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IS THERE SUCH A THING AS "EVIDENCE-BASED MANAGEMENT"?

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I explore the promise organization research offers for improved management practice and how, at present, it falls short. Using evidence-based medicine as an exemplar, I identify ways of closing the prevailing "research-practice gap"—the failure of organizations and managers to base practices on best available evidence. I close with guidance for researchers, educators, and managers for translating the principles governing human behavior and organizational processes into more effective management practice.

Evidence-based management means translating principles based on best evidence into organizational practices. Through evidence-based management, practicing managers develop into experts who make organizational decisions informed by social science and organizational research—part of the zeitgeist moving professional decisions away from personal preference and unsystematic experience toward those based on the best available scientific evidence (e.g., Barlow, 2004; DeAngelis, 2005; Lemieux-Charles & Champagne, 2004; Rousseau, 2005; Walshe & Rundall, 2001). This links how managers make decisions to the continually expanding research base on cause-effect principles underlying human behavior and organizational actions.

Here is what evidence-based management looks like. Let's call this example, and true story, "Making Feedback People-Friendly." The executive director of a health care system with twenty rural clinics notes that their performance differs tremendously across the array of metrics used. This variability has nothing to do with patient mix or employee characteristics. After interviewing clinic members who complain about the sheer number of metrics for which they are accountable (200+ indicators sent

monthly, comparing each clinic to the 19 others), the director recalls a principle from a long-ago course in psychology: human decision makers can only process a limited amount of information at any one time. With input from clinic staff, a redesigned feedback system takes shape. The new system uses three performance categories—care quality, cost, and employee satisfaction—and provides a summary measure for each of the three. Over the next year, through provision of feedback in a more interpretable form, the health system's performance improves across the board, with low-performing units showing the greatest improvement. In this example a *principle* (human beings can process only a limited amount of information) is translated into *practice* (provide feedback on a small set of critical performance indicators using terms people readily understand).

Evidence-based management, as in the example above, derives principles from research evidence and translates them into practices that solve organizational problems. This isn't always easy. Principles are credible only where the evidence is clear, and research findings can be tough for both researchers and practitioners to interpret. Moreover, practices that capitalize on a principle's insights must suit the setting (e.g., who is to say that the particular performance indicators the executive director uses are pertinent to all units?). Evidence-based management, despite these challenges, promises more consistent attainment of organizational goals, including those affecting employees, stockhold-

ers, and the public in general. This is the promise that attracted me to organizational research at the beginning of my career—but it remains unfulfilled.

THE GREAT HOPE AND THE GREAT DISAPPOINTMENT

It is ironic that I came to write this article in my role as the sixtieth Academy of Management president. "Management" was a nasty word in my blue collar childhood, where everyone in the family was affected by how the company my father worked for managed its employees. When the supervisor frequently called my father to ask him to put in more overtime in an already long work week, all of us kids got used to covering for him. If the phone rang when my father was home, he'd have us answer it. We all knew what to say if it was the company calling: "Dad's not here." The idea of just telling the supervisor that he didn't want to work never occurred to my father, or anyone else in the family. The threat of disciplinary action or job loss loomed large, reinforced by dinnertime stories about a boss's abusive behavior or some inexplicable company action. From this vantage point, the term *management* connotes harsh and arbitrary behavior, with undertones of otherness. It is a far cry from the dictionary definition of management as "a judicious use of means to accomplish an end" (*Merriam-Webster*, 2005).

I acquired a wholly new perspective on management and managers when I became a business school professor. First, many business students, even at the MBA level, have never experienced what it is like to work for a good manager. In the first business course I taught, in organizational behavior, I gave the students two assignments: (1) write about the worst boss you ever had, describing what made that person the worst and how it impacted you, and (2) write about the best boss you ever had, describing what made that person the best and how it impacted you.

My MBA students with an average of five years of full-time work experience had no problem with assignment 1. For many of them, the assignment was cathartic, and they frequently exceeded its assigned page limit in writing vituperative portrayals of managers variously presented as self-centered, capricious, or otherwise lacking in capability or character. Assign-

ment 2 was another matter. Many students had great difficulty thinking of anyone who qualified as "the best manager." Over a third couldn't think of any boss they could even describe as good.

To the extent that people manage others the way they themselves have been managed, I came to worry about what the future held for these managers-in-the-making. Nonetheless, while these business students may never have had a great boss, they themselves still hoped to become one. (By the way, I have since abandoned this assignment in favor of more self-reflection on the manager students want to become and ways they can develop themselves to move closer to that ideal.)

Second, most business students have never worked for a great company either. (There is the possibility that only dissatisfied people quit their jobs to study full time for an MBA, but in this regard I suspect availability bias.) I never have had any difficulty getting students to share their experiences of dysfunctional organizational practices. However, when it comes to identifying a more functional way to motivate workers or restructure firms, they are often at a loss. Still, in-class discussions and students' own future plans suggest that they do hope to join a company (or to start one) that is better managed than those they have worked for so far.

In class and out, I have spent a lot of time helping students learn how to make a business case, with their future employers in mind, for creating financially successful firms that are good for people too. I have come to feel tremendous respect and affection for those students who have the personal aspiration to be a great manager in a great company. Out of these personal and professional experiences, I have nurtured my great hope—that, through research and education, we can promote effective organizations where managers make well-informed, less arbitrary, and more reflective decisions.

My great disappointment, however, has been that research findings don't appear to have transferred well to the workplace. Instead of a scientific understanding of human behavior and organizations, managers, including those with MBAs, continue to rely largely on personal experience, to the exclusion of more systematic knowledge. Alternatively, managers follow bad advice from business books or consultants based on weak evidence. Because Jack Welch or

McKinsey says it, that doesn't make it true. (Several decades of research on attribution bias indicate that people have a difficult time drawing unbiased conclusions regarding why they are successful, often giving more credit to themselves than the facts warrant. Management gurus are in no way immune.)

Sadly, there is poor uptake of management practices of known effectiveness (e.g., goal setting and performance feedback [Locke & Latham, 1984]). Even in businesses populated by MBAs from top-ranked universities, there is unexplained wide variation in managerial practice patterns (e.g., how [or if] goals are set, selection decisions made, rewards allocated, or training investments determined) and, worse, persistent use of practices known to be largely ineffective (e.g., downsizing [Cascio, Young, & Morris, 1997; high ratios of executive to rank-and-file employee compensation [Cowherd & Levine, 1992]). The result is a research-practice gap, indicating that the answer to this article's title question is no—at least not yet. What it means to close this gap and how evidence-based management might become a reality are the matters I turn to next.

THE "EVIDENCE-BASED" ZEITGEIST

The phrase "evidence-based" is a buzzword in contemporary public policy, with all the risk of triteness and superficiality that buzzword status conveys. Let's not be misled by its current popularity. Evidence-based practice has tremendous substance and discipline behind it. We can observe its impact in two fields highly influenced by legislative decisions: policing and secondary education. In evidence-based policing, community police officers are trained to treat criminal suspects politely, because doing so has been found to reduce repeat offenses (Sherman, 2002; Tyler, 1990). In evidence-based education, many secondary schools have restored the practice of social promotion, where students who have difficulty passing their courses, even after several tries, are advanced to the next grade level. Research indicates that social promotion's benefits outweigh its costs, because a high school diploma increases the likelihood of subsequent employment and lowers the incidence of drug use, even among students who wouldn't otherwise have qualified for that diploma

(Jimerson, Anderson, & Whipple, 2002; National Association of School Psychologists, 2005).

Evidence-based practice is a paradigm for making decisions that integrate the best available research evidence with decision maker expertise and client/customer preferences to guide practice toward more desirable results (e.g., Sackett, Straus, Richardson, Rosenberg, & Haynes, 2000). Proponents are skeptical about experience, wisdom, or personal credentials as a basis for asserting what works. The question is "What is the evidence?"—not "Who says so?" (Sherman, 2002: 221). The answer, as the criminologist Lawrence W. Sherman indicates, can be graded from weak to strong, based on rules of scientific inference, where before-and-after comparisons are stronger than simultaneous correlations—randomized, controlled tests stronger than longitudinal cohort analyses. Strong evidence trumps weak, irrespective of how charismatic the evidence's presenter is. Sherman sums it up: "We are all entitled to our own opinions, but not to our own facts" (2002: 223).

Medicine is a success story as the first domain to institutionalize evidence-based practice. Evidence-based medicine is the integration of individual clinical expertise and the best external evidence. Its origins date back to 1847, when Ignaz Semmelweis discovered the role that infection played in childbirth fever. Semmelweis was vilified by physicians of the time for his assertion that it was doctors themselves who were infecting women by carrying germs between dead bodies and patients. Nonetheless, his work influenced the formulation of germ theory, which gained acceptance with the work of Lister and Pasteur forty years later (*Wikipedia*, 2005). Extensive infrastructures promote evidence-based health care (e.g., the U.S. National Institutes of Health and Institute of Medicine, the Canadian Health Services Research Foundation, and the Cochrane Collaboration).

Evidence-based-clinical care as a way of life in health care organizations is of relatively recent vintage, enjoying its greatest growth after 1990. (If you are wondering what physicians did before, the answer is what managers are doing now, but without medicine's added advantages from common professional training and malpractice sanctions.) The attributes of evidenced-based medicine provide a useful reference point

for exploring what its counterpart in management might look like.

By way of example, germ theory is widely understood by clinical care givers. It has led to broad application of infection control systems (gowns, sterile needles, and sterile instruments), medicines to avoid or cure infections, and supporting practices (handwashing). Its application has led to radical but important interpretations of seemingly distant events. Incidence of heart attack, for example, increases immediately after having one's teeth cleaned. Reflecting on this correlation in light of germ theory led to recognition that teeth cleaning disperses mouth bacteria into the heart's arteries. Certain bacteria in these arteries create conditions that give rise to heart attacks. Recognizing this causal link led to a risk-reducing solution: giving heart patients antibiotics to take before dental treatments as a preventive. This application of medical evidence involved *cause-and-effect connections*—how dental practice can disperse mouth bacteria into the heart's arteries. It also required *isolation of variations that affect desired outcomes*, requiring knowledge of the mechanisms triggering heart attacks (and, in this case, knowledge that gum disease may itself trigger heart attacks [see, for instance, Desvarieux et al., 2005]).

Yet more than scientific insight is needed to create evidence-based practice. In fact, only some physicians recommend this preventive action for their heart patients. Others may not see the risk as that great, are unaware of the finding, or merely have forgotten to make this preventive action part of their standard orders for cardiac patients. The involvement of other practitioners further complicates matters: dentists are not necessarily educated to inquire about heart conditions.

Organizational factors affect whether evidence-based practice occurs. In health care settings certain features increase the likelihood that an at-risk patient will get the preventive medication. *Social networks and organizational culture matter.* It helps if the patient's physician is part of a practice or a hospital where others recommend such preventive care. Similarly, impeding this evidence-based practice is the fact that dentists are unlikely to be in the same professional networks as physicians. In a hospital where medical leadership promotes evidence-based medicine, more physicians are likely to

be aware of the finding. Such settings are also likely to have staff in-services to update physician knowledge where this practice might be discussed.

Relatedly, *participation in research increases the salience of the evidence base*. It helps if physicians in the immediate environment have participated in clinical research and are engaged in one of the several online communities that review clinical evidence and then create and disseminate recommendations, which raises the next point: *access to information on those practices the evidence supports*. Physicians have online services that provide ready access to clinical practice best supported by research, based on the review and recommendation of health care experts (e.g., Cochrane Collaboration). Such services capitalize on the information explosion and internet connections to build communities of practice enabling experts to communicate their knowledge, identify the best-quality evidence, and disseminate it broadly to care givers (Jadad, Haynes, Hunt, & Browman, 2000).

Decision supports can be designed to make it easier to implement evidence-based practices. A patient care protocol might be written specifying that each heart patient and all post-op cardiac cases be advised of the need to premedicate before teeth cleaning, along with a prescription written for and given to the patient at discharge. This protocol might be formalized to the extent that a premedication instruction is written in each cardiac patient's discharge orders.

Last, *a web of factors—individual (knowledge), organizational (access to knowledgeable others, support for evidence use), and institutional (dissemination of evidence-based practice)—promotes, sustains, and institutionalizes evidence-based medicine*. Britain's national health system, for example, promotes evidence-based practice using the Cochrane Collaboration's recommendations as the standard. Medicare in the United States publishes information on whether hospitals use proven remedies in patient care (Kolata, 2004).

In sum, features characterizing evidence-based practice include

- learning about *cause-effect* connections in professional practices;
- isolating the variations that measurably affect desired outcomes;

- creating a culture of evidence-based decision making and research participation;
- using information-sharing communities to reduce overuse, underuse, and misuse of specific practices;
- building decision supports to promote practices the evidence validates, along with techniques and artifacts that make the decision easier to execute or perform (e.g., checklists, protocols, or standing orders); and
- having individual, organizational, and institutional factors promote access to knowledge and its use.

Now let's consider what such practice might mean for management and organizations.

WHY EVIDENCE-BASED MANAGEMENT IS IMPORTANT AND TIMELY

Evidence-based management is not a new idea. Chester Barnard (1938) promoted the development of a natural science of organization to better understand the unanticipated problems associated with authority and consent. Since Barnard's time, however, we have struggled to connect science and practice without a vision or model to do so. Evidence-based management, in my opinion, provides the needed model to guide the closing of the research-practice gap. In this section I address why evidence-based management is timely and practical.

Calling Attention to Facts: "Big E Evidence" and "little e evidence"

An evidence orientation shows that decision quality is a direct function of available facts, creating a demand for reliable and valid information when making managerial and organizational decisions. Improving information continues a trend begun in the quality movement over thirty years ago, giving systematic attention to discrete facts, indicative of quality (e.g., machine performance, customer interactions, employee attitudes and behavior [Evans & Dean, 2000]). This trend continues in recent developments regarding open-book management (Case, 1995; Ferrante & Rousseau, 2001) and the use of organizational fact finding and experimentation to improve decision quality (Pfeffer & Sutton, in press).

In all the attention we now give to evidence, it helps to differentiate what might be called "Big E Evidence" from "little e evidence." Big E Evidence refers to generalizable knowledge regarding cause-effect connections (e.g., specific goals promote higher attainment than general or vague goals) derived from scientific methods—the focus of this article. Little e evidence is local or organization specific, as exemplified by root cause analysis and other fact-based approaches the total quality movement introduced for organizational decision making (Deming, 1993; Evans & Dean, 2000). It refers to data systematically gathered in a particular setting to inform local decisions. As the saying goes, "facts are our friends," when local efforts to accumulate information relevant to a particular problem lead to more effective solutions.

Although decision makers who rely on scientific principles are more likely to gather facts systematically in order to choose an appropriate course of action (e.g., Sackett et al., 2000), fact gathering ("evidence") doesn't necessarily lead decision makers to use social science knowledge ("Evidence") in interpretating these facts. In my introductory example of the health care system, the executive director might have concluded that the performance differences across the twenty clinics were due to something about the clinics or their managers. It was his knowledge of a basic principle in psychology that gave him an alternative and, ultimately, more effective interpretation. However, systematic attention to local facts can prompt managers to look for principles that account for their observations. The opening example illustrates how scientific principles and local facts go together to solve problems and make decisions.

Opportunity to Better Implement Managerial Decisions

In highly competitive environments, good execution may be as important as the strategic choices managers make. Implementation is a strong suit of evidence-based management through the wealth of research available to guide effective execution (e.g., goal setting and feedback [Locke & Latham, 1984]; feedback and redesign [Goodman, 2001]). Indeed, with greater orientation toward scientific evidence, health care management's guidelines frequently reference social and organizational research on implementation (e.g., Lemieux-Charles & Champayne, 2004; Lomas, Culyer, McCutcheon,

McAuley, & Law, 2005). The continued wide variation we observe in how organizations execute decisions (e.g., in goal clarity, stakeholder participation, feedback processes, and allowance for redesign) is remarkable, given the advanced knowledge we possess about effective implementation and what is at stake should implementation fail.

Better Managers, Better Learning

Given the powerful impact managers' decisions have on the fate of their firms, managerial competence is a critical and often scarce resource. Improved managerial competence is a direct outgrowth of a greater focus on evidence-based management. Managers need real learning, not fads or false conclusions. When managers acquire a systematic understanding of the principles governing organizations and human behavior, what they learn is *valid*—that is to say, it is repeatable over time and generalizable across situations. It is less likely that what managers learn will be wrong.

Today, the poor information commonly available to managers regarding the organizational consequences of their decisions means that experiences are likely to be misinterpreted—subject to perceptual gaps and misunderstandings. Consider the case of a supervisor who overuses threats and punishment as behavioral tools. A punisher who keys on the fact that punishing suppresses behavior can completely miss its other consequence—its inability to encourage positive behavior. Status differences and organizational politics make it unlikely that the punisher will learn the true consequences of that style, by limiting and distorting feedback.

The reality is that managers tend to work in settings that make valid learning difficult. This difficulty is compounded by the widespread uptake of organizational fads and fashions, "adopted overenthusiastically, implemented inadequately, then discarded prematurely in favor of the latest trend" (Walshe & Rundall, 2001; 437; see also Staw & Epstein, 2000). In such settings managers cannot even learn why their decisions were wrong, let alone what alternatives would have been right. Evidence-based management leads to valid learning and continuous improvement, rather than a checkered career based on false assumptions.

Organizational legitimacy is another product of evidence-based management. Where decisions are based on systematic causal knowledge, conditioned by expertise leading to successful implementation, firms find it easier to deliver on promises made to stockholders, employees, customers, and others (e.g., Goodman & Rousseau, 2004; Rucci, Kirn, & Quinn, 1998). Legitimacy is a result of making decisions in a systematic and informed fashion, thus making a firm's actions more readily justifiable in the eyes of stakeholders. Yet, given evidence-based management's numerous advantages, why then is the research-practice gap so large? I next turn to the array of factors that align to perpetuate this evidence-deprived status quo.

WHY MANAGERS DON'T PRACTICE EVIDENCE-BASED MANAGEMENT

The research-practice gap among managers results from several factors. First and foremost, managers typically do not know the evidence. Less than 1 percent of HR managers read the academic literature regularly (Rynes, Brown, & Colbert, 2002), and the consultants who advise them are unlikely to do so either. Despite the explosion of research on decision making, individual and group performance, business strategy, and other domains directly tied to organizational practices, few practicing managers access this work. (I note, however, that of the four periodicals the Academy publishes, it is the empirical *Academy of Management Journal* to which company libraries most widely subscribe. So there is some recognition that this research exists!)

Evidence-based management can threaten managers' personal freedom to run their organizations as they see fit. A similar resistance characterized supervisory responses to scientific management nearly 100 years ago, when Frederick Taylor's structured methods for improving efficiency were discarded because they were believed to interfere with management's prerogatives in supervising employees. Part of this pushback stems from the belief that good management is an art—the "romance of leadership" school of thought (e.g., Meindl, Erlich, & Dukerich, 1985), where a shift to evidence and analysis connotes loss of creativity and autonomy. Such concerns are not unique: physicians have wrestled with similar dilemmas, expressed in

the aptly titled article "False Dichotomies: EBM, Clinical Freedom and the Art of Medicine" (Parker, 2005).

Managerial work itself differs from clinical work and other fields engaged in evidence-based practice in important ways. First, managerial decisions often involve long time lags and little feedback, as in the case of a recruiter hiring someone to eventually take over a senior position in the firm. Years may pass before the true quality of that decision can be discerned, and, by then, the recruiter and others involved are likely to have moved on (Jaques, 1976). Managerial decisions often are influenced by other stakeholders who impose constraints (Miller, 1992). Obtaining stakeholder support can involve politicking and compromise, altering the decision made, or even whether it is made at all. Incentives tied to managerial decisions are subject to contradictory pressures from senior executives, stockholders, customers, and employees. Last, it's not always obvious that a decision is being made, given the array of interactions that compose managerial work (Walshe & Randall, 2001). A manager who declines to train a subordinate, for example, may not realize that particular act ultimately may lead the employee to quit.

Evidence-based management can be a tough sell to many managers, because management, in contrast to medicine or nursing, is not a profession. Given the diverse backgrounds and education of managers, there is limited understanding of scientific method. With no formally mandated education or credentials (and even an MBA is no guarantee), practicing managers have no body of shared knowledge. Lacking shared scientific knowledge to add weight to an evidence-based decision, managers commonly rely on other bases (e.g., experience, formal power, incentives, and threats) when making decisions acceptable to their superiors and constituents.

Firms themselves—particularly those in the private sector—contribute to the limited value placed on science-based management practice. Although pharmaceutical firms advertise their investment in biotechnology and basic research, the typical business does not have the advancement of managerial knowledge in its mission.

Historically leading corporations such as Cadbury, IBM, and General Motors were actively engaged in research on company selection and training practices, employee motivation, and supervisory behavior. Their efforts contributed substantially to the early managerial practice evidence base. But few organizations today do their own managerial research or regularly collaborate with those who do, despite the considerable benefits from industry-university collaborations (Cyert & Goodman, 1997); the globally experienced time crunch in managerial work and the press for short-term results have reduced such collaborations to dispensable frills. Nonetheless, hospitals participate in clinical research and school systems evaluate policy interventions.

In contrast to more evidence-oriented domains, such as policing and education, management is most often a private sector activity. It is less influenced by public policy pressures promoting similar practices while creating comparative advantage via distinctiveness. Businesses are characterized by the belief that the particulars of the organization, its practices, and its problems are special and unique—a widespread phenomenon termed the *uniqueness paradox* (Martin, Feldman, Hatch, & Sitkin, 1983). Observed among clinical care givers and law enforcement practitioners too, the uniqueness paradox can interfere with transfer of research findings across settings—unless dispelled by better education and experience with evidence-based practice (e.g., Sackett et al., 2000).

Yet, despite all these factors, the most important reason evidence-based management is still a hope and not a reality is not due to managers themselves or their organizations. Rather, professors like me and the programs in which we teach must accept a large measure of blame. *We typically do not educate managers to know or use scientific evidence.* Research evidence is not the central focus of study for undergraduate business students, MBAs, or executives in continuing education programs (Trank & Rynes, 2003), where case examples and popular concepts from nonresearch-oriented magazines such as the *Harvard Business Review* take center stage. Consistent with the diminution of research in behavioral course work, business students and practicing managers have no ready access to research. No communities of experts vet research regarding effective management practice (in contrast to the collaboratives that vet health care, criminal justice, and educational research [e.g., Campbell Collaboration,

2005; Cochrane Collaboration, 2005]). Few MBAs encounter a peer-reviewed journal during their student days, let alone later. Consequently, it's time to look critically at the role we educators play in limiting managers' knowledge and use of research evidence.

EVIDENCE-BASED MANAGEMENT AND OUR ROLE AS EDUCATORS

My biggest surprise as the Academy president turned out to be the most frequent topic of emails sent to me by Academy members: complaints about our journals from self-identified teaching-oriented members. A typical email goes like this: "I want to let you know what a waste the Academy journals are. There's nothing in them at all pertinent to my teaching. The Academy should be for everybody, not just researchers."

My first response was to feel guilty (why hadn't I seen this?). But then I started to think more deeply about what this message implies. It says that educators aren't finding ideas in journals that cause them to *change* what they teach. This might mean that current research is irrelevant to what's being taught if educators focus on other topics. It could mean that the kind of information research articles provide about principles or practices is insufficient to determine what settings or circumstances their findings apply to. Or it could even mean that professors aren't updating their course material when research findings differ from what they teach.

These emails prompted me to wonder *what exactly we are teaching*. If we are teaching what research findings support, the content of a class has to change from time to time, with new evidence or better-specified theory. The concern that prompted this address stemmed from these emails: the role we educators play in the research-practice gap.

How Professors Contribute to the Research-Practice Gap

Management education is itself often not evidence based, something Trank and Rynes implicitly recognize (2003) as the "dumbing down" of management education. They also persuasively demonstrated that, in place of evidence, behavioral courses in business schools focus on general skills (e.g., team building, conflict man-

agement) and current case examples. Through these stimulating, ostensibly relevant activities, we capture student interest, helping to deflect the criticism "How is this going to help me get my first job?" Business schools reinforce this by relying heavily on student ratings instead of assessing real learning (Rynes, Trank, Lawson, & Ilies, 2003).

Stimulating courses and active learning must be core features of training in evidence-based management, because these educational features are good pedagogy. The manner and content of our approaches to behavioral courses perpetuate the research-practice gap.

Weak Research-Education Connection

Pick up any popular management textbook and you will find that Frederick Herzberg's work lives, but not Max Weber's. Herzberg's long-discredited two-factor theory is typically included in the motivation section of management textbooks, despite the fact that it was discredited as an artifact of method bias over thirty years ago (House & Wigdor, 1967). I asked a famous author of many best-selling textbooks why this was so. "Because professors like to teach Herzberg!" he answered. "Students want updated business examples but can't really tell if the research claims are valid."

This conversation suggests that professors are likely to teach what they learned in graduate school and not necessarily what current research supports. (Since many management professors are adjuncts valued for their practical experience but are from diverse backgrounds, even educators of comparable professional age may not share scientific knowledge.) I suspect that the persistence of Herzberg will continue until all the professors who learned the two-factor theory in graduate school (c. 1960–1970) retire.

However, business schools may discourage inclusion of some well-substantiated topics because they don't "sound" managerial. Paul Hirsch, the well-known sociologist, tells the story that when he flies business class, his seatmates ask what he does for a living. When he identifies himself as a business school professor, the next customary question is "What do you teach?" As a sociologist steeped in Weber and the century of research he spawned, Paul used to say, "Bureaucracy." His seatmates frequently

moved to the opposite wing at that point, until Paul wised up and found a more appealing response: "Management" (personal communication).

Paul notes that managers still need to understand bureaucratic processes, so he hasn't changed what he teaches—only what he calls it. I do this too: I no longer call socialization, training, and rules "substitutes for leadership" (Kerr & Jermier, 1978), having found that the last thing a would-be manager wants to hear is how he or she can be replaced. The implications are clear. We frame, and perhaps even slant, what we teach to make it more palatable. Can it be we are on that slippery slope of avoiding teaching the most current social science findings relevant to managers and organizations, from downsizing to ethical decision making, because we fear our audience won't like the implications?

Failure to Manage Student Expectations

Student expectations do drive course content, and current evidence indicates that there is a strong preference for turnkey, ready-to-use solutions to problems these students will face in their first jobs (Trank & Rynes, 2003). What efforts do we make to manage these expectations? Unless students are persuaded to value science-based principles and their own role in turning these principles into sound organizational practice, it will be nigh impossible for faculty to resist the pressure to teach only today's solutions.

We might start by asking students who they think updates more effectively—practitioners trained in solutions or in principles. Effective practices in 2006 need not be the same as those in 2016, let alone 2036, when the majority of today's business students will still be working. If we teach solutions to problems, such as how to obtain accurate information on a worker's performance, students will acquire a tool—perhaps, for example, 360-degree feedback. Yet they won't understand the underlying cognitive processes (whether feedback is task related or self-focused), social factors (the relationships between ratees and raters), and organizational mechanisms (used for developmental purposes or compensation decisions), which explain how, when, and why 360-degree feedback might work (or not). Imagine a doctor who knows to prescribe antibiotics to patients with bronchitis (a common recommendation in the 1980s before recognition of antibiotic overuse [Franklin, 2005]) but doesn't understand the basic physiology that can lead other therapies to be comparable, more effective, or have fewer downsides. In the case of feedback, basic social science research is quite robust regarding how feedback impacts behavior (Kinicki & Kreitner, 2003). Such knowledge is likely to generate broader utility and more durable solutions over time than training in any particular feedback tool.

Lack of Models for Evidence-Based Management

Case methods are de rigueur in business schools, helping to develop students' analytic skills and familiarity with conditions they will face as practicing managers. The cases that I find most effective are those that have an individual manager as a protagonist (as opposed to those that describe an organization without developing one or two central personalities). A central character creates tension and evokes student identification with the events taking place. That character is typically a manager, who can be the change agent responsible for solving the problem or a catalyst for the dysfunctional behavior on which the cases focuses.

Either way, students have a model—a positive or negative referent—from which they can learn how to behave (or not) in the future. As with most complex behaviors, from parenting to managing, people learn better when they have competent models (Bandura, 1971). Nonetheless, in twenty-five years of using cases in class, I cannot recall a single time in which a protagonist reflected on research evidence in the course of his or her decision making.

No Expectation for Updating Evidence-Based Knowledge Throughout the Manager's Career

Upon graduation, few business students recognize that the knowledge they may have acquired can be surpassed over time by new findings. Although social science knowledge continues to expand, business school training does not prepare graduates to tap into it. Neither students nor managers have clear ideas of how to update their knowledge as new evidence emerges.

There are few models of what an "expert" manager knows that a novice does not (see Hill, 1992, for an exception). In contrast, expert nurses are known to behave in very different ways from novices or less-than-expert midcareer nurses (Benner, 2001). They more rapidly size up a situation accurately and deal simultaneously with more co-occurring factors. In the professions, extensive postgraduate development exists to deepen expertise to produce a higher quality of practice. In contrast, business schools often imply that MBAs know all they need to know when they graduate.

WHAT WE CAN DO TO CLOSE THE RESEARCH-PRACTICE GAP

There is a lot we can do to close the research-practice gap, both as individual educators and through working collectively.

Manage Student Expectations

We can manage student expectations with regard to the role of behavioral course work in the student's broader career. I often introduce myself to full-time students by telling them that the easiest teaching I do has always been to executives, because these experienced managers come to the program convinced that human behavior and group processes are the most critical things they need to learn. At this point in their careers, our full-time students can only be novices whose expertise will grow with time and active effort on their part to understand the dynamics of behavior in organizations. Try asking students what the difference is between ten years of experience and one year of experience repeated ten times. Then let them imagine what ten years of experience in becoming more expert on behavior and group processes in organizations would look like (the types of job, people, settings, etc.). Let them also imagine this for one year repeated ten times. Reflecting on these contrasting visions of their careers gives students an opportunity to raise their expectations of themselves as professional managers.

There are various related means for managing expectations, including the creation of learning contracts based on the learner's anticipated future roles, the behavioral knowledge and skills these roles will necessitate, and how that knowledge and skill will be acquired in the

course (Goodman, 2005). It is easier to do this as part of a larger curriculum framed by anticipated future roles—the would-be-manager's story (Schank, 2003). Important also is the next feature: providing models of evidence-based practice and evidence-based managers.

Provide Models of Evidence-Based Practice

We need to model evidence-based practice in our teaching and in the curriculum. Psychological research on learning offers a useful guide for course/curriculum practices (e.g., Kersting, 2005). These include exposing the learner to models of competent evidence-based managers. I have been fortunate to encounter such a person. John Zanardelli is the CEO of Asbury Heights, the Methodist Home for the Aged, Mt. Lebanon, Pennsylvania. I first met John in an executive course on change management at Carnegie Mellon. He peppered me with questions about skills, information, and management tactics and wanted to know the research support behind my answers. Trained as an epidemiologist, John understands the scientific method and regularly looks for scientific corroboration of ideas he comes across in popular management books and from self-proclaimed experts. (Not surprisingly, the calls for evidence-based management largely have come from health care professionals and scholars [e.g., DeAngelis, 2005; Kovner, Elton, & Billings, 2005].) I knew that I was seeing an unusual manager, to say the least, when John, faced with the need to redesign his organization's compensation practices, went off to the Carnegie Mellon library to read J. Stacy Adams' equity theory! His organization's vision statement is built around the concept "Where Loving Care and Science Come Together."

Managers such as John Zanardelli provide exemplars of the complex set of proficiencies required to become a master management practitioner. Using them as examples reinforces the notion that the typical twenty-something student is a novice taking first steps along the path to becoming an expert (e.g., Benner, 2001; Hill, 1992). Active practice, self-reflection, and feedback are core learning principles (Schön, 1983). Developing student competence through active practice entails project work supported by ongoing reflection and debriefing regarding what constitutes valid learning and effective behavior. Similarly, our educational practices,

courses, and curricula need that same reflection and evolution to effectively model evidence-based teaching.

Promote Active Use of Evidence

Students need to know that evidence is available, and they need to learn how to apply it. This necessitates a balance between teaching *principles*—that is, cause-effect knowledge—and *practices*—that is, solutions to organizational problems—though the mix is subject to dispute (Bennis & O'Toole, 2005). In the spirit of making the course tell a story students can understand and participate in, a course conveying how a novice becomes an expert manager, like any good story, involves a succession of experiences, trials, failures, and successes (Schank, 2003). That story line is marked by the acquisition of distinctly different kinds of knowledge. There is declarative knowledge regarding principles or cause-effect relationships. Students can acquire principles in a variety of ways. They might address the appropriateness of group incentives versus individual incentives by locating evidence in a textbook, in journals, or online. Informing students of the "evidence" through lectures and books has its place, but there is value in identifying and deriving the principles themselves from the sources that will remain available to them throughout their careers.

Students can learn a good deal from actively accessing evidence, using it to solve problems, reflecting—and trying again. Indeed, one of the most powerful forms of learning may be deriving principles from experience and reflection, as when students review cases and then derive the principles governing the underlying outcomes (Thompson, Gentner, & Loewenstein, 2003). Thompson and her colleagues found that students learned better when they developed principles from cases than when they derived solutions, a finding consistent with basic psychological research on learning (Anderson, Fincham, & Douglass, 1997).

Actually using evidence takes a metaskill—the ability to turn evidence-based principles into solutions. A form of procedural knowledge, a solution-oriented approach to evidence use is comparable to product design, where end users and knowledgeable others familiar with the situation in which the product will be used jointly participate in specifying its features and functionality.

Perhaps one of the first products of behavioral research in organizations was the revolving spindle restaurants use to convey customer orders to the kitchen. William Foote Whyte (1948) discovered that status differences between restaurent wait staff (typically female) and the (male) chef led to conflicts, because chefs disliked taking orders from women. The revolving order spindle to which waitresses could attach an order and spin it in the direction of the kitchen allowed customer orders to be conveyed impersonally, reducing workplace conflict and improving communication. Other research-based products include decision supports such as checklists to guide a performance review or action plans to conduct meetings in ways that build consensus (e.g., Mohrman & Mohrman, 1997), effectively translating the evidence into guides for action.

Build Collaborations Among Managers, Researchers, and Educators

As the saying goes, it takes a village to educate people. Changing how we educate managers in professional schools necessitates a collective attitude and behavior shift among educators, researchers, current managers, and recruiters. Pfeffer and Sutton's (in press) book calls attention to managerial heroes—people who use evidence to turn troubled companies around and/or to create sustained successes. As in the case of any change in collective attitudes (Gladwell, 2002), turning evidence-based management from a practice of a prophetic few into the mainstream requires *champions*—credible people like Pfeffer and Sutton's managerial heroes—to advertise its value. *Networks* of individuals, excited by what evidence-based management makes possible, need to exist to disseminate it to others.

One such collaborative network might parallel the Cochrane Collaboration in medicine and the Campbell Collaboration in criminal justice and education. (Such a community has been advocated to promote evidenced-based management of health care organizations [Kovner et al., 2005], suggesting that communities of experts might effectively be built around the management of specific kinds of organizations.) Each represents a worldwide community of experts created to provide ready access to a particular

body of evidence and the practices it supports. Community members, practitioners as well as researchers, collaborate in summarizing state-of-the-art knowledge on practices known to be important. Information is presented in sufficient detail regarding evidence and sources of outcome variation to reduce underuse, overuse, and misuse. While these communities are geographically distributed, they also sponsor face-to-face meetings to promote community building, commitment, and learning. Their major product is online access to information, designed for easy use.

EVIDENCE-BASED PRACTICE CAN BE MISUNDERSTOOD

On a cautionary note, the label *evidence-based practice* can be misapplied. It can be used to characterize superficial practices (another company's so-called best practice or the latest tool consultants are selling). Alternatively, it can be used as a club (the kind with a nail in it) to force compliance with a standard that may not be universally applicable. One downside of poor implementation of evidence-based medicine is the challenge the British health care system has faced owing to the use of the Cochrane Collaboration's recommendations to regulate clinical care decisions, with enforcement of the recommendations regardless of their suitability for particular patients (Eysenbach & Kummervold, 2005). Evidence-based practice is not one-size-fits-all; it's the best current evidence coupled with informed expert judgment.

OUR OWN ZEITGEIST PROMOTING EVIDENCE-BASED PRACTICE OF MANAGEMENT

Forty years elapsed between Semmelweis's discoveries and the formulation of germ theory. One hundred years later, even basic infection-reducing practices such as hand washing still are not consistently performed in hospitals (Johns Hopkins Medicine, 2004). Considering the personal growth and social and organizational changes evidence-based practice requires, our own evidence-based management zeitgeist still has plenty of time to run.

The first challenge is consciousness raising regarding the rich array of evidence that can improve effectiveness of managerial decisions.

Educating opinion leaders, including prominent executives and educators, in the nature and value of evidence-based approaches builds champions who can get the word out. Updating management education with the latest research must be ongoing, demanding that educators and textbook writers apprise themselves of new research findings. The onus is on researchers to make generalizability clearer by providing better information in their reports regarding the context in which their findings were observed. All parties need to put greater emphasis on learning how to translate research findings into solutions. In the case of researchers, too much information that might affect the translations of findings to practice remains tacit, in the apparent minutiae research reports omit, known only to the researcher. Educators need to help students acquire the metaskills for designing solutions around the research principles they teach. Managers must learn how to experiment with possible evidence-based solutions and to adapt them to particular settings. We need knowledge-sharing networks composed of educators, researchers, and manager/practitioners to help create and disseminate management-oriented research summaries and practices that best evidence supports.

Building a culture in which managers learn to learn from evidence is a critical aspect of effective evidence use (Pfeffer & Sutton, in press). Developing managerial competence historically has been viewed as a training issue, underestimating the investment in collective capabilities that is needed (Mohrman, Gibson, & Mohrman, 2001).

The promises of evidence-based management are manifold. It affords higher-quality managerial decisions that are better implemented, and it yields outcomes more in line with organizational goals. Those who use evidence (E and e) and learn to use it well have comparative advantage over their less competent counterparts. Managers, educators, and researchers can learn more systematically throughout their careers regarding principles that govern human behavior and organizational actions and the solutions that enhance contemporary organizational performance and member experience. A focus on evidence use may also ultimately help to blur the boundaries between researchers, educators, and managers, creating a lively community with many feedback loops where information is sys-

tematically gathered, evaluated, disseminated, implemented, reevaluated, and shared.

The promise of evidence-based management contrasts with the staying power or stickiness of the status quo. Like the QWERTY keyboard created for manual typewriters, but inefficient in the age of word processing, management-as-usual survives, despite being out of step with contemporary needs. Failure to evolve toward evidence-based management, however, is costlier than mere inefficiency. It deprives organizations, their members, our students, and the general public of greater success and better managers. Please join with me in working to make evidence-based management a reality.

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