO IT process relies on naturalistic observation to study and improve performance. Its impossible to set realistic but challenging goals without first observing current performance levels, and its impossible to improve an intervention process unless performance is observed before and after attempts to improve it. When people use the DO IT process, they are actually applying the scientific method and adding to their profound knowledge. This depends, of course, on an objective and reliable observation process.

Listen. We cannot rely on direct observation for all of our study behavior. Fortunately, we can learn a lot by listening to experts relate their observations. Its important, of course, to adjust our listening according to the credibility of the source. I recommend asking the expert to

reference the research on which they base their theory, conclusion, or recommendation. We need to be leery about advice based only on common sense or on information gleaned from the popular press. It is as critical to base human factors decisions on sound research observation as it is to refer to the latest technological findings before making chemical, mechanical, or electrical engineering decisions.

Listening carefully to people's opinions, feelings, and concerns can help immensely at improving morale and solving human factors problems. It cannot be denied that the people who work daily in situations where personal injury is possible, either because of hazardous conditions or at-risk behaviors, can offer substantial advice regarding the prevention of injury. And, those who experience a near miss or actual injury have learned something that could be invaluable in injury prevention. Unfortunately, there are often barriers in place that stifle people from offering safety suggestions. Sometimes the people who can use a suggestion are not ready to listen. Obviously, you need to study your workplace (especially through careful observation and listening) in order to find and remove these barriers. This will enable proper study of the conditions, behaviors, and attitudes that determine your safety record.

Evaluate. Before making an informed decision, we integrate the information we have obtained from a variety of sources. In other words, after reading, observing, and listening, we evaluate that information most relevant to the topic of interest, and then decide on a particular course of action. Such an evaluation process is obviously vulnerable to several sources of bias. We decide, for example, which material we read is most pertinent; what observations are most relevant, reliable, and valid; and who or what we listened to offers the most useful information.

Although researchers follow particular guidelines to determine the reliability and validity of their data, subjectivity and potential bias are apparent when translating data to information

and then when weighing various bits of information for decision making. Overcoming these sources of bias is not easy, but remaining aware of potential subjectivity and prejudice during our study behavior can help. And, the more comprehensive our study (through reading, observing, and listening), the more likely an evaluation of the information will help us make the right decision.

In Conclusion

Three words beginning with the letter S remind us of particular challenges to meet if we want to continuously improve the human dynamics of occupational safety and health. The behavioral shaping procedures developed by behavior analysts offer guidelines for increasing safe behaviors and decreasing unsafe work practices. These guidelines, supported by substantial behavioral science research, contradict current safety management policy and procedures in some work settings and therefore imply some paradigm shifts. In particular, shaping directs us to focus on the behavior we want to occur more often and to use positive rather than negative consequences to shape continuous improvement.

How we talk about a safety improvement process can influence how we and others feel about the process. In other words, we need to sell the process to ourselves and others. This requires, of course, that we believe in the process. How does this happen? This will happen naturally if we do our homework before implementing a process, and systematically observe the impact of the process throughout its implementation. This is the essence of study behavior, and the third key to safety success.

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NOTE: Dr. Gellers new book, *The Psychology of Safety*, summarizes the research-based literature related to the human dynamics of injury prevention. For more information call Safety Performance Solutions at (540) 951-SAFE (7233).