Organizational Preparedness for Coping With a Major Crisis or Disaster

Karen L. Fowler
Nathan D. Kling
Milan D. Larson
Monfort College of Business, Greeley, CO

This research presents the results of an exploratory empirical study that assessed perceived organizational preparedness for coping with a major crisis or disaster. A scale was developed and tested to measure perceptions of organizational preparedness. Hypotheses were tested to examine variations in perception of crisis preparedness. Potential for occurrence of crises was also examined and demographics collected. Findings indicate that top-level and middle-level managers have a higher level of perceived preparedness than employees, no differences in perceived preparedness based on size of the city where organizations operate, government organizations expressed a higher perception of crisis preparedness than for-profit organizations, and the highest perception of preparedness was exhibited by organizations employing more than 500 employees.

Keywords: crisis and disaster planning; emergency response planning; crisis and disaster preparedness; workplace

Crisis and Disaster Planning

Crisis management and disaster prevention and/or preparedness have long been topics of interest in the strategy, planning, decision making, and public administration literatures. The Oklahoma City bombings, events of 9/11, and Hurricane Katrina, however, have catapulted crisis and disaster planning into the forefront of many scholarly disciplines. The relationships between theory and practice have generated heightened interest.

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One week after 9/11, at the *Disaster Recovery Journal's* Fall World Conference in Orlando, it was found that 75% of the companies represented already had crisis management plans in place (self-selection because of the nature of the conference). However, 97% of those firms reported their crisis management plans needed to be changed (*Disaster Recovery Journal,* 2001). More than 2 years after 9/11, corporate security chiefs said that nearly one half of their companies were still not prepared in basic areas (*Wall Street Journal,* 2003). The devastation and aftermath of coping with Hurricane Katrina speaks for itself. A recent survey of our academic colleagues across the United States indicated that not one was aware of the crisis management or disaster preparedness plan in place at his or her respective university. Pilot studies showed that many employees were uninformed regarding their organization's crisis or disaster plan. This was surprising given that crisis and disaster planning had been thrust into national attention by the media and academic journals alike following 9/11. For example, *The Wall Street Journal* published an entire section titled "How Vulnerable Are You?" (*Wall Street Journal,* 2003). The *Academy of Management Executive* published an interview with Lee Korins, former CEO of the Security Traders Association, in which he recounted his personal experience in escaping from the North Tower of the World Trade Center immediately following the terrorist attack (Clinebell & Rowley, 2003). Crisis and disaster preparedness is a crucial topic in today's society, and opportunities for empirical organizational research are numerous.

In the past, *crisis events* were often defined as low-probability, high-consequence events that could threaten organizational legitimacy, profitability, and viability (Shrivastava, 1987) and were characterized by ambiguity of cause, effect, and means of resolution (Pearson & Clair, 1998). Recent tragic events have affected our thinking with respect to some of these criteria. Certainly the events of 9/11 and Hurricane Katrina have escalated the necessity for better crisis and emergency planning in all types of organizations, and the related bodies of literature have been reexamined.

The crisis, disaster, and emergency planning literatures have long existed and can be categorized generally as theoretical, empirical, and practitioner-oriented articles. Researchers in these areas have debated the theoretical differences and varying applicabilities of existing disaster-related paradigms, such as the disaster-resistant community, disaster-resilient community, and sustainable development and/or sustainable hazards mitigation concepts (McEntire, Fuller, Johnston, & Weber, 2002) and have attempted to integrate crisis concepts and develop better process models to advance crisis management

research (McEntire et al., 2002; Mitroff, Shrivastava, & Udwadia, 1987; Pearson & Clair, 1998; Pearson & Mitroff, 1993). Other researchers have examined crisis as a threat versus an opportunity and the paradoxical nature of crisis (Nathan, 2000), attempted to guide comprehensive government decision making in crisis management (Rosenthal & Kouzmin, 1997), examine public leadership in times of crisis (Boin & Hart, 2003), plan for coping with crises in our schools (Lichtenstein, Schonfeld, & Kline, 1994; Perea & Morrison, 1997), respond to internal marketing crises (Gonzalez-Herrero & Pratt, 1998), and describe frameworks for ethical decision making in time of crisis (Christensen & Kohls, 2003). Drabek and McEntire (2003) provided a litera-ture review and analysis of emergent phenomena and sociological aspects of disaster, pointing out numerous opportunities for further empirical research.

Empirically, Penrose (2000) studied the role of perception in crisis plan-ning by surveying top managers of *Fortune* 500 firms. His research exam-ined the perception by managers of a crisis being a threat or an opportunity and the resulting relationship to a number of crisis-planning variables. As Penrose (2000) and Marra (1998) stated, much of the traditional crisis man-agement literature stresses the fundamental importance of implementing an enterprise-wide crisis plan, and when organizations practice proactive cri-sis management, the damage of a crisis can be lessened. Furthermore, when a crisis occurs in organizations that are prepared, learning takes place, and those organizations are more prepared for the next crisis because, in part, of accelerated change in organizational processes (Burnett, 1998). When organizations merely respond to crisis, without a proactive posture, more damage seems to prevail (Nudell & Antokol, 1988). Smits and Ally (2003) also contended that when behavioral readiness is absent, crisis management effectiveness becomes a matter of chance.

Massey (2001) investigated the effects of crisis-response strategies on perceptions of organizational legitimacy. His findings suggest that to main-tain legitimacy, organizations must engage in successful crisis manage-ment. Prior to 9/11, many organizational decision makers seemed either (a) ignorant about the need for their involvement in crisis management and dis-aster preparedness and/or (b) reluctant and unwilling to allocate resources appropriately to develop effective crisis management and disaster pre-paredness plans for their employees, in spite of volumes of practitioner, pedagogical, and theoretical articles on how to plan for a crisis.

Spillan and Crandall (2002) surveyed executive officers of nonprofit organizations and found that the presence of a crisis management team in an organization does not necessarily mean that concern for all types of crisis

events exists and that nonprofit managers who have actually experienced a crisis are more concerned about that particular crisis than the managers who have not experienced that crisis. The authors pointed out that their research sample comprised primarily small nonprofit organizations and speculated that smaller nonprofits may be less sophisticated in their crisis management preparations than larger nonprofits.

One of the most comprehensive theoretical treatments of crisis management has been offered by Pearson and Clair (1998). Their crisis management process model provides a comprehensive descriptive model of preevent environment, perceptual and organizational characteristics, and postevent reactions, responses, and outcomes. As with any low-probability, high-impact event, empirical assessment can be limited. Often researchers do not know what preevent preparedness was in place; however, they can assess visible damage that may have occurred. If no visible damage occurred, researchers may not know about the crisis at all, therefore making any preevent assessment impossible. Pearson and Clair have stressed that there is little empirical knowledge available on crisis and disaster planning processes, and many of the variables discussed in the literature have not yet been operationalized. The three primary preevent constructs in Pearson and Clair's work include environmental context, such as institutionalized practices, executive perceptions of risk, and adoption of organizational crisis management preparations. These constructs were instrumental in the development of our research hypotheses shown below.

Hypothesis 1: Managers will have a higher perception of crisis preparedness than the employees in the organization.

Hypothesis 2: Organizations located in higher populated densities will have a higher perception of crisis preparedness than organizations located in lower density populations.

Hypothesis 3: For-profit organizations will have a higher perception of crisis preparedness than nonprofit or public (government) organizations.

Hypothesis 4: Organizations with more employees will have a higher perception of crisis preparedness than organizations with fewer employees.

Method

Questionnaire

To test the crisis preparedness of our participants, we designed and tested a 21-item scale (see the appendix). During the pilot testing of the instrument,

we started with a 32-item scale that included items from the literature review. Although the initial reliability (α = .80) was within an acceptable range (Nunally & Bernstein, 1994), we observed the opportunity to increase the reliability of the scale by reducing the number of items. Through a step-by-step process of eliminating one question at a time, we found a 21-item scale (see appendix) to have the highest reliability (α = .88). In addition to our reliability analysis, we used exploratory factor analysis techniques to investigate the underlying latent structure of the data. Traditionally, factor analysis has been recognized as a powerful method for construct development that is at the heart of psychometric research (Kerlinger, 1986; Nunally & Bernstein, 1994). In exploratory factor analysis, the eigenvalue-equal-to-one criterion is often used to determine the number of factors from the data. Because the main purpose of our research was to compare mean differences between different sample populations (rather than to account for variance), we realize other factor structures with multiple factors might be revealed in similar research whose main objective is to develop a theoretical framework. Consequently, eliminating factors with eigenvalues greater than 1 or retaining factors with eigenvalues less than 1 might be appropriate when there is more theoretical and or conceptual support (Hair, Anderson, Tatham, & Black, 1998; Nunally & Bernstein, 1994).

In addition, our survey asked respondents to rank the likelihood of various major crises that could occur at their organizations. The five types of crises that appeared on the questionnaire include:

- secondary terrorist attack
- natural disaster
- major terrorist attack
- accidental disaster
- workplace violence

Consideration of the presentation order of the types of crises indicated was considered (Minium, 1978); however, consensus among statisticians and ourselves resulted in the opinion that an order effect was not likely to occur, provided that we did not present the crises in any predetermined sequential-type order on the questionnaire. Care was taken to present the crises in an order (shown above) that reflected them as independent events.

Of further interest were the basic characteristics of the organizations in which our respondents were employed. Eight demographic variables were included in the questionnaire:

- type of organization
- number of employees at respondent's work location
- total number of organization employees worldwide
- respondent's employment state
- respondent's gender
- size of city and/or town of respondent's work location
- number of total organizational locations worldwide
- respondent's position in the organization

Sample

The intent in the current research was to assess organizational readiness for effectively surviving a serious crisis or disaster in the workplace. Unlike Penrose (2000) and Spillan and Crandall (2002), who chose to question top management, we wanted to survey a broader range of organizational employees because responses from top management could be biased toward saying that the organization is more prepared than it might be. Our initial surveys indicated that many organizational employees were not aware of any crisis or emergency preparedness plans in their work environment; however, when we investigated further, some of these organizations did, in fact, have plans residing in the organization's security department or on the organization's Web site. The problem as we saw it was that the plans had never been communicated or institutionalized throughout the levels of the organization and had not, therefore, resulted in organizational members being prepared to respond to a crisis or disaster if it did in fact occur. The crisis and disaster preparedness literature is clear about the importance of everyone in the organization knowing about the emergency or crisis plan and preferably having rehearsed it often. For these reasons, we chose to sample a broader range of organizational employees.

The population selected for this research was the alumni database from a medium-sized, Association to Advance Collegiate Schools of Business (AACSB)-accredited college of business at a state university in the southwestern United States. Every graduate from the college for the past 10 years was included in the population, resulting in an initial population of 2,296 graduates. Thirteen alums were eliminated from the study because they had moved home to foreign countries. The questionnaire, along with a cover letter explaining the research, was mailed to 2,283 alums. Of the surveys mailed, 104 resulted in incorrect addresses and had to be discarded. The final useable sample consisted of 2,179 alums. Of these, 398 alums completed the questionnaire, resulting in a response rate of 18.27%.

Demographics

The majority of the respondents worked for for-profit organizations (80.4%), employing 100 to 499 employees at their work location (27.5%), employing more than 500 total organizational employees (61.7%), and having more than 25 work locations for their organization (43.3%). Respondents' work locations included 25 states with the majority represented in the state in which the college of business is located. The size of the city or town of the respondents' work locations was primarily between 50,000 and 1,500,000 (58.5%). Gender of the respondents was nearly evenly split with 50.3% being female and 49.7% being male (adjusted for 14 nonresponses to gender item). The majority of respondents were nonmanagement employees (41.6%), followed by middle-level managers (25.4%), then entry-level management (15.9%). 9.1% of the respondents indicated their positions to be upper- or top-level management. This met our objective of surveying employees in lower levels of organizations as compared with primarily upper-level management.

Analysis and Results

To compare the perceived readiness for a crisis prior to the actual event occurring, we used ANOVA methods for leadership levels, size of organization (measured by number of employees), type of industry, and size of the city in which the company is located. To calculate perceptions of organizational preparedness for a crisis or disaster, we calculated the sum from each respondent's scores from the 21-item scale; therefore, a higher score suggests a higher perception of preparedness. For the leadership levels in the current sample, the average level of preparedness is summarized in Table 1. There was a significant mean difference between top-level managers and employees and middle-level managers and employees, $F(3,311) = 3.73$, mean square error (MSE) = 99.32, $p = .012$. Pairwise comparisons using least significance difference (LSD; with a minimum mean difference = 3.11) revealed that, consistent with Hypothesis 1, top-level managers and middle-level managers have a higher level of perceived preparedness than employees in the current sample. Contrary to Hypothesis 1, low-level managers do not have a higher perceived preparedness than employees. Thus, Hypothesis 1 was only partially supported with the current sample.

In our analysis of Hypothesis 2, related to the size of the city where organizations operate, we found no significant differences, $F(2,341) = .116$, MSE = 101.09, $p = .891$ (see Table 2 for details). Because of insignificant mean

Table 1
Management Level Descriptive Statistics

Management Category	Level	N	Mean Score	SD
1	Top manager	31	56.00	7.776
2	Middle manager	95	56.61	10.456
3	Entry manager	54	53.91	9.112
4	Nonmanagement	135	52.36	10.363
Total		315	54.27	10.095

Pairwise comparisons
  (LSD = 3.11)

Category 1	Mean Difference	Category 2	Mean Difference	Category 3	Mean Difference
1-2	−.61				
1-3	2.09	2-3	2.70		
1-4	3.64[a]	2-4	4.25[a]	3-4	1.55

Note: LSD = least significance difference.
a. significant mean differences at the $p < .05$ level.

Table 2
Organizational Location Descriptive Statistics

Category	City Population	N	Mean Score	SD
1	> 1.5M	84	54.21	9.944
2	50K – 1.5M	203	54.18	10.313
3	< 50K	57	53.49	9.239
Total		344	54.08	10.028

Note: No pairwise comparisons necessary here.

differences in this area of our analysis, no pairwise comparisons were conducted, which suggests Hypothesis 2 was not supported in our sample of employees.

Table 3 provides the details of the for-profit, nonprofit, and public organizations. Public (government) organizations expressed the highest perception of crisis preparedness, while for-profit organizations exhibited the lowest perception of crisis preparedness. These findings are contrary to

Table 3
Organizational Type Descriptive Statistics

Category	Type	N	Mean Score	SD
1	For-profit	280	53.57	9.873
2	Public	30	57.63	11.55
3	Nonprofit	18	54.06	8.768
4	Other	15	56.80	10.421
Total		343	54.09	10.038

Pairwise comparisons
  (LSD = 2.988)

Category 1	Mean Difference	Category 2	Mean Difference	Category 3	Mean Difference
1-2	–4.06[a]				
1-3	–0.49	2-3	3.57[a]		
1-4	–3.23[a]	2-4	.83	3-4	–2.74

Note: LSD = least significance difference.
a. significant mean differences at the $p < .05$ level.

Hypothesis 3, which proposed that for-profit organizations would hold the highest perception of crisis preparedness. Using LSD pairwise comparisons (with a minimum mean difference of 2.99) revealed a significant mean difference between for-profit organizations and public (government) organizations and significant mean difference between for-profit organizations and the category of "other" types of organizations.

In our analysis of organizational size, Table 4 lists the perceived preparedness of the six categories of organizational size. The highest perception of preparedness was noticed by organizations that employ more than 500 employees ($M = 56.22$), while the lowest perceived preparedness was observed by organizations that employ 20 to 99 employees ($M = 49.36$). There was a significant mean difference between the size of the organization, $F(5,335) = 5.46$, MSE = 93.89, $p = .000$. Further pairwise comparisons using LSD (with a minimum mean difference of 3.56) suggests the only significant difference in perceived preparedness is visible with organizations that employ 500 or more employees. All other mean differences between the various organization sizes are not significant. Therefore, Hypothesis 4 is only partially supported.

Table 4
Organizational Size Descriptive Statistics

Organization Category	Number of Employees	N	Mean Score	SD
1	1-4	16	51.56	10.972
2	5-9	14	51.64	8.661
3	10-19	19	50.00	8.644
4	20-99	39	49.36	8.728
5	100-499	43	51.74	10.007
6	500+	210	56.22	9.837
Total		341	54.12	10.002

Pairwise comparisons
(LSD = 3.56)

Category 1	Mean Difference	Category 2	Mean Difference	Category 3	Mean Difference	Category 4	Mean Difference	Category 5	Mean Difference
1-2	–.08								
1-3	1.56	2-3	1.64	3-4	.64	4-5	–2.38	5-6	–4.48[a]
1-4	2.20	2-4	2.28	3-5	-1.74	4-6	–6.86[a]		
1-5	–.18	2-5	–.10	3-6	–6.22[a]				
1-6	–4.66[a]	2-6	–4.58[a]						

Note: LSD = least significance difference.
a. significant mean differences at the $p < .05$ level.

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Discussion and Implications for Future Research

Practically speaking, the success stories generated on 9/11 garner their own support for the value of getting prepared, and the practitioner literature is abundant with case-specific and generalized prescriptive advice for being prepared. The 1993 bombing of the World Trade Center spurred the Board of Trade and some other firms in and around the Twin Towers to better protect their employees and data. For example, for Morgan Stanley Dean Witter, the World Trade Center's largest tenant, with 3,700 employees, sticking with the evacuation plan was critical to saving lives. Even though someone on the South Tower's public address system informed workers it was safe to return to their offices, Morgan's security officer kept employees moving down dozens of flights of stairs. All but six employees escaped. Everyone knew about the contingency plan. Many of Wall Street's brokerage houses and other firms were able to evacuate the majority of their workers because of often-repeated drills. Employees of the Japanese firm Mizuho had emergency kits with burn cream, smoke hoods, and glow sticks strapped to the backs of their chairs to assist in evacuation ("Guarding Against," 2001). Potential legal and other complications could face managers who remain unprepared for managing crises or disasters in their organizations. Managers could be held liable for failing to do so, analogous to other expected accountabilities of the past, such as unsafe working conditions. Bordwin (1999) examined the legal aspects of crisis indicating managers could get sued. His research cites the potential for criminal liability (for example, when poultry packing executives were jailed for manslaughter when workers caught in a plant fire could not escape because the fire exits were bolted shut).

The tragedy that occurred on 9/11 has caused some analysts to reexamine the theories of centralization and decentralization of organizational structures and processes as they relate to crisis prevention and preparedness ("Guarding Against," 2001), and certainly Hurricane Katrina may fuel those investigations. Trophy buildings, high-profile locations, single locations, advertising of brand names on vans and buses, employee uniforms, employee criminal records, air travel, management succession, and organizational size, among a number of other issues, have all come under new and heightened scrutiny. Private jet air travel is booming under the assumption that private airports may be safer. Softer, heuristic forecasting techniques have been thrust back into the limelight. Reexamining team decisions has additionally come into question. "In a crisis, too many decision makers may frustrate carefully laid plans" (Podolak, 2002, p. 54). A theoretical analysis

of these structural considerations with respect to crisis management can be found in Hart, Rosenthal, and Kouzmin (1993), and the role of heterogeneous top management teams can be found in Greening and Johnson (1997).

The current research attempted to operationalize constructs previously identified in the crisis and disaster preparedness literature and empirically assess variables identified as important to crisis and disaster preparedness research. Our findings suggest that there may be differences in perception of preparedness based on level of employment within an organization. Top-level managers and middle-level managers showed a higher level of perceived preparedness than employees. This finding does not support the contention that all employees in the organization be thoroughly familiar with the crisis or disaster plan but does support the notion that management may believe the organization is more prepared than may actually be the case.

Somewhat unexpectedly, public (government) employees expressed the highest level of feeling prepared while for-profit employees expressed the lowest perception of being prepared. In line with Massey's (2001) argument that organizational decision makers may be reluctant and unwilling to allocate resources appropriately to develop effective crisis management and disaster preparedness plans for their employees, for-profit decision makers may be less willing to spend money on these types of plans than other types of organizational decision makers. Perhaps some government organizations experience more institutionalized planning processes that spill over to crisis planning. Further research efforts should examine potential underlying causes for this finding. It is not surprising to note that employees who work at organizations employing more than 500 employees showed a higher perception of being prepared. Based on the organizational size literature, we might suggest that larger organizations experience more formalization in areas that could lead to better crisis planning, such as policies, procedures, communication, and so on. Again, these are areas in need of further empirical research.

Limitations

As with all empirical research, the current study has limitations that should be noted for future research in crisis preparedness. One of the most visible limitations is that the majority of our responses were from the state in which the alumni graduated. By having a high representation from one area of the United States, other perceptions may exist with employees and managers from different geographic areas. Similarly, the sample in the current study represents a strong bias toward the United States; therefore, perceptions of crisis preparedness may be different in other parts of world. Future

research should include a broader geographical area. A second limitation to the current study is the high number of respondents from for-profit organizations. Although for-profit organizations represent a large percentage of U.S. firms, crisis research for nonprofit and public organizations may discover different results. A third limitation of our research is that our analysis looked at for-profit, nonprofit, and public organizations. Future research should investigate an array of specific industries such as airlines, manufacturing, health care, high-tech, transportation, and so on. For example, Royal Caribbean Cruise Lines (2005) requires all passengers to practice an evacuation drill before leaving port.

Summary

The current research presents the results of an exploratory empirical study that assessed perceived organizational preparedness for coping with a major crisis or disaster. Findings indicate that top-level and middle-level managers have a higher level of perceived preparedness than employees, no differences in perceived preparedness based on size of the city where organizations operate, public (government) organizations expressed a higher perception of crisis preparedness than for-profit organizations, and the highest perception of preparedness was exhibited by organizations employing more than 500 employees.

Appendix
Crisis and/or Disaster Preparedness Scale

1 = *strongly disagree*, 2 = *disagree*, 3 = *agree*, 4 = *strongly agree*

1. I am very familiar with our building's evacuation plan.
2. It would be easy for a potentially threatening nonemployee to gain access to my workplace. (R)
3. If my organization suffered a serious crisis, like those mentioned in the title of this study, I might lose my job. (R)
4. If my organization suffered a serious crisis, I would still get paid until we could reopen.
5. My organization has provided each employee with a basic emergency preparedness kit (e.g., flashlight, smoke mask, etc.).
6. The security at my workplace is adequate.
7. If a crisis occurred at my organization, I am familiar with the plan for how family members can get information on the status (e.g., safety) of their relatives.

(continued)

Appendix (continued)

8. In the event of an emergency or disaster, I am familiar with my organization's plan to continue operations from another location.
9. All organization members are required to rehearse portions of our crisis plan, for example, evacuation.
10. If my organization suffered a serious crisis, I would still have my job.
11. If my organization suffered a crisis, I would still be covered by my organization's employee benefits (e.g., health insurance, etc.).
12. Security at my workplace has been significantly increased since 9/11/2001.
13. I know where the nearest fire extinguisher is to my desk/workstation.
14. If a crisis and evacuation occurred at my organization, I am familiar with our plan on how to communicate with my fellow employees from scattered or emergency locations (such as cell phone numbers, websites, or e-mail lists).
15. Most of our employees are familiar with my organization's crisis/disaster plan.
16. As part of our emergency plan, customers and suppliers would be able to contact us for information.
17. If my organization suffered a crisis/disaster, I would have the data I need to do my job backed up at a remote site.
18. My organization offers to pay to have volunteer employees trained in basic life support techniques, such as CPR, first aid, etc.
19. My organization has contingency plans in place so our customers would be covered if we suffered a disaster.
20. I know where the nearest emergency exits are to my desk/workstation.
21. My organization's emergency plan has been coordinated with local agencies, such as the fire department, hospitals, etc.

Note: (R) = Reversed scored items.

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Karen L. Fowler is a professor of management at the Kenneth W. Monfort College of Business, University of Northern Colorado. She received her BS in business administration from the University of Southern Colorado (now Colorado State University–Pueblo), her MBA from the University of Wyoming, and her PhD in strategic management from the University of Nebraska–Lincoln. Her research publications and presentations include the areas of mergers and acquisitions, board of director composition and control, outsourcing, and crisis and disaster preparedness planning. She is a member of the Academy of Management, Decision Sciences Institute, Strategic Management Society, and Institute for Supply Management and is formerly an officer for Western Decision Sciences Institute. Prior to her academic career, Fowler held various managerial positions for CF&I Steel Corporation, Xerox, and Mountain Bell. Her community interests include volunteering for local humane societies. She was recently named Outstanding Alumna by Colorado State University–Pueblo.

Nathan D. Kling is a professor of marketing at the Kenneth W. Monfort College of Business at the University of Northern Colorado. He received three degrees in business from the University of Texas at Austin; BBA (marketing, 1969), MBA (management and marketing, 1971), and PhD (marketing, 1979). He has taught at Texas Tech University; St. Mary's University–Halifax, Nova Scotia; and Abilene Christian University and is now a professor of marketing at Monfort. He served for 7 years as chairperson of the Marketing Department at Monfort College and is currently the director for the Management and Marketing Department. He is a member of the Greeley Centennial Rotary, where he has served as a member the board of directors. He also served as a board member and later as a member of the executive board in charge of finance for the Suicide Education and Support Services of Weld County. He is actively involved in the domestic and international business communities. He has consulted with national, regional, and local governmental entities as well as major international corporations. He has had consulting assignments in the United States, Canada, China, and Central Asia. His professional affiliations include membership in the Academy of International Business, the Marketing Management Association, and the Marketing Educators' Association. He served many years on the board of directors of the Marketing Educators' Association and currently is the vice president of marketing for that organization. His research interests include international marketing, marketing pedagogy, and business ethics. He regularly presents his research at regional, national, and international marketing conferences. His works have been published in numerous academic journals.

Milan D. Larson is an assistant professor of management, with an emphasis in human resource management courses, at the Kenneth W. Monfort College of Business, University of Northern Colorado (UNC). Prior to joining the faculty at UNC, he taught at Colorado State University, the University of Nebraska–Lincoln, and Gustavus Adolphus College. He earned his BA from Concordia College, MBA from the Executive Programs at the University of Colorado, and PhD from University of Nebraska–Lincoln. His research focuses on human resource management in small businesses and entrepreneurship. Other areas of research interest include positive psychology in the workplace, psychological contracts of employees, and employee resiliency. He is a member of the Society for Human Resource Management, National Decision Science Institute, Academy of Management, and Society for Industrial Organizational Psychology. Prior to his academic career, Larson worked as a manager in the retail and manufacturing industries, including Teledyne Water Pik in Fort Collins, Colorado. In addition to his managerial roles, he has worked as an outside consultant with companies in the manufacturing, retail, health care, high-tech, and nonprofit industries throughout the country.