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REACH OUT: A Mnemonic Technique Used to Enhance Corporate Compliance with Safety Legislation

By Shari McMahan, Daniel Stokols, Meredith M. Wells and H.C. Clitheroe Jr.

REACH OUT, a mnemonic technique, was developed to help firms comply with California's Injury and Illness Prevention Program legislation. Some 151 companies participated in the study. Of these, 71 received training at the beginning of the study (treatment group), while the remaining 80 (control group) received training at the conclusion of the study.

Post-training knowledge of the legislation's requirements was significantly greater in six of the eight covered areas. Follow-up investigations at three- and 12-month intervals did not find greater recall of the acronym's meaning. However, the treatment group did show greater improvement in program awareness and compliance than did the control group.

In 1991, California began to enforce Senate Bill 198, California's Injury and Illness Prevention Act—the most comprehensive health and safety legislation enacted since the national OSH Act of 1970. Under the act, all California employers must establish, implement and maintain a worksite injury and illness prevention program (IIPP). Key program elements include:

- 1) identification of those responsible for program implementation;
- 2) a system for identifying and evaluating workplace hazards, including scheduled inspections to identify unsafe conditions and work practices;
- 3) a procedure for investigating injuries and illnesses;

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4) procedures for correcting unsafe or unhealthy conditions and work practices in a timely manner;

5) an occupational health and safety training program designed to instruct employees in general safe work practices and to provide training with respect to job-specific hazards;

6) a system for ensuring that employees comply with safe work practices, which may include disciplinary action;

7) a system for communicating with employees on occupational health and safety matters, including provisions designed to encourage employees to report work hazards without fear of reprisal;

8) a system for documenting steps taken to implement and maintain the program (i.e., training attendance records, medical records).

PROBLEMS ENCOUNTERED

Since the law was enacted, IIPP has not been widely implemented by small firms (those with 2 to 500 employees) within the state. In 1992, the California Senate Committee on Industrial Relations issued an oversight report entitled "Senate Bill 198: Impact and Effectiveness on Workers' Health and Safety," which criticized several aspects of the act's implementation. Specifically, the report concluded that:

- 1) Some regulations are not clear and effective.
- 2) The guide developed by Cal-OSHA to facilitate small employer compliance was too general.
- 3) The guide's effectiveness had not been properly evaluated.
- 4) A "model" program was needed to help employers implement successful IIPPs.
- 5) Small businesses are not receiving needed help from Cal-OSHA in creating IIPPs.

In addition, recent statewide economic summit meetings have consistently identified California's demanding regulatory environment as one factor that has prompted firms to relocate to other states.

THE NEED FOR REACH OUT

Based on this information, an easy-to-understand approach for explaining IIPP to small businesses was developed. The "REACH OUT" program clarifies the legislation and provides a model for developing and implementing an IIPP. As Figure 1 shows, the acronym incorporates the act's eight basic implementation steps.

Acronyms are popular mnemonic devices used to enhance learning and improve later recall of information (Manning and Bruning; Perewiznyk and Blick). Use of first-letter mnemonics has been shown to be an effective memory technique (Nelson and Archer; McKenzie and Sawyer). However, this research has primarily involved college populations—no studies have been applied to a field setting (Blick and Boltwood; Patton; Yalch).

REACH OUT uses very simple, non-technical language, and vivid examples and anecdotes to communicate on a personal level. These methods have proven to be effective in communicating risk messages (Covello, et al). It was hypothesized that this technique would effectively communicate the complex requirements of the legislation to the employer representative who, in turn, would help his/her firm comply.

Research Method

A total sample of 151 firms was established using random and convenience sampling techniques. First, to obtain a random sample of firms in Orange and Los Angeles counties, a list of 700 companies was obtained from a survey mailing service. This list included diverse standard industrial classification codes, employer size and geographic locations.

Study information was sent to these 700 firms. In response, 110 (15.7 percent) returned participant interest forms indicating their willingness to participate. Of these, 91 completed the initial background questionnaire, yielding a response rate of 83 percent (among those firms that initially expressed interest in participating) for the randomly drawn sample.

To augment this number, business lists were obtained from two local chambers of commerce. Again, participant interest forms and background questionnaires were sent to these firms, yielding an additional 25 participants. Next, public service announcements were presented via radio and newspapers, yielding 35 more questionnaires for a total sample of 151.

REACH OUT Participants and Program

Of the 151 participants, 71 were randomly selected to receive REACH OUT training. The remaining 80 firms served as the control group. A three-hour training session, offered free-of-charge, was held at three locations in Los Angeles and Orange counties during January 1994. The control group received the same training program at the conclusion of the study—one year after the treatment group. (For additional study details, see Stokols, et al and Wells, et al.)

Hypotheses

Based on prior mnemonic research, it was hypothesized that: 1) training session participants would exhibit greater knowledge of IIPP requirements at post-training as compared to pre-training; 2) participants would have significantly greater recall of the acronym letters at a three-month interval as compared to pre-training; 3) at the 12-month interval, there would be greater compliance within the firms of participants who recalled the acronym at post-training than for those who did not; and 4) one year later, training participants would show greater awareness, and their firms greater compliance, than non-participants.

Background Questionnaire

A background questionnaire was administered to all study participants (treatment and control) to establish baseline levels of injury and illness prevention activities. It included eight sections: program management; surveys and inspections; correcting hazards; employ-

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REACH OUT simplified complex legislation. The mnemonic technique increased awareness of and facilitated corporate compliance with the IIPP legislation.

ee training; communicating with employees; program administration and records; general company data (i.e., health benefits, various company expenses and costs, facility layout and specifications, and overall worksite injuries and illnesses); and participant information.

Pre- and Post-Training Awareness Survey

Prior to the REACH OUT training session, participants were asked to rate their familiarity of—and their firms' compliance with—IIPP on a likert-type scale. They were also asked to list specific requirements with which they were familiar and to indicate how easily these requirements could be implemented within their firms. After the session, participants were re-asked the same questions. In addition, they were asked to list potential obstacles to IIPP implementation.

Follow-Up

Three months after the training session, participants in the treatment group were contacted unexpectedly by phone for a follow-up assessment. They were asked what they had done prior to training to implement IIPP as well as what they had achieved since then to improve compli-

ance. In addition, they were asked to assess the usefulness of REACH OUT training. Participants also were asked to identify implementation problems and whether they recalled what each letter in the acronym represented. Subjects in the control group were not contacted.

One year later, a final questionnaire was distributed to both groups. It posed the same questions as the original questionnaire.

RESULTS

A series of analyses of variance was performed to examine the effect of REACH OUT training on knowledge of the eight IIPP requirements. Post-training knowledge was found to be significantly greater than pre-training knowledge in six areas (Table 1). The three-month telephone follow-up did not yield any significant differences between pre-training levels of awareness and recall of the acronym's meaning.

Analysis of final questionnaires indicated that post-training memory of the acronym had no effect on organizational compliance. However, greater improvement in awareness of and compliance with IIPP was found among training participants than among non-participants (Table 2). Level of IIPP awareness was assessed by a seven-point likert-type scale. Responses ranged from "not very well informed" to "very well informed." The average score was 4.0 at Time 1 and 4.9 at Time 2. Compliance was measured on a scale from 0 to 16. The average compliance score was 9.9 at Time 1 and 11.5 at Time 2.

DISCUSSION

These findings support two of the four hypotheses presented. First, post-training knowledge was significantly greater than pre-

LETTER	REPRESENTING	F VALUE	SIGNIFICANCE
R	responsibility	F= 9.86	p<.0025 **
E	evaluation of hazards	F=11.16	p<.0013 *
A	accident investigation	F= 4.26	p<.05 *
C	corrective action	F= 4.20	p<.05 *
H	hazard training	F= 0.03	n.s.
O	obeying the law	F=10.89	p<.002 **
U	understanding through communication	F= 0.94	n.s.
T	tracking/documentation	F= 8.00	p<.006 **

* p <.05
** p <.01

TABLE 1. Post-training vs. pre-training knowledge.

training knowledge in six of eight IIPP mandates. This finding is not surprising, however, since many people did not realize the magnitude of the responsibilities mandated by this legislation. The two components that were not significantly different were "hazard training" and "understanding through communication." This finding was expected, however, because those participants who were aware thought IIPP was a training/communication program and may have possessed some pre-training awareness. In addition, other legislation (i.e., HazCom and Bloodborne Pathogen standards) focuses on training and communication.

The three-month follow-up phone call did not elicit recall of the IIPP requirements. This could be due in part to the wording of the question. Participants were asked to recall the meaning of the REACH OUT acronym, not to list IIPP requirements, which may have influenced their responses. In addition, research indicates that first-letter mnemonic techniques have not been successful at retrieval of information at later timepoints (Perewiznyk and Blick; Levin).

Analysis of variance revealed that, one year after training, post-training acronym recall had no effect on organizational compliance. Interestingly, significant differences existed between training participants and non-participants in terms of IIPP awareness and compliance. Participants were more likely to have greater awareness of and compliance with IIPP than non-participants. Perhaps some other element of training, such as multiple media aids (i.e., skits, slides, overheads), group participation, message content, or vivid examples and anecdotes helped communicate the message effectively.

Future research should characterize risk messages more completely and evaluate source, message, channel and receiver characteristics in greater detail. It is also possible that training participants implemented IIPP requirements shortly after the session and, thus, felt no need to remember the acronym. One limitation of this study is that the control group was not asked to complete additional surveys (i.e., a three-month follow-up, pre-/post-training). This was due to time constraints and data analysis considerations.

The REACH OUT program simplified complex legislation that is burdensome to employers. The mnemonic technique increased awareness of and facilitated corporate compliance with the IIPP legislation. As this research shows, its use in an applied field setting has proven to be a valuable contribution to safety training. ■

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AWARENESS ^a	n	M	SD
Participants	57	5.23	.41
Non-participants	46	4.30	.51

COMPLIANCE ^b	n	M	SD
Participants	61	12.79	1.27
Non-participants	58	10.17	1.34

^aF(1,102)=7.13, p<.009 ^bF(1,118)=4.68, p<.032

TABLE 2. IIPP awareness and compliance after participation in the REACH OUT training program controlling for Time 1 levels of awareness and compliance.

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