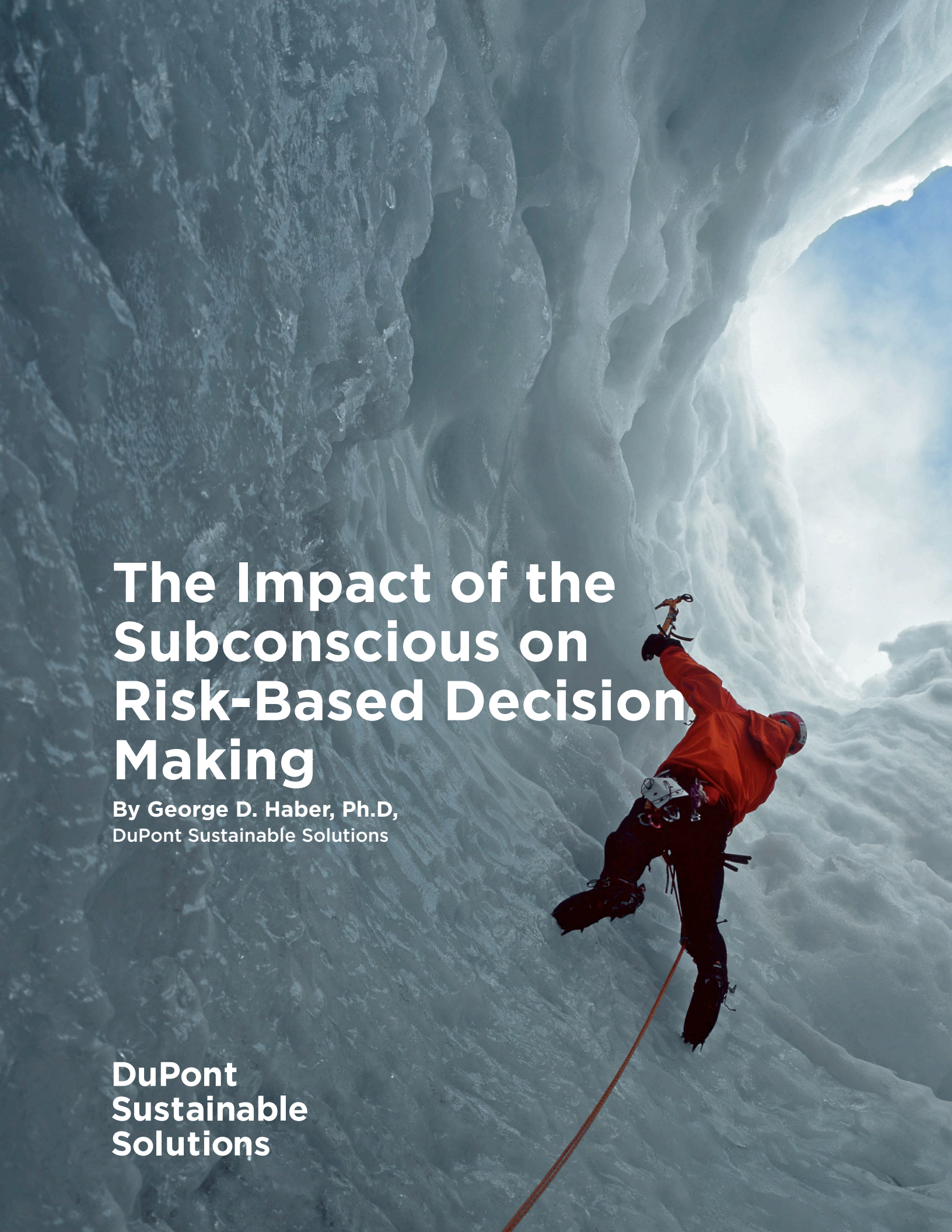

The Impact of the Subconscious on Risk-Based Decision Making

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The current state of organizational safety requires an approach that considers the cognitive, behavioral AND affective elements of risk-related decision making. Without consideration of the affective domain, the emotional drivers for subconscious decision making cannot be acknowledged and addressed.

In response to new research findings in the growing field of neuroscience, DuPont Sustainable Solutions has invested in the creation of a new intervention called **The Risk Factor**, which includes the affective element of risk-related decision making. This new offering tasks the participants with examining the drivers for their personal risk-related decisions and equips them to make better decisions, in real time, under real circumstances. These new skills will help the participants to lower their risk levels by making better decisions at work, at home and in transit.

This paper examines the importance of incorporating cognitive, behavioral and affective elements into risk-based decision making to improve the value and internalization of safe decision making and actions.

INTRODUCTION

Problem

Although the United States and other industrial countries continue to invest heavily in enterprise wide safety interventions to decrease workplace injuries, there is always room for safety improvement, even among the most mature organizations. Organizations frequently attempt to identify effective interventions to improve safety performance (including tools,processes and messages to employees); however, gaps and residual injuries often still remain after such solutions are put in place.

While much of the motivation for safety improvement efforts can be described as caring, altruistic, and preventative, there also is a financial incentive for keeping workers healthy. For instance, in 2011, the health care industry spent $13.1 billion to cover lost-time injuries, up from $10.2 billion in 2010. Many of those injuries were simple slips, trips or falls (Harris, 2013), (Sullivan, 2013). In the U.S. oil industry, hazardous work environments result in increased spending on safety initiatives, equipment and training, which could rise 60 percent to $56 billion by 2030 (Walter, 2013).

Historically, organizations have made substantial investments in the anticipation and elimination of incidents, specifically in the areas of incident prevention, process and systems improvement. Much of this investment is, and will continue to be, rooted in the foundational elements, philosophies and psychology of behavior-based safety.

We believe behavior-based safety should be the foundation for safety management systems, but to improve safety performance, organizations must understand how employees make decisions and teach them how to make better decisions to lower their risk.

Current State of Safety Offerings

DSS relies on its strong safety culture for its safe operation, and also has a consulting business that promotes safety so it is natural that we are often asked, “What’s new in safety?” The answer to this question typically focuses on new systems, processes, equipment

and tools, but one could argue that there has not been much revolutionary advancement in this space in the last few years.

We believe innovation can be found in recent research that explores decision-making, conscious and subconscious cognitive functioning, and affective psychology (Sahakian & Labuzetta, 2013). These three areas of study are unified by two central questions: given the complexity of daily life, and the thousands of decisions that are made by individuals, how are decisions that are often followed by subconscious actions, deliberated, selected and acted on, and what impact do these decisions have on safety and on safety cultures?

The DSS Bradley Curve and Behavior-Based Systems

The DSS Bradley Curve categorizes safety culture into four stages — reactive, dependent, independent and interdependent. Organizations with little safety culture or maturity reside in the **reactive stage**, and those with safety systems and an awareness of the need to follow the systems will usually position an organization in the **dependent stage**. The next phase, referred to as **independent** is best defined by an internal maturity of the workforce. While in the reactive and dependent stages, workers are typically reliant on the external factors introduced in these two phases. The independent stage, however, requires a shift in which workers develop an internal sense and drive to seek a safer work state through their own awareness, actions and interactions. This transition from dependent to independent is what is at the heart of The Risk Factor, a new offering from DuPont Sustainable Solutions.

Now, this interpolation between an organization's placement on the Bradley Curve and the expectation of its workforce does not exclude workers in the reactive and dependent phases from benefiting from **The Risk Factor**. Rather, The Risk Factor provides the individual with the impetus to **own** their safety roles, and value the new rules and processes introduced in the dependent phase. This ownership is critical for an organization to sustain the gains it made during its safety culture maturity, especially during the transition to the independent phase. Simply put, **The Risk Factor** elevates workers' personal safety awareness, and instills safety practices as personal guiding principles.

Cultural evolution leadership is based on the concept that most current offerings that adhere to Behavior-Based Safety (BBS) programs do not fully use the most recent research that includes the impact of the affective domain and the subconscious in decision-making and at-risk reasoning (Cooper, 2009), (Grainnes, 2015), (Cambridge Center for Behavioral Studies, 2015). Recent advancements in understanding the affective domain have created new avenues of research and application for moving organizations beyond their safety performance plateaus, and toward truly independent and interdependent cultures.

The bottom line is that behavior-based safety has served the safety industry well (Geller, 2004), and will continue to do so as a required foundation for the dependent culture on its journey to the independent culture. But to move from a safety performance plateau, safety system owners also should use cognitive and behavioral foundations to foster a truly independent culture where workers are empowered to analyze risks in situations not governed or guided by safety systems.

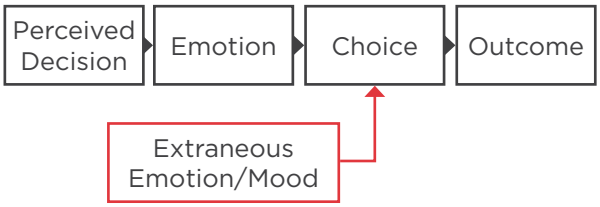
THEORETICAL FOUNDATIONS

Decision Making

Why is there new interest in the affective domain? It is estimated that people make tens of thousands of decisions daily, many of which are subconscious (Daum, 2012). We need to consider whether decisions are followed by actions, with consequences, or whether they are made consciously or subconsciously.

To change or improve the subconscious decision making, we need to address the root of the decisions that are often based in simple behavioral psychology. Thorndike and Skinner found that actions that were positively reinforced were likely to create a reoccurrence of the action, and as Pavlov found, the anticipation of that reward leads to a predictable response (Loewenstein, Vohs, & Baumeister, 2012).

Emotiong-Mediated Decision Making



This anticipation of the reward becomes a cyclical reinforcement of the decision. Not only is the behavior reinforced each time the behavior is exhibited, but it also becomes a factor in the decision-making.

Historically, a substantial amount of safety-related investments are for the purposes of incident prevention and process and systems improvement. These investments are focused on the anticipation and elimination of incidents and are primarily centered on the concepts of behavior-based safety (BBS). As its title implies, BBS systems rely on elements that are essential in any safety system, including the cognitive and behavioral domains according to the Cambridge Center for Behavioral Studies (2015). These essential components ensure that rules and procedures are in place, are clearly communicated through effective media, and are coupled with consequences for adhering to or violating the rules. Both intrinsic and extrinsic reinforcements are considered and distributed as needed (Cooper, 2009), and represent the extent to which many of these systems address the affective domain.

Even with decades and centuries of safety planning, training and systems, we still experience incidents. And even with a clear and simple map of safety maturity, many organizations have great difficulty progressing to the right of the DSS Bradley Curve. These organizations are sometimes defined as being stuck on a “plateau,” unable to continue their improvement along the safety maturity curve. One reason for this plateau is that organizations in the dependent stage experience difficulty managing the unexpected or unobserved circumstances that are out of the ordinary, or outside of the standardized processes, procedures or general work and home life.

New Thinking

Consider the decisions that are made by people every day, in everyday tasks while shopping, driving, working or just walking down a busy street. For most of the decisions made in these situations, we go through a conscious period of deliberation for only a tiny fraction of decisions. Many, if not the majority, of these everyday decisions are made subconsciously (Sahakian & Labuzetta 2013, p. 5). Some estimate that while

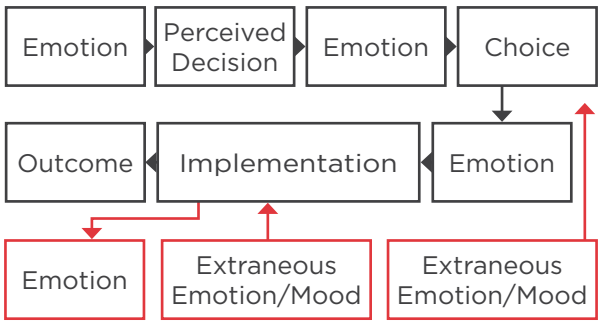
humans make up to 35,000 decisions a day (Daum, 2012), some decisions are deliberate and thoughtful, but the vast majority are made at varying levels of sub-consciousness.

For example, University of Texas researchers found that we use an average of 16,000 words a day (Swaminathan, 2007). Most of these words are selected subconsciously, but selected nonetheless (Mehl, Vazire, Ramírez-Esparza, Slatcher, Pennebakerj, 2007). Subconscious decision-making also is a large factor when driving a motor vehicle. The U.S. Occupational Safety and Health Administration (OSHA) reports that "drivers make more than 200 decisions during every mile traveled," so simply driving 20 miles a day adds considerably to the number of decisions made each day (2016). Wansink and Sobal found that adults make 221 decisions just on their food intake each day, and concluded, **"First, we are aware of only a fraction of the food decisions we make. Second, we are either unaware of how our environment influences these decisions or we are unwilling to acknowledge it."** (2007, p. 1). These three activities can be estimated to conservatively produce 20,221 decisions daily. Decisions about physical movement, work, school, social relations, all add to this number, making Daum's estimate of 35,000 decisions a day, an easy extrapolation.

Given that there are so many decisions being made in a day and that many are being made subconsciously, the logical question to ask is what is guiding those decisions, the largest share of which we cannot remember? While participating in a summer-long research institute at Russel Sage College, researcher Christopher J. Anderson offered a simple explanation that points the finger at emotions and suggests that emotions provide a circular, sequential and selfreinforcing model of decision guidance. Anderson explains that emotions first "shape" decisions, aid in their implementation, and then provide almost immediate feedback on them.

As a decision-maker matures and experiences the emotional feedback or "payoff" of the decision, the emotional feedback is no longer unexpected, but anticipated, and begins to factor in the initial step in "shaping" the decision, as illustrated in figure 2 (Loewenstein, Vohs, & Baumeister, 2012).

Emotiong-Constructed Decision Making



It seems impractical to conclude that behavior-based safety systems are capable of influencing the behaviors of workers every minute of their day. The inability to account for or recall the great majority of daily decisions, many of which can be risk-related (either to self or others), is the unaddressed gap that the new DuPont Sustainable Solutions offering called **The Risk Factor** is designed to address. This offering is predicated on the knowledge that risk cannot be managed away and that rules, consequences and systems can only provide protection if systems are in place. That protection is only possible if a worker is making rational decisions while performing predictable tasks, in planned environments, with lucidity and a high level of conscious reasoning.

Literature Conclusion:

1. Many of our decisions are made subconsciously
2. These decisions are reinforced through feelings associated with expected outcomes and their associated feelings
3. Individuals can have their consciousness levels raised to the point of being able to anticipate these potential risk-based decisions and take preventative action.

The current state of organizational safety requires an approach that addresses the cognitive, behavioral AND affective elements of risk-related decision making. Without consideration of the affective domain, the emotional drivers for subconscious decision making cannot be acknowledged and addressed.

The evolution of safety cultures is a sum of its people, and their collective decision making as observed through behavior. For those who rely solely on safety systems provided by their employers, the value and internalization of safe decision making and actions will not take root, and therefore the achievement of an independent safety culture will be most difficult, and the ultimate goal of an interdependent culture, a dream.

THE RISK FACTOR

The Risk Factor offering is structured into four modules: Own It, Choose It, Change It and Lead It. A fifth module, Champion It, is aimed at the supervisors and other front-line leaders.
Own It is a module that challenges the preconception that decisions and actions can be classified as "safe or unsafe." Most of our lives we deal with degrees of variance that are described as "degrees of risk" versus managing absolutes. Participants also are introduced to the idea that they make tens of thousands of decisions a day, and that many of them are made subconsciously.

Choose It takes participants through several exercises that challenge them to go beyond the typical reasons or justifications for risk-taking behavior. Through several exercises, participants examine motivations, feelings and other drivers that make others choose risky behavior. This module concludes with a challenge and an exercise to examine themselves and their own historic risky behaviors in an effort to identify their own drivers for behavior.

Change It focuses on applying the new awareness to enable real and sustained change to help participants at work, at home and in transit.

Lead It is designed to be delivered two months after The Risk Factor delivery. It reinforces the key learnings from The Risk Factor, and challenges participants to use their leadership skills and strengths to help elevate and sustain personal and organization-wide safety culture. This module uses a leadership assessment that assists the participant with identifying their personal leadership strengths.

Champion It prepares the front line leadership of the organization to communicate and lead their workforces effectively after the Risk Factor engagements. The participants practice using the persuasion model for effective communication.

It is critical to understand how decisions are made, especially for the tasks that fall outside of rules, procedures and predictable environments. When cognitive processes get overloaded, they relegate certain tasks to

the subconscious, and actions soon follow. This is what The Risk Factor aims to remedy. Acknowledging that we live in a constant state of varying levels of risk and that through conscious and deliberate actions, we can decrease our risks. We need to make safety a habit!

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