

Behavioral Safety Analysis: Correcting for Skill Discrepancies

Last month I discussed behavioral safety analysis in term of system factors or environmental contingencies that support discrepancies between what people do and what we want them to do. Such behavioral discrepancies can occur for many reasons, and it's critical to carefully assess the potential factors contributing to a behavior-based problem before deciding on an intervention plan. Too often "retraining" or "discipline" (meaning punishment) are selected impulsively as the corrective action approach when another less costly and more effective approach is called for.

For example, a discrepancy between ideal and actual behavior, or between a safe and at-risk work practice can occur because workers:

- don't know what's really expected
- don't have the proper tools, space, time, or authority
- don't get useful behavior-based feedback
- are rewarded for performing the wrong (or at-risk) behavior
- are ignored or punished for performing the right (or safe) behavior

The reasons listed above for behavioral discrepancies imply the need for change in the context in which the behavior is performed, referred to as environmental system or interpersonal factors. In these cases, people know what to do, but they just aren't doing it. They are "consciously incompetent." The problem amounts to an execution discrepancy, not lack of knowledge or skill. So obviously "training" is not the answer. Instead environmental contingencies need to be changed, as I discussed in my *ISHN* contribution last month.

Task Redesign

In their 1997 book *Analyzing Performance Problems*, Robert Mager and Peter Pipe point out a number of basic approaches to reducing a skill discrepancy which ought to be considered before concluding that formal training is needed. First and foremost, consider whether the task can be simplified. This is, of course, the rationale behind ergonomics and the search for engineering solutions to occupational safety and health.

Before developing a training program to increase on-the-job safety, make sure all possible engineering "fixes" have been implemented. For example, explore the many ways the environment could be changed to reduce physical effort, reach, and repetition. In other words, entertain ways to make the job more user-friendly before deciding what behaviors are needed to prevent injury.

Sometimes behavior facilitators can be added, such as designing controls with different shapes so they can be discriminated by touch as well as sight, placing clear instructions at the point of application, using color coding to aid memory and task differentiation, and applying machine lifts or conveyor rollers to help with a physical task. Plus, it's possible complex tasks can be redesigned to involve fewer steps or more people. Or to reduce boredom or repetition, simple tasks might allow for job swapping.

Ask these questions to determine whether a task can be simplified:

- Can an engineering intervention make the task more user-friendly?
- Can the task be redesigned to reduce the physical demands?

- Can a behavior facilitator be added to improve response differentiation, reduce memory load, or increase reliability?
- Can the challenges of a complex task be shared?
- Can boring, repetitive tasks be swapped?

Is There a Skill Discrepancy?

But what about those times when the individual really doesn't know how to do the prescribed safe behavior? The person is "unconsciously incompetent." This situation might call for training, which is usually a more expensive intervention approach. Mager and Pipe claim that most of the time a behavioral discrepancy is not caused by a genuine lack of skill. Usually people can perform the safe behavior if the conditions and the consequences are right. So training should really be the least used approach for corrective action.

Ask these questions to determine whether the behavioral discrepancy is caused by a lack of skill:

- Could the person perform the task safely if his or her life depended on it?
- Are the person's current skills adequate for the task?
- Did the person ever know how to perform the task safely?
- Has the person forgotten the safe way to perform the task?

What Kind of Training is Needed?

Answers to the latter two questions can help pinpoint the kind of intervention needed to reduce a skill discrepancy. More specifically, a "yes" answer to these questions implies the need for a skill maintenance program. Skill maintenance might be needed to help a person stay skilled, as when police officers practice regularly on a

pistol range to stay ready to use their guns effectively in the rare situation when they need it. This is, of course, the rationale behind periodic emergency training. People need to practice the behaviors that could prevent injury or save a life during an emergency. Fortunately, emergencies don't happen very often, but since they don't, people need to go through the motions just to "stay in practice." Then if the infrequent event does occur, they will be ready to do the right thing.

A very different kind of situation also calls for skill maintenance training. This is when certain behaviors occur regularly, but discrepancies still exist. Contrary to circumstances requiring emergency training, this problem is not lack of practice. Rather, the person gets plenty of practice doing the behavior ineffectively or at risk. In this case, practice does not make perfect but rather serves to entrench a bad (or at risk) habit.

Vehicle driving behavior is perhaps the most common and relevant example of this second kind of situation in need of skill maintenance training. Most drivers know how to drive a vehicle safely, and once showed little at-risk driving. But for many drivers, safe driving has deteriorated over time, with some safe practices dropping out of a person's driving repertoire completely.

Practice with appropriate behavior-based feedback is critical for solving both types of skill discrepancies. However, if the skill is already used frequently but has deteriorated (as in the driving example), it's often necessary to add an extra feedback intervention to overpower the natural consequences which have caused the behavior to drift from the ideal. This is the basic rationale for the observation and feedback process in behavior-based safety.

While the police officer gets task-inherent feedback to improve his performance on the pistol range, at-risk drivers might need behavior-based coaching to improve. The coach needs to systematically complete a critical behavior checklist (CBC) while watching for safe versus at-risk driving, and then use this CBC to give both supportive and corrective feedback.

Ask these questions to determine whether the cause of the apparent skill discrepancy is due to lack of practice or lack of appropriate feedback:

- How often is the desired skill performed?
- Does the performer receive regular feedback relevant to skill maintenance?
- How do performers find out how well they are doing?

Is the Person Right for the Job?

It should be obvious from this discussion that a skill discrepancy can be handled in one of two ways. Change the job or change the person. The first approach is exemplified by redesigning the task, while the latter approach is reflected in practice and behavior-based feedback. This is behavior-based training. But what if a person's interests, skills, or prior experiences are incompatible for the job?

The person might be like me, for example, and not be "mechanically inclined." Sure, I could learn how to fix a computer if my life depended on it, but the training process would take relatively long and I wouldn't like it. So before investing in skill training for a particular individual, it's a good idea to assess whether the person is right for the job. If the person does not have the motivation nor the physical and mental capabilities for a particular job, the cost-effective solution is to replace the performer. If

you don't, you'll not only suboptimize work output, you'll increase the risk for personal injury.

Ask these questions to determine whether the individual has the potential to handle the job safely and effectively:

- Does the person have the physical capability to perform as desired?
- Does the person have the mental capability to handle the complexities of the task?
- Is the person over-qualified for the job and thus prone to boredom or dissatisfaction?
- Can the person learn how to do the job as desired?

In Conclusion

This article continued with the diagnosis challenge I introduced in my *ISHN* article last month. Numerous factors have been entertained that can contribute to a behavioral discrepancy -- a distinction between the behavior performed and the behavior desired. In safety terms, this is the difference between at-risk and safe behavior.

Most of the factors contributing to behavioral discrepancies are due to the context in which the task is performed or the task itself. Contextual variables include: a) unclear or misunderstood expectancies, b) upside-down contingencies which reward at-risk behavior or punish safe behavior, and c) the lack of behavior-based feedback to help people improve. Often a job can be simplified or re-engineered to reduce physical or mental effort and thus decrease the probability of personal injury.

Training should be considered only after analyzing and correcting critical contextual and task variables. Some training is needed to keep people in practice for handling a relatively rare event (as in emergency training), while other training is needed to help people change frequently occurring at-risk behavior to safe behavior. And then there is the training needed to introduce a new procedure or process. Each of these training situation requires behavior-based feedback, but obviously the situation and the individuals involved determine the protocol for delivering the feedback. This is one more analysis challenge.

The bottomline: Before deciding on an intervention approach, conduct a careful analysis of the situation, the behavior, and the individuals involved in an observed discrepancy between desired and actual performance. Don't impulsively assume corrective action requires "training" or "discipline." A behavioral safety analysis will likely give priority to a number of alternative intervention approaches. Remember this ingenious quote from Socrates, "A prescription without diagnosis is malpractice."

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NOTE: Dr. Geller and his partners at Safety Performance Solutions (SPS) help companies analyze their occupational safety and health discrepancies related to employee behavior -- from the line worker to the plant manager. For information on related books, videotapes, audiotapes, and customized consulting service please call SPS at (540) 951-7233 and visit our website at www.safetyperformance.com