

Impact of Managers' Personal Determinants in Notifying Workplace Hazards

Stanley Rabin, PhD,^{1,2,3*} Mabel Feiner, MA,¹ Judith Shaham, MA,^{1,4}
Daniel Yekutieli, MSc,¹ and Joseph Ribak, MD^{1,4}

Notification about work hazards is a legal requirement in advanced industrial countries, but workers have claimed, that in many cases, they do not receive enough information regarding risks, exposure, and medical problems. The recent professional literature on the subject has explored the ways in which notification is delivered without sufficiently considering the psychological incentives and barriers that may affect managers in transmitting risk information. The present study aimed at examining managers' personal determinants and notification of work hazards in a sample of 106 managers and 460 workers in 40 departments of three industrial plants in Israel. Results of our study showed that both managers and workers perceived the importance of the delivery of safety information as quite high (means of 3.43 and 3.7, respectively, out of 5), with managers reporting that they rely primarily on personal modes of communication. Immediate supervisors were regarded by both groups as the most important persons in notification. Managers having past experience in treating injured workers notified more, primarily using personal notification. The most important personal determinants that positively predicted managers' notification were their sense of self-efficacy and positive expectation of notification. Outcome denial and coping by distancing were negatively correlated with notifying about these risks. Am. J. Ind. Med. 33:493-500, 1998. © 1998 Wiley-Liss, Inc.

KEY WORDS: *personal determinants; worker notification; workers; managers; workplace hazards*

INTRODUCTION

Communication of risk of general job safety hazards and specific high risk exposure in the workplace has

received much attention over recent years. In the United States the National Institute for Occupational Safety and Health (NIOSH) has since 1988 stressed the importance of the worker's right to know of current hazards which are legally protected. Today there is general consensus on the importance of risk communications in helping workers to understand risks and to provide them with the opportunities to take action to protect themselves [Schulte et al., 1993].

In 1991 under the aegis of the NIOSH, a planning group from academia, industry, labor, and government convened a workshop examining many of the issues related to notification. Areas covered included the technical aspects of risk communication, including the choices of communication channels [Schulte et al., 1993], writing styles, and letter layout [Zimmerman, 1993], as well as the social and ethical ramifications of risk communication [Needleman, 1993]. It has been asked whether information about risks from the

¹Occupational Health and Rehabilitation Institute at Loewenstein Hospital, Raanana, Israel

²Department of Family Medicine, Sackler School of Medicine, Tel Aviv University, Tel Aviv, Israel

³Mental Health Services, Ministry of Health, Jerusalem, Israel

⁴Department of Epidemiology and Preventive Medicine, Tel Aviv University, Tel Aviv, Israel

Contract grant sponsor: Committee for Preventive Action and Research in Occupational Health; Contract grant sponsor: The Ministry of Labor and Social Affairs.

*Correspondence to: Dr. S. Rabin, Department of Family Medicine, Sackler School of Medicine, Tel Aviv University, Building 130, Tel Hashomer, Israel

health and safety committee is enough, or should every worker receive a personal letter or be given information individually and face to face?

Studies have generally shown that early knowledge and awareness of work risks is important in activating preparedness, and therefore reducing potentially dangerous work risks [Lawrence, 1978; Maddux and Rogers, 1983]. Few severe psychological effects due to informing workers have been reported [Houts and McDougall, 1988; Meyerowitz et al., 1989]. Furthermore, researchers have pointed out that appropriate knowledge of the threat and its detection can be an essential ingredient in the process of controlling the dangers [Hale and Glendon, 1987]. It can therefore be concluded that prior and ongoing information about risks can act as a palliative emotional factor rather than a stressful agent.

Most recent research efforts in the area of notification have explored the content and process of notification or the more formalistic aspects of notification (example: ways of writing notification letters, the content of the letter, the use of nontechnical language, etc.). However, studies have not explored the possible impact of conveying risk findings on the notifiers themselves, be they occupational health professionals or management. Covello [1992] describes a number of physicians' qualities necessary for conveying risk including personal competence, specialist training, authoritative stance, professional skills and commanding trust. However, the psychological incentives and barriers that may affect the health team and managers' transmission of risk have not been described. The aim of this paper is to address some of these issues.

Notification of workplace hazards requires sensitivity both to the needs of workers as well as those of the notifiers themselves [Saiki et al., 1995]. Reports of the impact of delivering notification in crisis situations have been well reported and include feelings of stress, anxiety, sadness, anger, and overinvolvement [Kranz, 1985; Brown and Harris, 1981]. Such feelings may profoundly affect the boundaries between notifiers and those notified. These and other studies have, however, mainly taken place in clinical situations relating to notification of illness or deaths [Hochstadter, 1986; Viswanathan, 1996]. Few studies have, however, looked at personal determinants of managers in conveying work risks to their workers. One study showed that employers who lack motivation to reduce risks may fail to provide safety precautions [Maizlish et al., 1995]. Another study revealed that significant predictors of safety and health information seeking concerned the beliefs of how well managers protect themselves from hazards and the usefulness of this information [Beck and Feldman, 1983]. It should be pointed out that the findings were revealed through survey questionnaires sent to safety officers only,

without engaging the appropriate perceptions of workers about safety and health precautions in their workplaces.

The present study aimed at examining managers' personal determinants that encourage or thwart notification of workers about hazards in their workplaces. We considered both managers' perception of risks and mode of notification, as well as workers' perception of risks and effectiveness of notification efforts.

Here, managers are looked at as being primary conveyers of work risks, their consequences, and modes to attenuate them. We took, as our theoretical background, the research that has been done looking at the personal qualities involved in notification in the health and medical area. Among personal determinants found to allow for positive coping in notification are self-confidence, self-disclosure, ability to tolerate uncertainty and ambiguity, personal coping ability, positive coping in stressful situations, flexibility, good decision-making, and emotional maturity [Getz et al., 1974; Kranz, 1985]. In the area of notification in the workplace, additional predisposing factors involved in the notification of work hazards also need to be considered.

METHOD

Participants

We invited 106 managers and their 460 workers in 40 departments in three industrial plants in Israel to participate. The sites were all in the public work sector. Two of the plants were involved in high-tech telecommunication manufacturing and the other in the food manufacturing area. All three plants complied with legally mandated worker health and training programs. Participants volunteered for the study. The response rate was almost 100%, with only a few subjects (5–6) refusing to participate in the study. The main reasons for nonparticipation related to poor language skills (new immigrants) (Table I).

Procedures

Questionnaires were presented individually to the participants at the work site on a given day. Managers were given an 81-item questionnaire that included questions related to safety procedures as well as their personal determinants. Workers were given a 15-item questionnaire that included safety questions. A qualified health professional was constantly available to assist, clarify, and supervise the completion of the questionnaires. It took managers an average of 20 min to complete the longer questionnaire, and workers an average of less than 10 min to complete the shorter one.

TABLE I. Distribution of Workers and Managers in a Study of Risk Notification in Three Plants, Israel, 1996

Variable	Workers (n = 460)				Managers (n = 106)			
	Male (n = 299)		Female (n = 161)		Male (n = 95)		Female (n = 11)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Age	38.6	10.68	39.02	8.5	43.4	9.3	40.4	7.7
Education	12.2	2.63	11.07	2.38	12.96	3.03	11.9	2.55
Tenure	10.69	9.00	12.68	8.37	14.00	8.21	15.9	6.05

TESTS AND MEASURES

I. Notification of Work Risks and Hazards (Questions Completed by Both Groups)

1. Use and importance of notification

A list of seven statements related to subjects' attitudes toward work safety procedures. These statements concerned how they perceive work risks in the workplace. Participants were asked to assess themselves on a five-point scale: 1 (not at all) to 5 (very much). An example of items included "In my work, they explain to workers about safety procedures and hygiene regulations of the plant" and "It is important for managers of the plant I work at to inform workers about work risks."

2. Who notifies in the workplace?

The subjects were asked "To what extent do the following work authorities notify workers of work hazards," followed by a list of work and health authorities including employers, direct managers, occupational physicians, etc. This item was scored on a five-point scale: 1 (not at all) to 5 (very much).

3. Who should be notified?

This was gauged by the question "To what extent in your opinion is it important that the following people (example: managers, health authorities) notify about work risks?" The subjects were asked to assess this question on a five-point scale: 1 (not at all) to 5 (very much).

4. Methods of notification

Here subjects were given various ways of communication in which workers may be notified of work risks,

including a list of six items divided into two categories: personal ways of notifying (example: individual interviews with workers in the workplace), and impersonal ways of notifying (example: placards, films, etc.).

II. Personal Determinants (Questions completed by Managers Only)

1. Belief in own self-efficacy

This aspect was measured by a newly developed, nine-item questionnaire regarding belief in personal efficacy in helping others deal with tension rated on a five-point scale [Schwarzer et al., 1992]. It was adapted to intentions about notification. Examples of the items: "I am able to express understanding and empathy to people in distress" and "I am able to support someone who is in distress." Responses were assessed on a five-point scale: 1 (not at all) to 5 (to a great deal).

2. Outcome expectations

This aspect was measured by eight questions. Sample items were "Notification of the existence of work hazards can prevent injuries now and in the future" and "Notification of the existence of work hazards can promote workers' health." Subjects indicated on a five-point scale how much each item applied to them: 1 (not at all) to 5 (very much).

3. Denial of work risks

This involves avoiding or minimizing the possible effects of work risks so as to resist the uncomfortable feelings involved about it. Exaggerated denial may limit or thwart managers notifying their employees of work hazards. It was assessed by six items on a five-point scale: 1 (not at all) to 5 (to a great extent). Sample items were "Additional information to workers about workplace risks will not improve their health" and "Notification about workplace risks is not particularly important."

4. Ways of coping scale

As previously discussed, the literature has shown that coping styles are very important in effective notification. This scale is the 43-item scale that is a Hebrew translation [Solomon et al., 1988] of a shortened version of Folkman and Lazarus's [1980] Ways of Coping Scale. In the present study, managers were asked to think of vivid situations in which they cope with notifying workers of work risks; example: "I would let out my feelings," "I would make a plan of action and follow it through," "I would try to forget the whole thing." They were required to answer to what extent they would react favorably or not to a statement, on a four-point scale: 1 (not at all) to 4 (very much). Four types of

TABLE II. Estimation of Percentages of All Workers in Each Plant Exposed to Different Types of Risks*

Type of exposure	Chemical and physical			Few risks (%)	Totals ^a (%)
	physical (%)	Chemical (%)	Physical (%)		
Plant 1	3.1	43.1	5.5	48.4	100.1
Plant 2	12.4	17.2	18.3	52.1	100.0
Plant 3	0	54.1	21.4	24.5	100.0

*Source = assessment made by qualified industrial hygienist.

^aMay not equal 100% due to rounding off.

coping scores were calculated: problem-focused (PM), emotion-focused (EF), support-seeking (SS), and distancing (D).

III. Potential Level of Exposure and Reported Work Risks

To measure the relationship between the potential level of exposure and reported managers' and workers' ability to report about potential work risks, the following two procedures were undertaken. (1) All participants were given a list of various exposures to risks in the workplace and were asked to evaluate the amount of exposure relevant to them. Specifically the item was "What is, to your opinion, the level of exposure to the following risks in your workplace?" Items included a list of physical, chemical, and other exposures (e.g., dust, noise, etc.). Participants were asked to evaluate exposure on a five-point scale: 1 (not at all) to 5 (very much). (2) Second, information about potential exposure in each plant was received from a qualified industrial hygienist with many years of experience. Each plant was divided into four general categories according to their potential risks. The categories were exposure to chemical and physical hazards, exposure to technological processes involving only chemical hazards, exposure to technological processes involving only physical hazards, exposure to relatively few hazards (Table II).

RESULTS

We compared the subjective reports of exposure by workers and managers and the four general assessments of potential exposure in the various plants made by the industrial hygienist. No significant differences between the two assessments were found. Significant differences between managers and workers were found on the following variables: perception of the use and importance of notification and hazards, and the mode in which risks are delivered (Fig 1). With regard to perception of the use and importance of notification, the means of both groups were quite high.

In comparison, managers attached significantly less importance to information about safety procedures and hazards than did the workers ($P < 0.05$). There was also a significant difference between managers and workers with regard to ways of communicating about risks. Managers reported using a personal mode of communication far more often than workers reported this ($P < 0.001$). Cronbach's Alphas for the questionnaires can be seen in Table III. As indicated, the Cronbach's Alpha for notification of work risk and hazards are large for both managers and workers, as desired, and those for personal determinants are particularly high, exceeded 0.60 in all cases but one (outcome expectations).

With regard to who notifies, workers and managers agree that immediate supervisors more often notify than do other work functionaries. In both groups, experience on the job was not found to be significantly related to the perception of the delivery of safety and hazards. It should be noted that, notwithstanding the relatively low Cronbach Alphas of some of the personal determinants, significant results were found (Table III). Thus, with regard to the personal determinants of the managers and their own reported notification about work risks, the greater their sense of self-efficacy, the greater was their own perception of the use and importance of notification ($P < 0.01$) and the more often they reported using the personal mode of risk communication. Not surprisingly also, a relationship was found between the extent to which direct managers report about work risks and their expectations of a potential positive outcome from these efforts ($P < 0.05$). Positive correlations were found between the managers' use of coping by problem-solving and (a) their own positive perceptions of the importance of notification ($P < 0.001$), (b) their use of a personal mode of communication ($P < 0.01$), and (c) their view that immediate managers should be more involved in notification ($P < 0.05$).

Questions were asked about managers' experience in detection and treatment of injured workers. Fifteen percent (16 of 106) of the managers reported having had previous experiences in helping injured employees in the workplace. When comparing this group with those managers with no experience in the area, the following results were obtained: managers with previous experience in treating injured workers showed significant differences from those with no experience on the following variables: greater use and importance of notification ($P < 0.05$), and greater use of the personal mode in notification ($P < 0.01$). When analyzing relationships between the personal determinants of the managers and reported notification by their workers, managers' self-efficacy cognitions were positively related to workers' perception of the delivery of safety procedures ($P < 0.001$) and the use of the personal mode of communication ($P < 0.05$). Managers' denial of work hazards was negatively correlated with their workers' perception of delivery

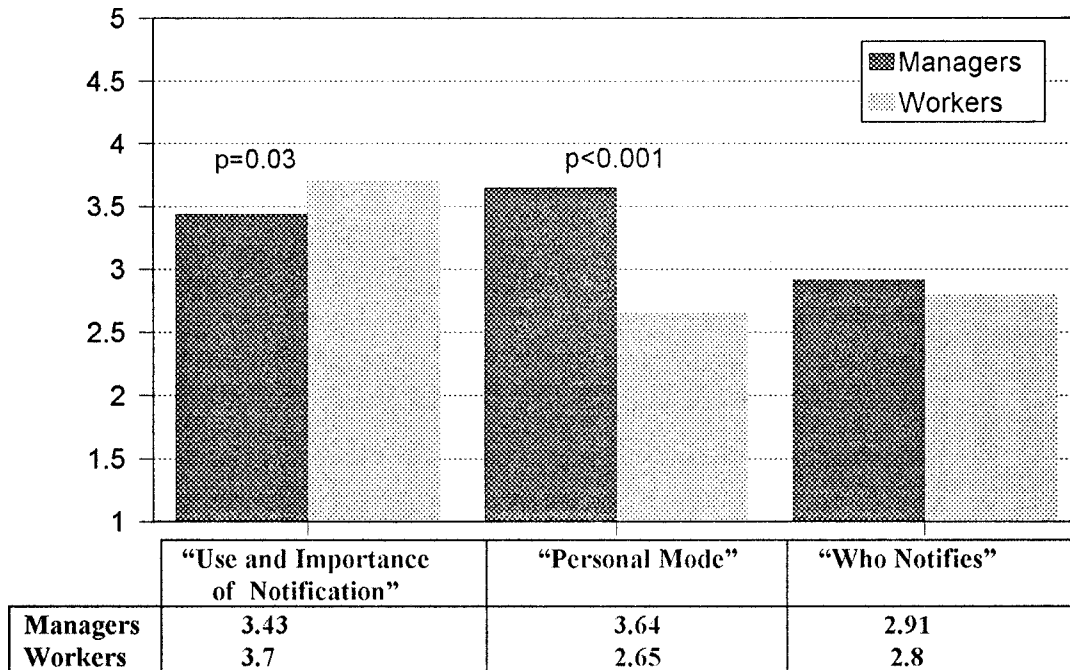


FIGURE 1. Test comparison of workers’ and managers’ attitudes toward notification of work risks.

TABLE III. Cronbach’s Alpha for the Questionnaires

	Cronbach’s Alpha	
	Managers	Workers
I. Notification of work risk and hazards		
Use and importance of notification	0.84	0.90
II. Personal determinants		
1. Beliefs in own self-efficacy	0.61	—
2. Outcome expectations	0.51	—
3. Denial of work risks	0.64	—
4. Ways of coping scale:		
a. Problem-focused	0.72	—
b. Emotion-focused	0.87	—
c. Support-seeking	0.67	—
d. Distancing	0.88	—

of safety procedures ($P < 0.01$) and workers’ view about the importance of personal communication of risk information delivery ($P < 0.001$). Managers’ use of coping by distancing was negatively correlated with workers’ perceptions about the delivery of safety procedures ($P < 0.05$), use of the personal mode of risk communication ($P < 0.05$) and managers’ direct involvement in notification ($P < 0.05$).

To examine the combined effects of the personal determinants on notification (while screening out statistically insignificant variables), multiple regression analysis

was carried out. This method included the following personal determinants variables: belief in self-efficacy, denial of work risks, outcome expectations, and coping by distancing. These were examined against the following dependent variables: (a) who notifies about work hazards, (b) the use and importance of notification, (c) the personal communication of work risks.

Results in Table IV showed the following: The model relating to delivery of safety procedures indicated that the greater a manager’s sense of self-efficacy and positive outcome expectations, the more often workers perceived receiving information about work hazards. On the other hand, the greater the denial by managers of work risks, the less workers reported receiving information about work hazards. The model relating to the personal mode of communication showed that the higher a manager’s self-efficacy cognition, the more often they used the personal mode of communication. On the other hand, the more managers denied work hazards, the less they used the personal mode of communication. It should be noted that although the results of the multiple regression analysis were statistically significant and meaningful, R-squared values were relatively low. When comparing the relevant personal determinants (self-efficacy, denial, distancing-coping) of those managers who had previous experience with injured employees in the workplace from those who had no experience, no significant differences were found between the two groups. However, self-efficacy means were higher in the former group (3.92 vs. 3.65), denial was lower (2.18 vs.

TABLE IV. Multiple Regression Analysis of Personal Determinants Predicting Workers' Attitudes About Notification of Work Risks

	Coping by distancing	Outcome expectations	Denial of work risks	Belief in self-efficacy	P	R ²
Who notifies	-0.17 ± 0.08	0.32 ± 0.10	-0.24 ± 0.08	0.34 ± 0.13	0.01	0.02
Use and importance of notification	—	0.26 ± 0.08	-0.22 ± 0.06	0.34 ± 0.11	0.01	0.02
Personal mode of communication	—	—	-0.22 ± 0.06	0.22 ± 0.12	0.00	0.04

2.38), and distancing coping was lower (1.87 vs. 2.24). This finding may suggest that previous experience plays some part in changing personal determinants and encouraging positive mastery and coping.

DISCUSSION

This study, conducted in 40 departments in three different industrial plants, showed that both managers and their workers perceived the use and importance of notification as quite high. Because notification about work hazards is a legal requirement in Israel, we would have anticipated even higher scores. However, notwithstanding such regulations, workers may not receive sufficient information with regard to work risks [Meyerowitz et al., 1989]. An interesting finding was the different ways in which managers and workers perceive risk information being delivered. Managers genuinely believed that they used the personal mode of communication about risks (i.e., through individual meetings), whereas workers did not perceive this. Managers may be unaware that information delivery is not picked up by their workers. It has been reported that notification is greatly influenced by effective communication between the notifier and the person being notified, and that communication is more effective when the notifier listens to the notified and the latter finds the information delivered important and relevant [Sparks and Cooper, 1993]. This can indeed be done through the personal mode as reported by the managers; however they should need to confirm its significance by their workers. Additionally, both managers and workers reported that the likely providers of risk information are immediate managers, confirming previous studies of the importance of immediate managers in delivering work risks [Dar-el et al., 1983].

Our findings showed that self-efficacy was an important factor in notification, as reflected in the reports by workers. These findings support the importance of self-efficacy in positively changing health and safety behaviors [Kelly et al., 1991; Melamed et al., 1996; Wulfert and Wan, 1993].

Differences were found between managers and workers with regard to the personal determinants affecting notification. During notification, managers see themselves as coping with the process through problem solving strategies and

emphasizing the outcomes of notification (high outcome expectations). Workers, on the other hand, perceive their managers differently, and report their use of distancing and denial. Managers' coping by distancing and denial was negatively correlated with workers' perception of notification.

Furthermore, the difference in perceptions of personal determinants between the two groups about managers' effective notification about work safety is very important because it highlights the communication problems mentioned earlier. It has important consequences for intervention in that it may reveal to the managers that the way they see themselves is different from how their workers see them. The awareness of these differences is important to help managers undertake appropriate change. Furthermore, the main "consumers" of safety hazards information in the workplace are the workers themselves, and their views about managers' personal determinants in notification are most important and relevant.

Manager denial was found to decrease workers' receiving notification about work risks. Denial has been found to be a negative buffer in experiencing stress, and stops people from accepting and integrating knowledge that may threaten their lives or affect their decisions [Beilin, 1982; Brown, 1987]. These findings may have important consequences for intervention in that by reducing their defenses of denial, managers may become more effective in notifying about work hazards.

As has been noted, managers' previous experience in dealing with injured workers had an important effect on notification of reporting about safety hazards in the workplace. Those managers who had been exposed to injured workers, notified more about safety hazards through the personal mode, in comparison to those managers with no experience. This finding may explain the importance of previous experience, especially if it is perceived as a positive experience. Coping with acute stress can be perceived as positive and can lead to positive growth and development [Caplan, 1989]. Furthermore, that mean self-efficacy cognitions of managers with previous experience were higher than those for managers with no experience substantiates Bandura's theory [Bandura, 1977, 1986], which claims that possible previous positive experiences in behavior increases

self-efficacy cognition. The implications of these findings for the supervision of managers is crucial because it may imply that use of experienced role models, could increase managers' knowledge of safety and managers' self-efficacy cognitions [Bandura, 1986].

This study has important implications for future research and intervention. Many studies in the past have studied either worker or manager variables alone. A strength of this study was our attempt to evaluate both managers' general attitudes toward work safety, as well as their respective workers' perception of these variables. However, more detailed explanations of these and other personal determinants should be undertaken in larger samples of managers, particularly among those managers who have had past experience treating injured workers. Measurements of actual risk or hazard levels were assessed by an expert industrial hygienist and were generally characterized according to chemical and physical hazards, chemical hazards, physical hazards, or relatively few hazards. Within these categories may lie some variation. It is suggested that, in future studies, the nature and extent of workers' exposures to specific hazards should be more carefully examined. In terms of intervention, it is suggested that management develop programs aimed at sensitizing colleagues to the needs/expectations of their workers to open up more effective channels of communication between themselves and their workers. Finally, denial may be changed through cognitive therapy techniques, such as Rational Emotional Therapy [Ellis and Grieger, 1986]. This technique involves changing irrational beliefs into more rational, appropriate, and functional thinking so that obstacles can be overcome and more effective notification take place.

ACKNOWLEDGMENTS

This study was supported by the Committee for Preventive Action and Research in Occupational Health, The Ministry of Labor and Social Affairs, Jerusalem, Israel. We thank Dr. Benny Malenki and Dr. Michael Meiman of the National Survey of Risks in Israeli Industry, Occupational Health and Rehabilitation Institute for their help. We thank Ms. Denise Solomon and Ms. Chani Shahar for their editorial assistance.

Note: Due to its length, the complete questionnaire used in this study is not attached. For a copy write to: Dr. Stanley Rabin, Department of Family Medicine, Sackler School of Medicine, Building 130, Tel Hashomer, Israel.

REFERENCES

- Bandura A (1977): Self-efficacy: Towards a unifying theory of behavior change. *Psychol Rev* 84:191–215.
- Bandura A (1986): Self-efficacy. In Bandura A (ed): "Social Foundations of Thought and Action. A Social Cognitive Theory." Englewood Cliffs, New Jersey: Prentice-Hall.
- Beck KH, Feldman HL (1983): Information seeking among safety and health managers. *J Psychol* 115:23–31.
- Beilin R (1982): Social functions of denial of death. *Omega J Death Dying* 12:25–35.
- Brown GW, Harris T (1981): "Social Origins of Depression." London: Tavistock.
- Brown MS (1987): Communicating information about workplace hazards: Effects on worker attitudes towards risks. In Johnson BB, Covello VT (eds): "The Social and Cultural Construction of Risk: Essays on Risk Selection and Perception." New York: D Reidel Publishing Co.
- Caplan G (1989): "Population-Oriented Psychiatry." New York: Human Sciences Press.
- Covello VT (1992): Risk communication, trust and credibility. *Health Environ Digest* 6:1–4.
- Dar-el A, Goldberg A, Vane N (1983): The development and improvement of safety in factories through the involvement of management. Israel Technology Institute, Center for Research in Work Safety and Human Engineering, Faculty of Industrial Engineering and Management, Technion, Haifa, Israel (Hebrew).
- Ellis A, Grieger RM (1986): "Rational Emotional Therapy: Handbook of Rational Emotive Therapy." New York: Springer.
- Folkman S, Lazarus RS (1980): An analysis of coping in a middle-aged community sample. *J Health and Soc Behav* 21:219–239.
- Getz W, Wiesen AE, Sue S, Ayres A (1974): *Fundamentals of Crisis Counseling*. Lexington Books, Mass.
- Hale AR, Glendon AI (1987): *Individual Behavior in the Control of Danger*. Oxford: Elsevier.
- Hochstadter K (1986): *The Notifiers of Injury in the Israel Defense Forces and Their Coping with Their Role*. Unpublished Dissertation, University of Tel Aviv, Tel-Aviv, Israel.
- Houts PS, McDougall V (1988): Effects of informing workers of their health risks from exposure to toxic materials. *Am J Ind Med* 13:271–279.
- Kelly RB, Zyzanski SJ, Alemagno SA (1991): Prediction of motivation and behavior change following health promotion. Role of health beliefs, social support and self-efficacy. *Soc Sci Med* 32:311–320.
- Kranz PL (1985): Crisis work: The stress clinician. *Crisis Intervent* 14:93–100.
- Lawrence AC (1978): Human error as a cause of accidents in gold mining. *J Saf Res* 6:78–88.
- Maddux JE, Rogers RW (1983): Protection motivation and self-efficacy: A revised theory of fear appeals and attitude change. *J Exp Soc Psychol* 19:469–479.
- Maizlish N, Rudolph L, Dervin K, Sankaranarayan M (1995): Surveillance and prevention of work-related carpal tunnel syndrome: An application of the Sentinel Events Notification System for Occupational Risks. *Am J Ind Med* 27:715–729.
- Melamed S, Rabinowitz S, Feiner M, Weisberg E, Ribak J (1996): Usefulness of the protection motivation theory in explaining hearing protection device use among male industrial workers. *Health Psychol* 15:209–215.
- Meyerowitz BE, Sullivan CD, Premeau CL (1989): Reactions of asbestos-exposed workers to notification and screening. *Am J Ind Med* 11:463–475.
- Needleman C (1993): Worker notification: Lessons from the past. *Am J Ind Med* 23:11–23.

Saiki CL, Green RS, Gold EB, Schenker MB (1995): Communication issues in a multi-component study of semi conductor employees. *Am J Ind Med* 28:883-911.

Schulte PA, Boal WL, Friedland JM, Walker JT, Connally LB, Mazzuckelli L, Fine LF (1993): Methodological issues in risk communications to workers. *Am J Ind Med* 23:33-36.

Schwarzer R, Dunkel SC, Weiner B, Woo G (1992): Expectancies as mediators between recipient characteristics and social support intentions. In Schwarzer R (ed): "Self-Efficacy: Thought Control of Action." New York: Hemisphere Publishing Co.

Solomon Z, Mikulincer M, Avitzur E (1988): Coping, locus of control,

social support and combat-related post-traumatic stress disorder. *J Pers Soc Psychol* 55:279-285.

Sparks PJ, Cooper M (1993): Risk characterization, risk communication and risk management. *J Occup Med* 35:13-19.

Viswanathan R (1996): Death, anxiety, locus of control and purpose in life of physicians. Their relationship to patient death notification. *Psychosomatics* 37:339-345.

Wulfert E, Wan CK (1993): Condom use: A self-efficacy model. *Health Psychol* 12:346-353.

Zimmerman DE (1993): Reading, readability and legibility research: Implications for notification letters. *Am J Ind Med* 23:61-69.