

Improving Organizational and Safety Performance by Addressing Human Error

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Introduction

Focus and distraction are human factors that impact both performance and the risk of error. Unlike observable conditions, such as human behavior, the conditions that give rise to human error are largely unobservable and un-measurable. Addressing these factors requires the application of psychological principles to the manager's toolbox. In other words, managing solely by the numbers misses many of the underlying human factors that impact organizational and safety performance. An understanding of these human factors is key to achieving improved performance as well as mitigating their negative effects.

This article presents a culture and skills development approach for management of focus and distraction. Individual skill proficiency requires on-going development and commitment through participation in awareness/education initiatives as well as applied practice. Organizations that pay attention to and understand the psychology of human factors can develop a safety culture that supports sustainable efforts to mitigate these risks through training and coaching at all levels.

While mind/body factors are part of our human condition, left unchecked they can distract and lead to undesirable outcomes. These events can happen quickly, unexpectedly, and often result in a lapse in concentration or a momentary loss of focus. It is well known among safety professionals that these types of unintentional, mental errors leading to accidents can happen to experienced employees who are familiar with their work, have good safety records and have gone years without an error.

Current management theory favors the measurable over the qualitative. Management indicators tend to be numeric-based and are well suited for tracking, analyzing, and benchmarking. Human factors are less understood or measurable, and as such it is largely overlooked as a valid element in a management system. What is needed is a better understanding and integration of psychology into existing management systems.

Individuals know from personal experience that their mental state, perceptions, and thoughts are a constant companion and cannot be easily separated while on the job. Our state of mind can

distract; misinterpret risk, and hinder focus. It is not surprising that even the best designed and implemented systems are still prone to incidents that result from unintentional mental errors. Therefore, relying solely on behavioral safety, or other observable/measurable approaches misses the underlying, and unobservable human factors that impact risk.

Management of Human Factor Errors

The application of psychological principles to safety management practice is well established and is represented in multidisciplinary fields such as human factors and behavior-based safety. In his 1990 book "Human Error," James Reason described human error and categorized it into intentional and unintentional actions. This type of error can negatively impact the performance of a task and result in significant consequences (death or serious injury). Incident investigations largely attribute cause to human error, yet fail to adequately address the systems in which people operate. (Holden, Richard J., Professional Safety, 2009) Since normal mental processes give rise to human error, the best remedy is to both develop skills to manage human error factors as well as create a culture that understands this condition. Every effort should be made to ensure that systems are sufficiently designed to compensate for the element of human error.

The unobservable nature and difficulty in quantification of human factor errors creates a management challenge. Where do typical business skills come into play to solve this? Can any business management curriculum teach the nuance of focus and distractibility? If we accept that focus depends on human tendencies then it makes sense that we need to look to the psychology of human behavior for answers. While many safety professionals and senior management are well versed in traditional management approaches, they may be less knowledgeable regarding the psychological aspects that drive human performance. To compound the problem these aspects are difficult to conceptualize and measure: Yet they exist and create significant barriers to organizational and safety performance. If necessary, managers should draw upon resources that can skillfully integrate workable psychological concepts and interventions into their management systems.

Are the rewards of teaching employees skills in management of their psyche worth the effort? Developing this skill will benefit the individual in every aspect of their life and creates a win-win situation: Employees acquire skills that are transferrable to their personal lives while there is a concurrent improvement in organizational performance. However, this approach would be best received in an organization that already has a mature and sophisticated management framework and strong safety culture. A supportive culture will reinforce an environment where performance skills such as focus are valued and nurtured. Taken one step further, improving organizational performance and creating a safety-focused culture are shared and complementary goals.

What does a supportive performance-based culture look like? Examples exist in many areas such as athletics, the arts, and business. Some of the key elements include a shared vision and goals; strong peer support for self-improvement; openness to innovative ideas; a sense of engagement and contribution to larger purpose, and mutual respect. The reader is invited reflect on their own organization and how their current culture may impact individual performance. Consider observing other groups that consistently perform at a high level. Does your organization contain some of the key elements as defined above? Consider your barriers to these.

Sources of Distraction

The ability to maintain enhance or control focus at will is a critical and desired outcome in achieving top performance, as well as minimizing risk. On the other hand, distraction is an undesired outcome that increases risk. Sources of distraction can include physical conditions such as fatigue, discomfort (thirst, hunger, cold/hot, other body pains), states of mind (stress level, frustration, complacency), and external sources such as a telephone call, texting, and multi-tasking. These factors can lead to impaired judgment and perception of risk. Regardless of how human error is defined, or whether it results from intentional or unintentional reasons, it is clear that there are a lot of factors that compete for the mind's attention. Without training, we naturally default to the thoughts that seem most important to us at the time. Our brain directs us to pay attention to the thought of the moment, whether it is related to the job or not.

Who has not had the experience of talking to oneself when they should be focused on what they are doing? An example of this is if you've ever been asked to give a public presentation, speech or report. Ever notice your own multi-tasking? On the one hand, you are reporting your information, and on the other you're talking to yourself about your performance. And when your self-talk is louder than your planned content you have entered the world of multi-tasking: working for both your business result and your ego at the same time. And how effective are you as a public speaker when you are talking to yourself about your performance?

Take this quick test. Read aloud the following:

Barefoot in the
the Park

The brain looks for patterns and once a pattern is recognized, minimal discernment is given to the details. You may or may not have noticed that the phrase above has a second "the". Did you read "Barefoot in the Park" or Barefoot in the the Park? Most people would have unconsciously eliminated one of the repeated the's. We experience this observation with routine and repetitive tasks. Think of some things you've learned to do in the past like driving, riding a bike, playing golf, or juggling. First of all, once you learn it, you'll always know how to do it. But remember what it was like when you were still in the learning phase of the activity? You had to think about each and every component of it. It wasn't automatic. You had to break it down into steps. But once you get really proficient, the steps slowly meld into one thought or action. You don't need to think about it anymore. The brain does this automatically.

So, what can we do to compensate for how the brain works and the compromise of attention to detail and the need for focus? What are the best tools to assure optimal focus? They tend to involve skills that manage the mental human factors that lead to distraction or perception bias.

Developing Focus Skills

Any drop in mental focus during the performance of safety sensitive, high risk or repetitive tasks can result in serious human and financial consequences, including death. There is ample evidence that individuals can be trained to improve their focus. Look at the coaching that goes in to training world-class athletes. The first step is awareness that focus is variable and controllable, that there are mechanisms that lead to distraction, and that there are techniques that can be mastered to maintain optimal levels of focus for given situations.

A combination of cognition and/or emotion largely determines the level of focus. Without conscious intervention, the mind will automatically adjust the level of focus based on perceived importance and familiarity of the event. Stress may also play a role. The fight or flight response can produce extreme focus or distraction while complacency tends to result when there is a perception of familiar, and unthreatening conditions. Unless trained to do otherwise, the mind is hard-wired to react to stress similar to a thermostat's reaction to temperature and therefore can influence focus within seconds of onset.

Another example: Let's say your spouse, partner or child is expected to receive results related to recent medical tests. You're worried about a major health problem and expect a phone call. You worry about possible bad news. Meanwhile, this occurs during a typical work day, and you're so familiar with the job that you can do the required tasks in your sleep. What's your mind going to turn to? Most likely to your family concerns. You certainly know the job, have a good attitude, and are committed to safety, yet the normal function of the mind has just increased the risk of an incident. Increasing awareness on the need to focus on the task at hand is a start, but the act of maintaining optimal focus in spite of competing distractions is a skill that must be practiced.

Reaching a level of optimal focus sometimes requires an individual to shift intensity from 0-60 as well as 60-0. It is well known that after a crisis or emergency, adrenaline remains in the body, even when we are expected to return to normal functioning. For example, you work at a control center and after hours of routine, uneventful data, you suddenly see your instrumentation exceed the red zone, and a serious problem is about to develop. Suddenly you have gone from automatic to "pedal to the metal" with adrenaline and your fight or flight response in full swing. During that emergency, you probably handled the critical event well, but what about the aftermath, getting back to normal: How do we get back to focus? Getting back to normal is not such an easy process. But, we can't afford to wait.

Awareness of Focus States & Levels

Let's take a look at the various levels of focus and see how you experience them in your life. Some activities require more focus than others: i.e. the required level of focus (RLF) is higher. For example: autonomic functions, such as breathing, do not require focus and the person is not really aware of it. Low focus involves minimal conscious thought and includes activities such as brushing your teeth, being a passenger in a car, and doing dishes.

The level of focus changes as we react to our environment. The difficulty is in correctly aligning the desired focus level with the activity. To illustrate, suppose that you're on a beach and looking out at the water: Lots of people walking around; kids playing in the sand. Maybe you're daydreaming or reading a book. What kind of focus is needed at the beach? The range can go from no focus (nap), low focus (looking out at the ocean); but what about when the lifeguard suddenly jumps up and there's a situation in the water? Depending upon your interpretation of the event, your focus can go very quickly from low focus to high focus. Now if you realize that the lifeguard is just doing a routine drill, you'll shift back to low focus.

Now let's talk about high focus. When you are really paying attention to something, everything else fades away. There's a relationship between the strength of your focus and the background. The mind is selective and can only focus on only one thing at a time. Try reading a

newspaper and listening to your spouse at the same time. Is possible to pay attention to both at the same time? The bottom line is that the brain is not good at multi-tasking: in fact, it can't.

Recent studies at MIT in Cambridge MA have reported that people are not able to multi-task. (CBS News, Feb 1, 2010) In fact, the research has shown that multi-tasking reduces impact on memory and concentration. Even though multi-taskers perceive they are effectively engaged, they are less engaged and less effective. And do our workers, multi-task? All the time according to confessions of thousands of workers who admit to competing thoughts emanating from stress related to both the job as well as personal life.

There is a strong relationship between the level of focus and stress. The flight or fight response, first described by the physiologist Walter B. Cannon, is a series of biochemical changes that prepare you to deal with threats or danger. Focus level increases with stress. And therein is the problem. Familiar tasks lead to complacency which lowers stress. The natural set point for focus is also lowered, unless the individual actively practices concentration.

Performance anxiety manifests itself on the opposite end of the stress spectrum. In this situation, there is excessive focus to the point of hesitation and uncertainty. Controlling stress is necessary to prevent it from interfering with focus.

A centering exercise uses the abdominal breath to lower stress. This requires the individual to focus on the breath while breathing from the abdomen at a slower rate. Focus on inhaling slowly and deeply through the nose, and exhaling slowly through the mouth. After a minute, the stress level should be lower and the ability to manage and control focus more accessible.

Developing a Focus Skill

When training employees in managing and controlling focus, participants should learn to recognize their own unique levels of focus and understand the factors that influence focus. This includes understanding sources of distraction, and the connectivity between focus, stress and errors. Curricula should include interactive class activities that identify areas of focus that are relevant to the participants' work as well as personal goals. Here are a few things to consider when evaluating your own areas of focus.

- Determine the important activity/tasks that would require special focus. Ask yourself what's the worst thing that could possibly happen if you get distracted or lose focus during that task?
- Determine the level of focus required for the task. Visualize your "focus" as a switch that can be turned on and off as if you had a rheostat and could adjust your focus level accordingly.
- Identify potential sources of distraction and determine ahead of the task how you will handle the potential distraction. For example, turn off the cell phone while driving, tell yourself if a certain worry or thought comes to mind you will tell it to go away, remind yourself that the task ahead of you is the single most important awareness you will have in your mind.

All focus skill development processes should be supported and reinforced by the organization's culture. Support for these should include:

1. Education on the normal function of the mind and how it creates varying levels of complacency and distraction.
2. Identification of the skills that can be used to enhance focus.

3. Creation of real life work examples that identify optimal focus states. This includes identification of situations where loss of focus could result in a serious or potentially serious incident.
4. Identification of how the skills discussed could have prevented the incident.
5. Identification of work activities that require varying levels of focus and motivational techniques to ensure optimal focus in each situation.
6. Discuss focus level requirements in job briefings and work planning forums. Discuss barriers to applying these skills.
7. Follow-up: Establish a work partner to do a scheduled de-brief on progress toward applying these skills at work. Integrate this requirement as part of the employee's performance plan.
8. Include mind/body factors as part of a contributing factor review as part of all incident analysis.

Conclusions

Organizations find that overall job performance and situational awareness improves and human error reduces when employees learn to manage their distractions, control stress and apply skills that improve their ability to focus.

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