

Knowledge Is Not Enough

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A farmer owns four tractors, all without Rollover Protective Structures (ROPS). He and his wife have worked their hilly, 600-acre farm for 25 years without an overturn. He knows three people in his region who died in tractor overturns and four others who survived overturns on tractors without ROPS, one who never fully recovered from his injuries. He has seen many stories and photographs in newspapers and farm magazines about fatal tractor overturns. Extension agents and equipment dealers have encouraged him to put ROPS on his tractors to protect himself and his family. He has the money to do so, but says, "Until I get a bigger and newer tractor, I'm not going to worry about getting a ROPS. And when I get a newer tractor it won't be for the ROPS!" How can the farmer's statement be explained?

The $A \nrightarrow B \nrightarrow C$ model of behavior was established more than 50 years ago (Skinner, 1953). Antecedent conditions (A) are things a person can see, hear, feel, and remember that cue a particular behavior in a certain situation. Behaviors (B) are the actions that a person exhibits in the presence of antecedent conditions. Consequences (C) are the outcomes or effects of the person's actions or behaviors. Behaviors that lead to desirable outcomes (consequences) are learned and become habits. In this case the farmer's habitual behaviors are driving tractors without ROPS and refusing to install ROPS on his tractors. How were these behaviors learned?

This farmer and his wife drove tractors an average of three times a day, 20 days a month for a total of 25 years. During these 72,000 tractor-driving events they never had an overturn. Occasionally they encountered tricky situations where their caution and driving skills prevented an overturn. The consistent positive outcomes (driving without an overturn) reinforced and improved their skilled tractor driving behaviors (Skinner, 1953) and also developed strong self-efficacy beliefs that they were capable of preventing tractor overturns (Bandura, 1989). This complex set of memories, skills, and beliefs are antecedent conditions that shape the farmer's attitude expressed in his statement, "ROPS are a waste of money", as well as his continued behavior of driving of tractors without ROPS. Attitudes consist of feelings (emotions) and patterns of thought that influence both opinions and actions (Gagne, 1984). Replacing habitual risky behaviors with safe behavior requires changes in attitudes as well as knowledge.

During his 26th year of farming the farmer overturns a tractor and becomes a paraplegic. Subsequently, the farmer and his wife install ROPS on all their tractors to protect her and other members of the family. While a life lesson like this can be effective in changing dangerous attitudes and behavior, the injuries can be so severe that they remove a person from a situation before he or she has an opportunity to replace risky behaviors with safe behaviors. How, then, can strongly ingrained risky attitudes and behaviors be changed prior to an injury event?

Knowledge about tractor overturn risks, injuries, and consequences as well as the effectiveness of ROPS and seat belts for preventing these injuries, is necessary if farmers are to adopt ROPS. This knowledge can be transmitted directly by telling or showing farmers what they need to know. However, such direct instruction is ineffective for teaching attitudes (Gagne, 1984). To influence behavior, knowledge must be supported by attitudes that help the individual perceive the relevance of that knowledge to his or her daily life. Otherwise the knowledge remains inert and untapped.

Attitudes are learned primarily through internalized stories about human models (Bandura, 1989; Bruner, 1990; Cole, 1997; Gagne, 1984; Sarbin, 1986). Some of the models are real people with whom we interact directly; people whom we respect, observe, and strive to imitate. Other models are people with whom we have no direct interaction, but whose stories we hear about and identify with. Collectively the stories about these models become internalized as mental models that guide our plans, decisions, and actions as well as our understanding of our own and others' conduct. These stories have been called culture tales (Howard, 1991) and stories to live by (Cole, 1997). Figure 1 is a schematic of narrative representation theory and how it integrates cognitive and behavioral psychological principles.

Over the past 16 years the concepts and relationships in figure 1 have been used to develop interactive narrative simulation exercises for promoting attitudes and knowledge that support safe work practices. The exercises have been evaluated in large-scale studies across diverse groups of workers in high-risk occupations (mining, construction, farming, and health care). The exercise scenarios are selected from among high incidence, high severity injury cases for each occupational area. Workers completing the simulation exercises interact with each other and the characters in the stories. As the problem situation unfolds, the workers make decisions at critical points and then learn the consequences of their decisions. Thus, in the safety of a training situation they vicariously experience a life-threatening situation that can occur in their everyday work. Results from a number of studies

How narrative influences and guides behavior

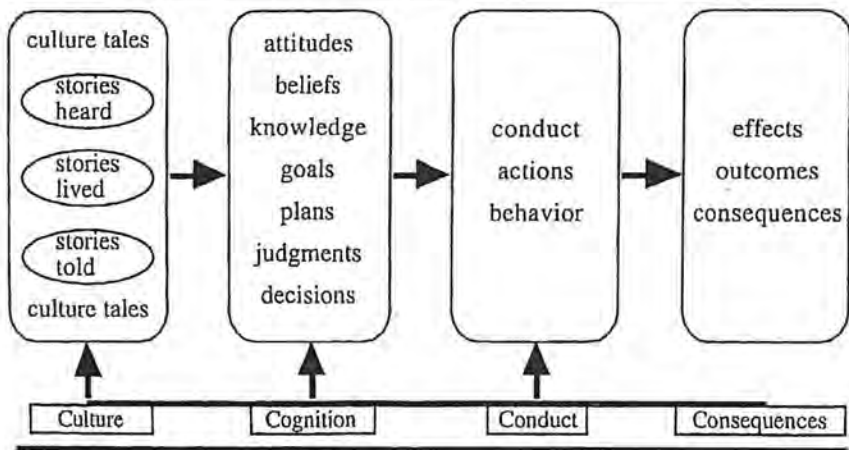


Figure 1-Theory of narrative representation (from Cole, 1997).

suggest that the exercises are effective in teaching attitudes and knowledge that are basic to safe work practices. These findings are not surprising. Parables about people and their predicaments have long been used as effective ways to teach attitudes and values critical to important life decisions.

In summary, replacing habitual risky behaviors with safe work practices requires changes in both knowledge and attitudes. While simply showing or telling someone what they need to know can transmit knowledge, direct instruction is ineffective for changing attitudes. Attitudes are changed primarily through our interactions with human models and parables.

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