The Value of Vulnerability:
How to Help your Workers Realize Their Risk

Anna H.L. Floyd, PhD
Regis University
Floyd Consulting LLC
Denver, Colorado USA

H. Landis Floyd II, PE, CSP, CMRP, Fellow IEEE
Principal Consultant
DuPont
Wilmington, Delaware USA

Introduction

Establishing a personal sense of vulnerability—or a heightened 'risk perception'—among workers is critical to the effectiveness of safety training and achieving a positive shift in safety related behaviors to reduce rates of injury. That a heightened perception of susceptibility serves as a catalyst for changing behavior is well supported by studies in the fields of cognitive and health psychology. This session combines research findings in psychology related to how an individual's risk perceptions are formed and influence their subsequent behaviors with practical engineering experience regarding high-risk hazards that have potential for fatality and disabling injury. We outline why it is important to establish a heighted perception of risk before providing safety training, provide examples of techniques that can be used to increase perceptions of risk, and provide insight into how you can assess the effectiveness of your training regarding increased risk perceptions. Our inclusion of examples in establishing a sense of vulnerability to contact with electricity will illustrate how this can impact effectiveness of safety training for other high-risk work activities.

Authors' note: Some portions of this paper were presented in: Floyd A. H. L. & Floyd H. L. (March 2013). Cultural drift and the occlusion of electrical safety, presented at the *IEEE IAS Electrical Safety Workshop, Dallas, TX, USA*.

Introduction: The Current State of Worker Safety Trainings

"How could this have happened? We have the best safety record in our division. We've never had a lost time electrical injury at this plant. He is the most knowledgeable person in the crew. He has never had a recordable injury. I was not

aware that my employees were exposed to a hazard with such severity. I don't understand."
                    -A plant manager commenting during an arc flash injury investigation

"I've been in the business (electrical trade) for 25 years. Until today, I can honestly say that I've never understood the hazards I've worked with."
                    -An electrician at the end of an 8-hour hazard awareness seminar

These two quotes may sound familiar to safety professionals. The first is from a plant manager during the course of an investigation of an arc flash incident that resulted in a Lost Time Injury and long term disability to a worker. In the statement, we see how the plant manager's disbelief is entangled in his justification of the worker's "qualifications" as the "most knowledgeable person in his crew." In short, the manager does not understand how such a horrible event happened to a person whose knowledge of rules and regulations was so complete.

As if in response to the questions posed by that manager, the second quote is from an electrician who had worked in the field for more than 25 years and was well versed in electrical safety regulations and various employers' safety rules (which was what had comprised most of his safety training thus far). However, he did not have a perception of the severity of the extent that the harm from a hazard could cause. The electrician admitted that he had worked his entire career up to that point without fully understanding the hazards of electricity, although he, his co-workers, and employers had considered him to be a "qualified" electrician. Through a course on electrical hazards, he had come to realize that his avoidance of electrical injury had been due to luck.

In this paper, we contribute to the discussion of how to best improve the quality of worker trainings to result in workers' understanding of their personal vulnerability, which ultimately impacts their tactful adoption of safety protocol. Safety professionals understand that the quality of training needs assessments, content design, and delivery methods are important factors training effectiveness. In this paper, we build on this knowledge base with discussion of how perceptions of vulnerability are key to workers' adoption of safety protocol. We discuss how people form risk perceptions and how these risk perceptions influence subsequent behaviors, and we present some methods for how to establish a sense of vulnerability before starting a training seminar.

Safety professionals have already contributed greatly to the understanding of good training practices. These topics are featured sessions at safety conferences and articles in professional literature, including *Professional Safety*, and provide foci ranging from the importance of understanding how adults learn (andragogy), as well understanding how workers cognitively process risk perceptions. For example, Fanning provides an excellent and practical discussion of techniques for engaging adult learners (e.g., role-playing, group projects, guided learning, storytelling, and peer coaching), because adults learn differently than children and therefore do not respond well to content-focus education (Fanning, 2011). Merli summarized key considerations in designing content and delivery for adult learners, and suggested four different levels of training evaluations (learner's reaction, learning, behavior change, and ROI/decreased incidents/increased profits; Merli, 2011). Cullen helps us recognize the great importance of truly understanding employees' workplace cultures before developing training programs, and approaching safety trainings in high-risk environments through personal stories (Cullen, 2011). Lehmann, Haight, and Michael reported on the effects of safety training on risk tolerance (Lehman et al, 2009), and conclude that workplace safety training alone should not be considered adequate enough to expect

appropriate risk decision-making to result among employees. They suggest that, "more specialized (i.e., psychological or behavior-based) training is necessary for changing safety-related attitudes and behaviors" (page 17).

These are just a few examples of in the body of knowledge in safety training effectiveness. ANSI/ASSE 490.1-2009 *Criteria for Accepted Practices in Safety, Health, and Environmental Training* provides a framework to help assure application of best practices in planning, developing, delivering and assessing safety training. With this paper, our intent is to add to that body of knowledge, specifically building on the suggestion of Lehmann et al, that psychological or behavior-based training is necessary for changing attitudes and behavior. We will focus on how the human mind perceives risk and perceives personal vulnerability.

A Focus on Low Frequency/High Consequence Hazards and Risk Perceptions

To use a grave illustration of why it is important to be able to adjust the risk perceptions of workers, we can consider the subset of workplace hazards that constitute a relatively small percentage of non-fatal injuries, but have a significantly higher likelihood causing disabling or fatal injuries. The injuries they produce are commonly referred to as low frequency/high consequence injuries. (For example, compare rates of Fires and Explosions and Contact with Electricity from Figure 1 with Figure 2). Although exposure to the hazards may be routine or frequent, the low frequency of non-

Type of Non-Fatal Injury	No. Injuries (2010)
Total	1,191,100
Sprains, strains, tears	474,000
Musculoskeletal disorders	346,300
Falls on same level	182,400
Struck by object	138,530
Falls to lower level	73,520
Assault/Violent act by person	40,310
Highway accidents	36,460
Assault/Violent act by animal	7,160
Fires and explosions	3000
Electrical shock and burn	1890

Event or Exposure	LTI / Fatality Ratio*
Fires & Explosions	12
Contact with electricity	13
Transportation accidents	23
Assaults & violent acts	28
Fall to a lower level	104
Caught in, compressed or crushed	134
Struck by object	323
Falls on same level	2056
Struck against object	8414
Slips or trips without fall	12593
Overexertion in lifting	14033

*Lost Time Injury to Fatality Ratio;

Figure 1. (Left). Comparison of select Non-fatal Occupational Injuries in the U.S 2010 (U.S. BLS Economic News Release, 2010).

Figure 2. (Right). Data from US Bureau of Labor Statistics showing ratio of Lost Time Injuries to Fatalities. Adapted from Anderson and Denkl (2010) with electrical injury data from Cawley & Brenner (2012).

fatal injury can create an illusion of control or immunity, as apparent in the two quotes in the Introduction. A safety training and assessment that focuses only on a worker's perceived risk *likelihood* without a focus on risk susceptibility and severity (a mistake often made in risk perception assessments), is an incredible disservice to our workers. That is, a worker's perception that his or her likelihood of getting a non-fatal electrical burn is low is in fact accurate. However, among those who are involved in an electrical incident, their likelihood of being killed is quite high.

This discrepancy raises an important point in how we conceptualize "risk".

Have We Missed Something Integral to What Constitutes "Risk Perception?"

Though many trainings may focus on crating hazard awareness (Lehmann et al, 2009), awareness of a hazard does not completely constitute a risk perception. To fully understand "risk perception", we need to look at several dimensions of risk. Clemens and Simmons (1998, as cited in Lehmann et al, 2009) propose a focus on the concepts of risk severity and probability. Lehmann et al propose a focus on the concepts of risk tolerance and risk perception.

Our suggestion is taken from Brewer et al, and is based in the foundations of social psychology and health psychology. We posit that understanding risk must come out of three dimensions of personal perception: perceived likelihood, perceived susceptibility, and perceived severity (Brewer et al, 2007) of the hazard (See Figure 3). These dimensions of risk may remain absent if trainings provide information about rates of incident, or degree of injury, but do not also establish a personal connection to the numbers or images used in the training.

Dimension of Risk	Description of Dimension	Sample Items or Questions for Assessment
Perceived Likelihood	Probability of being harmed by a hazard	Imagine that your PPE is unavailable over the next year. Given that you do not have the PPE to use, what would you say is the likelihood that you would get burned this year?
Perceived Susceptibility	Individual's perception of vulnerability to a hazard	I am more likely to be burned than other workers in my field.
Perceived Severity	The degree of harm that a hazard would cause	If I were to be burned, I would be disabled or killed.

(Figure adapted from Brewer et al, 2007)

Figure 3. Three Dimensions of Risk Perceptions

Consider the following two examples in how one could assess the effectiveness of trainings. This first represents a follow-up quiz from a training module on electrical safety on a construction jobsite:

What is the reason Ground Fault Circuit Interrupters (GFCIs) are required when using any electrically powered hand tool on the jobsite?

A. OSHA 1926 requires the employer provide GFCI protected outlets on construction sites
B. The National Electrical Code requires GFCIs protected outlets be installed on construction sites.
C. NFPA70E *Standard for Electrical Safety in the Workplace* requires that all extensions cords and portable electrically powered tools be plugged into outlets having GFCI protection.

      D. A GFCI will protect a worker, including myself, from instant death by electrocution due to a defective tool or cord.

There are no wrong answers in this case, as each of choices A through D is technically correct. However, the first three choices are about understanding what the rules and regulations require. The last one, choice D, is an indicator of understanding risk and personal vulnerability.

This second example represents training on auditing the use GFCIs on a construction site:

Which question provides better assurance that workers are complying with requirements to use GFCIs?

      A. When observing workers using portable electric powered tools, determine if GFCIs are being used.
      B. When observing workers using portable electrical tools, engage the workers and determine if they understand the purpose of GFCIs.

Again, while there are no wrong answers choices, a positive response on B is likely a better indicator of both the workers' commitment to always use a GFCI and the auditor's understanding that workers' behaviors when being observed is not necessarily representative of their normal behavior.

What answer choice D in the first example, and answer choice B in the second example have in common is that they have better made a personal connection toward why the rule is in place.

In the following section, we use several theoretical models to illustrate why establishing a personal sense of vulnerability is an essential precursor to workers' ultimate goal of understanding and committing to follow safety rules and procedures.

Risk Perceptions as a Catalyst in Changing Behavior

A Look at Theory
Two of the classic models outlining the relationship between risk perception and behavior are the Health Belief Model (described thoroughly by Becker & Maiman in 1975), and the Theory of Planned Behavior, first developed by Ajzen (1985/1991). Both are used extensively in the field of health psychology to understand individuals' health behaviors.

According to the Health Belief Model (Becker & Maiman, 1975; See Figure 4), factors that influence whether a person adopts a protective behavior include how susceptible they feel to a threat to their health, how severe they believe that threat to be, whether they believe that adopting a protective behavior will be beneficial, and whether the costs (time, financial, skill acquisition, etc.) associated with adopting the protective behavior are not so great as to be daunting.
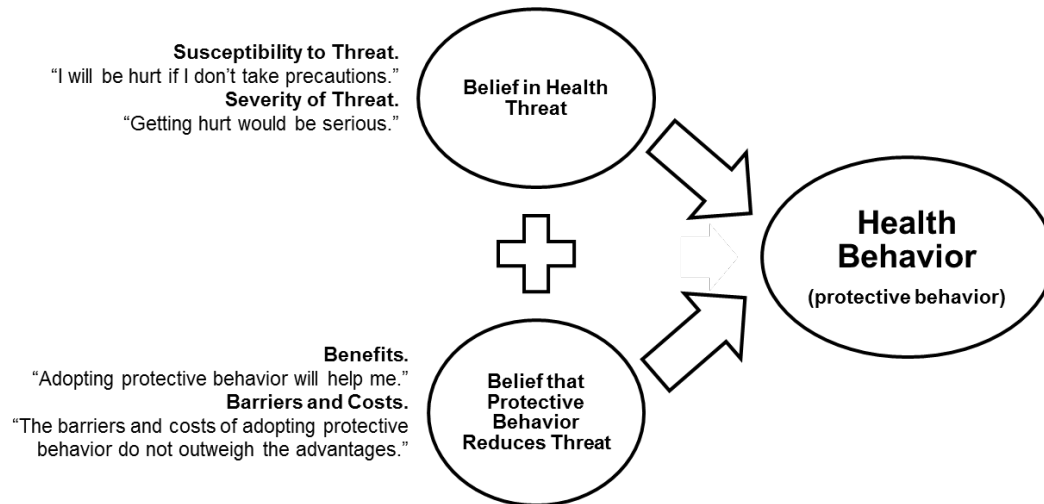
Susceptibility to Threat.
"I will be hurt if I don't take precautions."
Severity of Threat.
"Getting hurt would be serious."

Belief in Health Threat

+

Health Behavior
(protective behavior)

Benefits.
"Adopting protective behavior will help me."
Barriers and Costs.
"The barriers and costs of adopting protective behavior do not outweigh the advantages."

Belief that Protective Behavior Reduces Threat

Figure 4. The Health Belief Model

The Theory of Planned Behavior (Ajzen and Fishbein, 1980; See Figure 5) describes the psychological, social, and environmental factors that influence whether a person intends to change their behavior. Importantly, it outlines the factors that affect one's *intention* of changing behavior (as intention must precede action). According to this model, three main factors that influence intention are: 1) attitudes toward the action (i.e., how one perceives and evaluates the possible outcomes of the action); 2) subjective norms regarding the action (i.e., what one's family and friends think of the action and how much value one places on the opinions of family and friends); and 3) perceived behavioral control over the action (also called "self-efficacy": does one believe he/she has the ability to follow through with the action).

Both of these theories illustrate the need for a risk perception to be a part of an individual's perspective before they can be influenced to adopt self-protective behavior. The big two risk-related questions for both theories are:

1. Does a person perceive him/herself to be at risk?
2. Does a person perceive that adopting a particular behavior will lessen that risk?

According to these models, if the answer to one or both of those two questions are "no", the individual is less likely to adopt protective behavior.

So how can we *instill* a heightened perception of risk in our safety trainings? First, we need to understand how risk perceptions are formed.
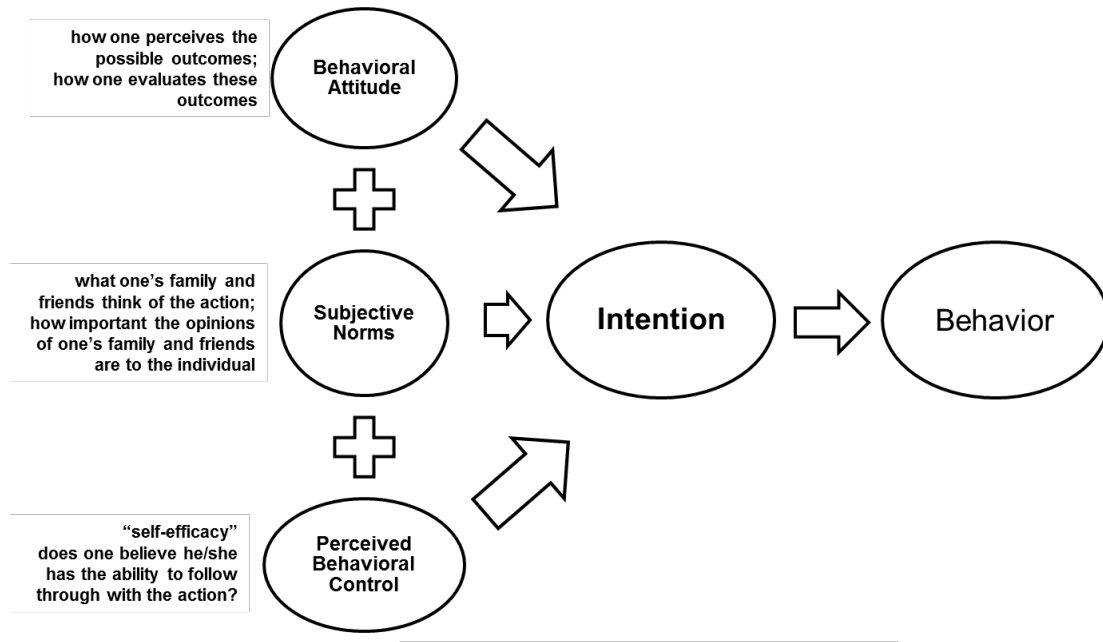
Figure 5. The Theory of Planned Behavior.

How Do We Form Risk Perceptions?

<u>Risk Perceptions Are Primarily Feeling-Based</u>
When we judge our risk of experiencing an event, including an adverse event like a workplace injury, there are two mental systems we use. One is an <u>analytic system</u> (which is logic-oriented, governed by conscious thought processes, and thus takes a long time to reach a decision). The other is an <u>experiential system</u> (which is "affective" or feeling-based, governed by associative connections and "vibes" from previous experiences, and takes very little time to reach a decision; Slovic, 2004).

We rely primarily on the experiential, feeling-based system. This is because we make so many decisions on a daily basis that we do not have time to weigh each decision logically. (Consider the potentially infinite number of factors that could go into a decision of what automobile to purchase. If you were to logically weigh all variables, you would never be able to reach a decision.) We are particularly likely to use the experiential system when the decision making is complicated, when we have little time to make a decision, or when our mental resources are taxed (Slovic, 2004). Whenever we are tired, hungry, or otherwise mentally preoccupied (that, is, almost

all the time) we will use the experiential system.

<u>Understanding Risk: Feelings as Input</u>
So what exactly is this "affect" that runs our experiential processing system? This term, pronounced \'a-ˌfekt\, stress on the first syllable, is used regularly within the field of psychology; a fancy way of referencing the experience of feelings or emotions. Feeling alert, determined and proud are examples of "positive" affect, while feeling scared, jittery and ashamed are examples of "negative" affect (Watson & Clark, 1994).

The experiential system which we usually use to calculate our risk relies heavily on past experience to influence an individual's perception of risk (Weinstein, 1989). When we have a strong emotional experience associated with certain hazards, this has a profound impact on our risk perception (Finucane, 2000). For example, a person who has been on the scene of a fatality that was due to another worker's noncompliance with proper PPE protocol will associate noncompliance with feelings of being scared, sad, and vulnerable. This person does not need much more convincing to be persuaded to be vigilant regarding safety.

"It Could Be Me"—Methods of Establishing Vulnerability

To increase the likelihood of behavior change in your workers, you must establish a personal sense of vulnerability. There are many ways to do this, but in this paper we focus on the use of stories in your training.

Because we operate affectively when developing our own risk perceptions and when making our own risk decisions, it makes sense to use methods that draw on affect to increase our workers' perceptions of risk prior to safety training. This can occur alongside more traditional methods (e.g., presenting statistics).

<u>The Role of Stories</u>
The experiences and opinions of other people play a key role in how we perceive appropriate actions and behaviors. We can see this clearly in the models presented above, specifically the subjective norms factor in The Theory of Planned Behavior (Ajzen, 1985/1991), as well as in the construct of Albert Bandura's exceptionally well-known social learning theory (not pictured; Bandura, 1977), which outlines how people learn vicariously through watching others.

Sometimes, these other people can come to us through the use of a *narrative*, or story (Cullen, 2011). Health messages presented in the form of a narrative have been studied extensively to determine the effect they have on subsequent behaviors. Narratives can come in different forms ranging from journalism to literature to testimonials (Kreuter, Green, Cappella, Slater, Wise, Storey, et al, 2007), and can depict occurrences to characters that are either fictional or real.

Of great importance to our purposes of health communication, *the more similar people perceive themselves to be to a narrative character, the more likely they are to be persuaded by the narrative itself* (Hinyard & Kreuter, 2007). Results are equivocal in whether statistical or narrative types of communication are more persuasive (Hinyard & Kreuter, 2007). With this in mind, it may be best to offer both strategies in a communication message.

Stories of people affected by incidents that include pictures with faces, names, and references to personable characteristics (family, hobbies) will persuade much more than simply presenting statistics. The more a person can see him or herself in the shoes of an example, the more likely he or she is to be transported into and affected by a story (Hinyard & Kreuter, 2007). And, the more likely he or she will think, "that could be me." Creating these vignettes is an art; if too much detail is included people can no longer project themselves in the story.

When possible, in safety training materials, prioritize using stories, not statistics to establish a personal sense of vulnerability that is needed to achieve behavior change. In these stories, mention personable information that is generic enough to apply to many people. For example, item B in Fig. 6 mentions an individual's spouse and two children – most workers will be able to project

---

A. "There are 1,890 electrical shock and burn injuries each year."

B. "Last Friday, one of our linemen was critically injured in an electric shock incident. His wife and their two children have spent the week visiting him in the hospital and would like to request that get-well cards be sent to the following address…"

Figure 6. Two hypothetical examples that could be used in a company newsletter. Which of these two examples is more likely to persuade your workers to take appropriate safety measures? (See text for answer).

themselves into that scenario, making it more likely to lead to behavior change in comparison to the presentation of statistics only. Notice that the information given is not overly detailed, which would make the story exclusionary. That is, the example does not read, "two *daughters*, aged *14* and *17*" but simply, "two children".

Assessing the Effectiveness of Your Risk Perception Training

To assess risk perceptions, psychologists typically use a form of self-report questionnaire. Questionnaires to assess risk perceptions are quite developed in certain areas (e.g., smoking and cancer; Weinstein et al, 2005), and we can apply some of the research conducted in these areas to assessing workers' perceptions of their own vulnerability (e.g., dermal exposure by Geer et al, 2006; Rundmo, 1996). From Figure 3, the Three Dimensions of Risk Perceptions, we see a sample questionnaire item for each dimension that could be used to assess risk perceptions related to electrical shocks and burns. Typically these types of items would be given to workers as part of a longer survey (with several additional but related questions on it). Response options would be designed with a rating scale or Likert scale responses, with five answer options ranging from Low Likelihood to High Likelihood, or from Strongly Disagree to Strongly Agree. Implementing such surveys at different time points (e.g., a week before training, just after training, and several weeks after training) and conducting basic statistical tests on the responses can indicate whether risk perceptions shifted as a result of the training, and whether these perceptions held several weeks post training.

Questions developed for a survey should assess workers' perceived likelihood of being harmed by the hazard, their perceived susceptibility or vulnerability to the hazard, and their perceived severity about the degree of harm that the hazard would cause (Figure 3). In reviewing the theoretical model pictured in Figure 4, we can see how these concepts map onto the "susceptibility to threat", "perceived severity of threat" elements (the variables on the left hand side of the figures) that predict intention and behavior.

Regarding validity, it is important when assessing risk perceptions to frame the items in the context that the worker is *not* taking self-protective action. To illustrate why this is important, consider the question, "What is the likelihood that you will receive an electric shock in an electrical incident this year?" A worker may respond with "low likelihood," but we do not know if this is because they truly consider themselves not at risk (a low risk perception), or because they already always wear their voltage rated gloves and other PPE. A better wording to assess their perception of risk likelihood would be, "Imagine that your PPE is unavailable over the next year. Given that you do not have the PPE to use, what would you say is the likelihood that you would get burned this year?" (from Figure 3).

Considerations for ANSI Z490.1

ANSI/ASSE Z490.1-2009 *Criteria for Accepted Practices in Safety, Health, and Environmental Training* documents proven best practices. We offer these proposals for the upcoming revision to this standard.

1. Add the following references to Annex A References:

   Hinyard, L.J. & Kreuter, M.W. (2007). Using narrative communication as a tool for health behavior change: A conceptual, theoretical, and empirical overview. *Health Education & Behavior, 34(5),* 777-792.

2. In Annex B Training Course Development Guidelines, insert a new item C in section B.7.2 Write Learning Objectives:

   C. *Determine the need to establish clear understanding of the hazard(s), potential injury or illness severity and consequences, and personal vulnerability as precursors to training on rules, procedures or task requirements.*

3. In Annex C Safety, Health and Environmental Trainer's Checklist, section C.5 Key Points of Delivery insert a new section between 'Introduction' and 'Main Body', referring to the above objective:

   Injury/Illness consequences – Establish a sense of personal vulnerability.

   This is where consideration should be given for methods to make the material personally meaningful to workers in order to establish a sense of vulnerability. Scenarios (from real events when possible) should be included in story form, and with detail that allows workers to project themselves into the storyline from the viewpoint of the individual who incurred the accident or injury.

Conclusion

Because safety-related training is an essential component of hazard and risk management, but can entail significant costs and takes people out of their daily jobs, it is important to make the best possible use of that time. We propose here, based on theoretical models of behavior change used on social and health psychology, that establishing a personal sense of vulnerability in employees is integral to their adopting self-protective behavior. We build off of previously published papers on safety trainings to suggest that curricula include stories (in addition to statistics) to establish a feeling of vulnerability because we develop risk perceptions through experiential (feeling-based) cognitive processes. We provide some guidelines around how to assess whether your workers' risk perceptions have changed and been maintained as a result of your trainings. Finally, we offer suggestions to ANSI/ASSE Z490.1-2009 *Criteria for Accepted Practices in Safety, Health, and Environmental Training.*

Bibliography

Anderson, M. & Denkl. M. (April 2010). The Heinrich Triangle - Too simplistic a model for HSE management in the 21st century? *Society of Petroleum Engineers 2010 International Conference on Health Safety and Environment in Oil and Gas Exploration and Production,* Rio de Janeiro, Brazil.

Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl and J. Beckman (Eds.), *Action-control: From cognition to behavior* (pp. 11-39). Heidelberg, Springer: 1985.

Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes, 50,* 179-211.

Ajzen, I. & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. New Jersey: Prentice-Hall.

Bandura, A. *Social learning theory*. Oxford, England: Prentice-Hall, 1977.

Becher, M H., & Maiman, L. A. (1975). Sociobehavioral determinants of compliance with health and medical care recommendations. *Medical Care, 13(1),* 10-24.

Brewer, N. T., Chapman, G. B., Gibbons, F. X., Gerrard, M., & McCaul, K. D. (2007). Meta-analysis of the relationship between risk perception and health behavior: The example of vaccination. *Health Psychology, 26(2),* 136-145.

Cawley, J.C., & Brenner, B.C. (2012). Occupational electrical injuries in the U.S., 2003-2009, *2012 IEEE IAS Electrical Safety Workshop*, Daytona Beach, Florida, USA.

Clemens, P. L., & Simmons, R. J. (1998). Safety system and risk management, a guide for engineering educators. U. S. Department of Health and Human Services (NIOSH) Publication No. 96-37768.

Cullen, E. T. (2011, March). Effective training: A case study from the oil & gas industry. *Professional Safety*, 40-47.

Fanning, F. E. (2011, August). Engaging learner techniques to make training stick, *Professional Safety*, 42-48.

Finucane, M. L., Alhakami, A., Slovic, P., & Johnson, S. M. (2000). The affect heuristic in judgments of risks and benefits. *Journal of Behavioral Decision Making, 13(1),* 1-17.

Geer, L. A., Curbow, B. A., Anna, D. H., Lees, P. S. J., & Buckley, T. J. (2006). Development of a questionnaire to assess worker knowledge, attitudes and perceptions underlying dermal exposure. *Scand J Work Environ Health, 32(3),* 209-218.

Heinrich, H.W., Peterson, D., & Roos, N. (1980). *Industrial accident prevention – A safety management approach*, McGraw Hill, New York.

Hinyard, L.J. & Kreuter, M.W. (2007). Using narrative communication as a tool for health behavior change: A conceptual, theoretical, and empirical overview. *Health Education & Behavior, 34(5),* 777-792.

Lehmann, C. C, Haight, J.M., & Michael J.H. (Spring 2009). Effects of safety training on risk tolerance: An examination of male workers in the surface mining industry. *Journal of SH&E Research, 6(1).*

Merli, C. M. (July 2011). Effective training for adult learners, *Professional Safety*, 49-57.

Rundmo, T. (1996). Associations between risk perception and safety. *Safety Science, 24(3),* 1996.

Slovic, P., Finucane, M. L., Peters, E., & MacGregor, D. G. (2004). Risk as analysis and risk as feelings: Some thoughts about affect, reason, risk, and rationality. *Risk Analysis, 24(2),* 311-322.

Watson, D. & Clark, L.A. (1994). THE PANAS-X: Manual for the positive and negative affect schedule - expanded form. Retrieved online August 10, 2012 from www.psychology.uiowa.edu/faculty/clark.

Weinstein, N.D. (1989). Effects of personal experience on self-protective behavior. *Psychological Bulletin,* 105, 31-50.

Weinstein, N. D., Marcus, S. E., & Moser, R. P. (2005). Smokers' unrealistic optimism about their risk. *Tobacco Control*, 14, 55-59. Doi: doi:10.1136/tc.2004.008375