

# What's Your Safety IQ?

## Personality Traits and Person States Related to Injury Prevention

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An injury-free workplace requires attention to three basic domains: the *environment* (including tools, equipment, and climate of the work setting), the *person* (including attitudes, beliefs, and personalities of the employees), and *behavior* (including safe and at-risk work practices, as well as intervening for a coworker's safety). These factors are interactive, dynamic, and reciprocal. Influencing one factor eventually has impact on the other two. For example, changes in the environment have indirect effects on peoples' behaviors and attitudes, and behavior change usually results in attitude change and some change in the environment. Thus, to achieve and maintain an injury-free workplace, employees need to address each of these domains daily during the development, implementation, and evaluation of intervention strategies to remove environmental hazards, decrease at-risk behaviors, increase safe behaviors, and provide more user-friendly or ergonomically-sound work stations (cf. Geller, 2001).

This presentation focuses on the person (or personality) factors that contribute to the safety performance of an organization. Piles of research in psychology show that personality factors influence behavior. In fact, the first involvement of psychology in safety focused on finding the "injury-prone personality". Methods of studying such a concept varied dramatically over time, and potential explanations for why some people seemed to suffer more injuries than others ranged from chance or "bad luck" to innate personality characteristics or traits. Each of these explanations and their accompanying methodologies suffered flaws, leading to studies that produced inconsistent or ambiguous results (Hadden, Suchman, & Klein, 1964; McKenna, 1983; Shaw & Sichel, 1971).

Therefore, data related to the control of injuries with person factors were often misinterpreted, creating miscommunication and confusion among researchers and leading many to scoff at the concept of injury proneness. Nevertheless, the idea that person factors determine unintentional injury resurges in the literature every decade or so, often by a consultant with a new employee selection tool or a researcher identifying prior miscommunications and urging further study.

### The Low-Hanging Fruit

Over the past several decades, safety researchers have largely focused their efforts on environment and behavior factors, mainly because these are readily observable and can be reliably measured. These environmental and management-systems strategies did not fail. They tackled the low-hanging fruit and prevented numerous injuries and fatalities as a result. However, today the context has

changed for many leading-edge companies. With environmental conditions and management systems more safety relevant, appropriate attention to the human dynamics of safety (including personality factors) will reap observable benefits.

Here we want to provide a context for understanding the role of personality in industrial safety and health. This could provide increased awareness and understanding of the diversity of individual differences related to injury prevention and inform the development of interventions to improve safety-related attitudes and behaviors.

## **Traits vs. States**

People are obviously different in many ways. To simplify things, it's common for us to want to put people into tidy classifications. At times however, these classifications can be unfair and invalid, such as to generalize our thoughts about strict gender boundaries, as in "men are from Mars and women are from Venus" (Gray, 1992). Many measures of personality, including the popular Myer-Briggs Typology (Myers & McCaulley, 1985), are grossly insufficient to account for relations between personality and behavior. In fact, the basic premise of the Myers-Briggs Typology – that we are born with certain personality traits – can be detrimental to human initiative and can limit possibilities. If the first author believed, for example, his introversion score was an immutable personality trait, he might have selected a profession other than university teaching and public speaking.

Research has shown that many personality characteristics are states that vary according to the interpersonal situation or environmental context (Cattell, 1973; Cattell & Kline, 1977). Thus, when the first author steps in front of his introductory psychology class of more than 600 students, he puts on his extroversion "hat". But, while drafting a version of this paper on the deck of a rather secluded house on Holden Beach, NC, he feels very much like an introvert. We should be careful not to limit ourselves with a certain personality label – a permanent trait that supposedly biases our attitudes, perceptions, and behaviors.

In thinking of the person factors related to safety, we would like to propose a model of what we call "safety identity", or states and traits that contribute to one's injury proneness and preventiveness. From this perspective, person states are most relevant for injury prevention. They can be changed by an intervention process, and they reflect one's willingness to participate in such a process. In contrast, the personality traits relevant to injury proneness are relatively immutable to external intervention.

## **Injury Prone vs. Injury Preventive**

When relating personality to safety it's important to distinguish between one's propensity to experience an injury versus one's willingness to participate in an injury-prevention effort. Both of these inclinations or propensities influence an organization's safety record, but as mentioned above, one is easier to influence than the other. Specifically, injury proneness is determined largely by internal or dispositional factors which are difficult to assess reliably and are somewhat resistant to influence. Hence, injury proneness is more likely a trait than a state.

In contrast, situational factors controlled by organizational and interpersonal variables influence a person's willingness to actively care for themselves and others by participating in an organizational process designed to prevent injuries. These are considered person states which fluctuate according to behavioral context or climate. Thus, it makes more sense to design environmental and behavioral interventions to get more people involved in a safety-improvement campaign than to attempt to change an individual's disposition to potentially be injured.

Figure 1 depicts this distinction between propensity for injury and willingness to participate in an injury-prevention effort. The labels given the four categories defined by the 2 x 2 matrix reflect the relative risk of injury to four different personality typologies.

		<b>Injury Prone</b>	
		<b>No</b>	<b>Yes</b>
<b>Injury Preventive</b>	<b>No</b>	<i>Externally At-Risk</i>	<i>Unsafe</i>
	<b>Yes</b>	<i>Safe</i>	<i>Internally At-Risk</i>

**Figure 1: Four safety identity categories are defined by two extreme injury proneness traits and two injury preventive states.**

As depicted above, the safest individuals are those who are not injury prone and do whatever they can to prevent an injury. The most unsafe employees are those who are injury prone, but do not take precautionary measures. Appropriate intervention strategies can move an “externally at-risk” individual into the safe category, but it’s unlikely an external technique can be successful in advancing an “internally at-risk” person to the safe classification.

Some personality factors can impact both injury prevention and injury proneness. For example, optimists and people who perceive a high level of personal control (termed “internals”) are more likely to be injury preventive than pessimists and “externals” (or those with relatively low expectations of personal control) because they place greater value in taking responsibility for their safety (Hansen, 1988). However, because of their greater expectations of personal control and positive outcomes, internals and optimists, respectively, might take more risks and therefore be relatively injury prone (Cooper, 2003). Thus, these personality factors can influence one’s propensity for both preventing and experiencing personal injury, resulting in no net gain for safety. Extraverts and pessimists, however, experience relatively high rates of unintentional injury (Hansen, 1988).

### **The Anxiety of Safety**

As a personality trait, anxiety is likely to influence both injury proneness and injury preventiveness. We’re referring to anxiety as operationally defined and measured 50 years ago by a highly researched survey instrument developed by Dr. Janet Taylor Spence. It’s called the Taylor Manifest Anxiety Scale (TMAS; Taylor, 1953).

Dr. Spence's definition is consistent with that given in the American Heritage Dictionary (1985) as "a state of uneasiness and distress about future uncertainties" (p. 117). Clearly anxiety is an unpleasant state we want to avoid. But, here we're talking about a trait, rather than a state. As a trait, anxiety is a relatively stable personality quality that determines one's motivational and emotional responsiveness to real or imagined environmental stressors.

As measured by the TMAS, high anxious people are energetic, high-strung, self-conscious, more nervous than average, and generally work under tension. They worry over money and business matters, and have difficulty keeping their mind on one thing. High-anxiety individuals worry about being unsuccessful (Taylor, 1953).

At first, high anxiety seems to be an undesirable personality trait. This is not necessarily so. Before bemoaning your own disposition toward high anxiety, consider the following reliable research finding. While high-anxious people perform less competently than low-anxious people on novel tasks or jobs they could not prepare for, they typically outperform those with lower anxiety on tasks for which they could prepare. Why, because their strong desire to avoid the aversive anxiety feelings accompanying the thought of failure motivates them to do as much as possible to succeed.

### An Illustrative Anecdote

Many people have experienced test-taking situations they could not prepare for, like the Educational Testing Service's Scholastic Aptitude Test (SAT), which high-school students take for entrance into college. On average, high-anxious individuals do worse than low-anxious people on these tests (Byrne, 1974). Why, because their nervousness and heightened arousal energizes a wide range of behaviors and thoughts, many of which compete with execution of the correct response.

Perhaps you won't be surprised to learn that SAT scores are not very predictive of academic performance in college, as measured by freshman grade point average (e.g., Ramist & McCamley, 1990). Why, because students can prepare for assignments and tests that determine their grades, and high-anxious students are typically very proactive when given opportunities to prepare for success. Their strong need to avoid the negative emotions of being unprepared motivates them to work hard to avoid failure. And, if they prepare well and become confident they can perform well. Then, they can develop an achievement mindset and actively approach success.

### Relevance to Safety

We hope you agree the anxiety trait defined here can be good for safety. Recall the dictionary definition of anxiety as a state of uneasiness about the future. People who have a constant anxiety about the possibility of a workplace injury are going to do everything they can to put themselves in control of injury prevention in an attempt to alleviate the feelings of anxiety. These folks do not need an actual injury or fatality to get their attention. However, such unfortunate events are often a necessary wake-up-call for the low-anxiety employees.

It's noteworthy that the term anxiety has negative connotations, and therefore the premise that anxiety is good for safety might be difficult for some people to accept. In this case, try substituting the analogous term "concern" for "anxiety". Then the bottom line is that people who have an ongoing internal concern about the safety of themselves and others are more likely to do whatever it takes to prevent the occurrence of personal injury. Therefore, this personality trait can have a supportive influence on industrial safety and health. Indeed, passionate safety leaders are apt to cultivate a *state* of anxiety or concern for safety throughout a work culture.

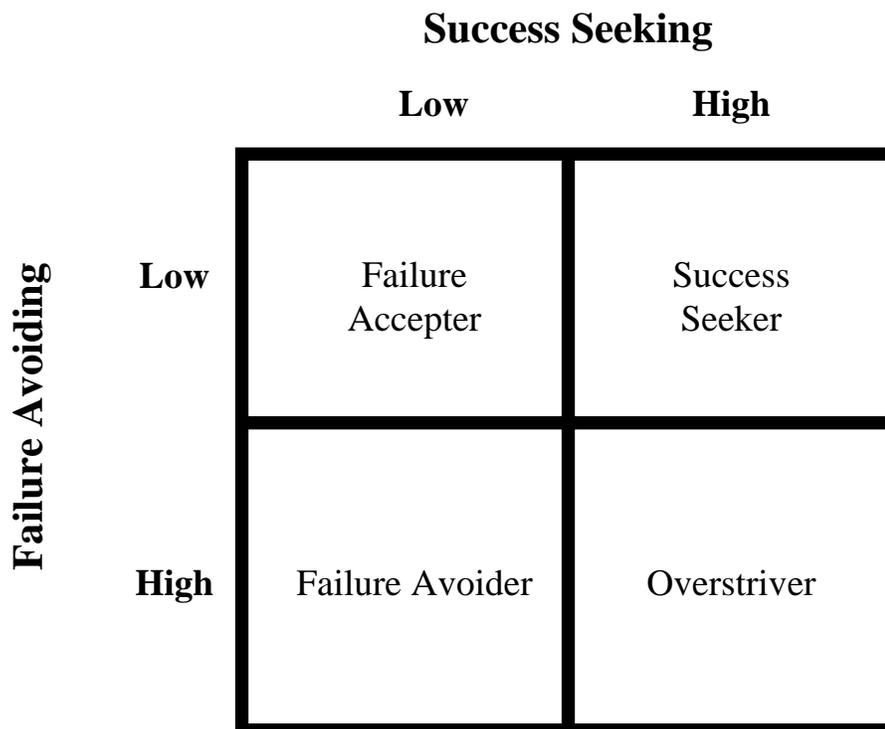
## Achieving Success vs. Avoiding Failure

Now let's turn our attention to person states that can have a dramatic effect on one's attitude toward safety as well as a person's willingness to participate in a safety-improvement effort. Over the first author's 35 years of university teaching, he has noticed two different person states among his students. But of course, the class environment influences these states. Specifically, some students seem to possess a "need to achieve," while others portray a "need to avoid failure." We can make this distinction by listening to students' verbal behavior. For the failure avoiders, the class is a requirement they must fulfill in order to get by. They study only minimally to avoid failure, and feel controlled by negative consequences. Generally, they are not "happy campers," unless the class is cancelled or ends early (which rarely happens).

Those who "work to achieve" enjoy the class much more than the "failure avoiders". They view the class as an opportunity to learn. These students feel more influenced by positive than negative consequences, and thus perceive more personal control, self-efficacy, and optimism. These person states influence more achievement, which in turn feeds these person states. Thus, we have a productive behavior-attitude spiral that continuously improves human performance.

### Four Types of Students

The person-state dichotomy of working to achieve versus working to avoid failure is based on classic research conducted in the 1950's and 1960's by Richard Atkinson and David McClelland (Atkinson, 1957, 1964; McClelland, 1961, 1965). These investigators developed a reliable assessment tool of achievement motivation capable of predicting student's course selections and class performance. However, this popular bipolar categorization is an overly simplified version of Atkinson's original theory which identified *four* types of individuals, as illustrated in Figure 2 (Covington, 1992). This typology of person states classifies people as success seekers, overstrivers, failure avoiders, and failure accepters (Covington & Omelich, 1991).



**Figure 2.** A four-way classification system determined by a person's focus on achievement vs. failure.

A substantial amount of research has identified personality characteristics related to each of these four categories. A complete discussion of these is beyond the scope and purpose of this paper (see Wiegand & Geller, 2004 for more details). Here it's only critical to understand why the "success-seeker" category is most desirable. These individuals show the highest levels of self-efficacy, personal control, and optimism (Covington & Omelich, 1991; Covington & Roberts, 1994; Martin, 2002b), and are more likely to actively care for the safety and health of others (Geller, 2001). Although it's generally better to be an overstriver than a failure avoider or failure acceptor, the high fear of failure among overstrivers leads to self-doubt about personal abilities (Covington, 1992; Covington & Omelich, 1991). These individuals fear personal evaluations and work hard to escape negative feelings of guilt, shame, incompetence, and anxiety. They experience high levels of distress, low perceptions of personal control, and unstable self-esteem (Covington & Omelich, 1991; Covington & Roberts, 1994; Martin, 2002b).

As you can imagine, failure avoiders have low expectancy for success and thus, they avoid challenges. They are unsure of themselves, and are overly anxious and pessimistic about the future (Covington & Omelich, 1991; Covington & Roberts, 1994). Interestingly, failure acceptors are better adjusted than failure avoiders (Covington & Roberts, 1994). They accept failure in the particular situation, and are generally apathetic or indifferent (Covington & Omelich, 1991).

### Relevance to Safety

We hope the relevance to safety is obvious. How would you classify yourself with regard to these four person states? Can you place certain coworkers in one of these categories? Would you place some people in one category with regard to safety, but in another category when it comes to production or quality? Have you seen people, perhaps yourself, change categories as the result of certain work experiences?

According to systematic research and basic intuition, the most productive and healthy person state is "success seeker". With their high expectancy for success and low fear of failure, success seekers respond to setbacks with optimistic persistence, self-assurance, and a sense of personal control (Martin, 2002a). These person states provide fuel for more success seeking.

Thus, it's obvious safety pros need to find ways to facilitate success-seeking person states in industrial safety and health. The more safety success seekers in an organization, the greater the probability of achieving and maintaining an injury-free workplace. Let's consider ways to increase the number of safety success seekers in a work group.

### A Focus on Failure

Many aspects of the traditional industrial safety program seem to emphasize failure avoidance over success seeking. How do you evaluate your safety performance? If the key indices are number of recordable lost-time injuries, the focus is on avoiding failure. If safety rewards or financial bonuses are based on "days without an injury," failure avoidance becomes a primary motivator. When companies are ranked according to their OSHA-recordable injury rates, a reactive failure-avoidance stance takes precedence over success seeking.

When does management get most concerned about safety? If lost-time injuries seem to arouse the most attention to safety, avoiding failure is promoted. If management considers "injury investigation" the key job responsibility of the company safety pro, avoiding failure is given priority status. When managers summarize their organization's safety performance with injury statistics and loss-control numbers, they put clear and obvious emphasis on avoiding failure.

Given these characteristics of traditional safety, it's understandable why a failure-avoiding state can be the prominent motivation of workplace safety. And if failures (or injuries) keep occurring in spite of people's best efforts to avoid them, a mindset of "failure acceptance" can

develop. This is an apathetic and helpless perspective that stifles participation in any safety-improvement effort.

### Focus on Proactive Success

So, with traditional safety it's easy to develop a failure-avoiding mindset. The obvious antidote is to focus on safety achievement rather than injury avoidance. Simply put, this means associating more positive than negative consequences with safety. This is easier said than done.

With quality production, positive consequences are inherent with the ongoing work activities. People can usually see evidence of achievement when contributing to the production of a quality commodity or service. Plus, the scoring system for the productivity side of an organization is typically given in achievement terms. Not so for safety.

The only way to put an achievement spin on safety is to define proactive things to do for injury prevention and then hold people accountable for achieving them. An achievement-based accountability system should put more focus on positive consequences for accomplishment, from interpersonal recognition to group celebrations. Plus, the safety scoring system should be based on proactive measures – activities accomplished to prevent injury.

Imagine a safety meeting that begins with a presentation of various process accomplishments for injury prevention, including the number of: a) environmental hazards removed, b) “near-miss” reports reviewed, c) safety audits completed, d) interpersonal observation and feedback sessions conducted, e) safety suggestions received and implemented, and f) percentage of safe behaviors observed per work team.

Moreover, imagine meeting facilitators asking participants to state publicly what they have done for safety since the last meeting. Imagine also that work teams are not ranked according to reactive injury records, but are recognized for what they do to prevent personal injury. And, further imagine the safety portion of a performance appraisal includes a checklist of safety accomplishments rather than total recordable injury rate. With these transitions from traditional safety, it's not difficult to imagine the cultivation of an achievement orientation toward safety and a resultant increase in the number of “safety success seekers”.

## **In Conclusion**

This presentation addressed several personality aspects of industrial safety. A key lesson is the distinction between injury proneness (which is typically considered an internal personality trait that is difficult to change) and injury preventiveness (which is more likely a state that is changeable by relevant external intervention).

Two classification systems were reviewed in this paper. One defines four person states – success seeker, overstriver, failure avoider, and failure acceptor – which primarily impact one's motivation to participate in an injury-prevention effort. In contrast, the classic notion of trait anxiety was discussed which presumably affects one's injury proneness. However, anxiety was also discussed as a situational state that can influence a person's awareness to take certain precautions. Thus, anxiety can be a trait or a state, and can influence both injury proneness and injury preventiveness.

Obviously, we have just cracked the surface with regard to the variety of personality characteristics that can impact a person's predisposition for personal injury and for voluntary participation in an injury-prevention program. The roles of anxiety, optimism and personal control were briefly mentioned, but numerous other person dimensions are relevant including belongingness (Geller, 1995; Wheelless, Wheelless, & Dickson-Markman, 1982) self-efficacy (Bandura, 1977), introversion/extroversion (Eysenck & Eysenck, 1985), perceived risk (Goldberg, Dar-El, & Rubin 1991), mindfulness (Langer & Moldoveanu, 2000), impulsivity (Eysenck, Pearson, Easting, &

Allsopp, 1985), and emotional intelligence (Goleman, 1994). And the complexity of this consideration of personality factors multiplies when considering that each of these dimensions can influence injury proneness, injury preventiveness, or both of these determinants of an organization's safety record.

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