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Conceptualization and Measurement of Organizational Readiness for Change

A Review of the Literature in Health Services Research and Other Fields

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Health care practitioners and change experts contend that organizational readiness for change is a critical precursor to successful change implementation. This article assesses how organizational readiness for change has been defined and measured in health services research and other fields. Analysis of 106 peer-reviewed articles reveals conceptual ambiguities and disagreements in current thinking and writing about organizational readiness for change. Inspection of 43 instruments for measuring organizational readiness for change reveals limited evidence of reliability or validity for most publicly available measures. Several conceptual and methodological issues that need to be addressed to generate knowledge useful for practice are identified and discussed.

Keywords: organizational change; readiness for change; measurement

Health care organizations are implementing a host of organizational changes to reduce costs, improve quality, increase efficiency, gain market share, retain valued employees, and raise patient satisfaction. Organizational change, however, is notoriously challenging because it usually entails multiple, simultaneous adjustments in staffing, work flow, decision making, communication, and reward systems (Institute of Medicine, 1999, 2000, 2001). Moreover, collective and coordinated behavior change by many organizational members is often critical for the organizational change effort to produce tangible benefits (e.g., quality improvement, computerized physician order

379

entry). Not surprisingly, many health care organizations achieve only partial implementation success when they initiate organizational change (Alexander, Weiner, Shortell, Baker, & Becker, 2006; Ash, Gorman, Seshadri, & Hersh, 2004; Blumenthal & Kilo, 1998; Pearson et al., 2005; Shortell, Bennett, & Byck, 1998). Outright implementation failure may be much more common than publicly reported (Berinato, 2003; Silverstein, 2006; Snyder-Halpern, 2002; Tannenbaum, 2006).

Change experts and health care practitioners contend that organizational readiness for change is a critical precursor to successful implementation (Amatayakul, 2005; Armenakis, Harris, & Mossholder, 1993; Cassidy, 1994; Hardison, 1998; Kirch et al., 2005; Kotter, 1996; Kuhar et al., 2004; O'Connor & Fiol, 2006; Sweeney & Whitaker, 1994). Indeed, one prominent change expert argues that half of all failures to implement large-scale organizational change occur because organizational leaders failed to establish sufficient readiness (Kotter, 1996). When organizational leaders overestimate the degree to which they have prepared the organization and its employees for change, experts and other observers note that a predictable range of undesirable outcomes would occur: (a) The change effort experiences a false start from which it might or might not recover, (b) the change effort stalls as resistance grows, or (c) the change effort fails altogether.

Although practitioners have written a great deal about the importance of organizational readiness for change and how to create it, health services researchers have only recently begun theorizing about developing measures of and empirically assessing organizational readiness for change. To date, health services researchers investigating organizational readiness for change have worked independently of one another in examining different types of organizational change, using different theoretical perspectives to inform their research, and publishing in specialized disciplinary journals. The result of this disconcerted research activity has been a proliferation of terms, definitions, and measures. Further advances in theory, research, and, ultimately, practice, would profit from a comprehensive review of this growing but scattered body of work and a critical assessment of the conceptual and methodological issues that remain.

In this article, we examine how organizational readiness for change has been defined and measured in health services research and other fields. To accomplish this aim, we conduct an extensive review of articles published in peer-reviewed journals, using bibliographic databases that cover not only health services research, but also sociology, psychology, and business literature. We include in our review articles that conceptually define and discuss organizational readiness for change, as well as those that develop measures or empirically assess organizational readiness. Our review identifies several conceptual ambiguities and disagreements in current thinking and writing about organizational readiness for change. Our review also reveals limited evidence of reliability or validity for most publicly available measures. We conclude our review with several observations and recommendations on the conceptual and methodological issues that need to be addressed to generate knowledge useful for practice.

New Contribution

Published estimates indicate that success rates for businesses implementing changes range from 20% to 60% depending on the type of change (Smith, 2002). Comparable estimates for health care organizations have not been published. However, there is little reason to suspect that health care organizations are any more successful than their business counterparts in implementing organizational change. Given the substantial investment of time, energy, and resources typically involved in change efforts, the development of a stronger knowledge base about organizational readiness for change, and the dissemination of reliable, valid, and practical tools for assessing it, could strengthen organizational efforts to implement changes and, ultimately, improve health care quality and safety.

This article offers a comprehensive review of how organizational readiness for change has been defined and measured in health services research and other fields. Unlike a recently published review of readiness instruments (Holt, Armenakis, Harris, & Feild, 2006), our review focuses on both the conceptualization *and* measurement of organizational readiness for change, includes only peer-reviewed articles, and makes use of an explicit search strategy and review process. This review reveals the diverse ways that researchers have defined organizational readiness for change, describes the psychometric properties of available instruments, and discusses the conceptual and methodological issues that should be addressed in future research.

Theory

Organizational change, broadly defined, refers to any modification in organizational composition, structure, or behavior (Bowditch & Buono, 2001). Theory and research on organizational readiness for change focuses on *intentional organizational change,* or deliberate efforts (often initiated by management) to move an organization from its present state to some desired future state to increase organizational effectiveness. This focus reflects the change management literature's predominant emphasis on planned or "top-down" forms of organizational change. As complexity theory, chaos theory, and systems thinking have infiltrated the change management literature, experts have paid greater attention to emergent or "self-organizing" forms of organizational change. However, the meaning, antecedents, and consequences of organizational readiness for emergent change have not been the subject of much theorizing or research.

Organizational readiness for change has been defined in a variety of ways (see the following sections for further discussion). As a working definition, we consider organizational readiness for change as the extent to which organizational members are psychologically and behaviorally prepared to implement organizational change. Readiness is thought to be a critical precursor to successful organizational change

because organizational members seek to maintain a state of affairs that provides them a sense of psychological safety, control, and identity (Argyris & Schon, 1978; Hirschhorn, 1988; Schein & Bennis, 1965). Attempts to alter such a state of affairs often produce strong resistance (Lewin, 1951; Senge, 1990; Strabel, 1996). Drawing on Lewin's (1951) famous three-stage model of change, change management experts contend that change advocates must first "unfreeze" the organization by changing the existing "mind-set" and creating the motivation to change. Actions thought to create readiness for change (i.e., unfreezing) include disconfirming organizational members' conceptions of the current situation, stimulating their dissatisfaction with the status quo, creating an appealing vision of a future state of affairs, and fostering a sense of confidence that this future state can be realized (Armenakis et al., 1993; Kotter, 1996). When organizational readiness for change is high, experts contend, organizational members are more invested in the change effort, expend greater effort in the change process, and exhibit greater persistence in the face of obstacles or setbacks— all of which contribute to more successful change implementation (Armenakis & Harris, 2002; Beckhard & Harris, 1977; Kimberly & Quinn, 1984; Kotter, 1996; Scott, Jaffe, & Scott, 1995). Although these assertions have not been subject to much empirical research, a large practice-based literature on organizational readiness for change suggests that these assertions are well grounded in the experiences of change experts, managers, and other practitioners. To help build a stronger evidence base concerning organizational readiness for change, we examine how the concept has been defined and measured in the research literature.

Method

We searched the peer-reviewed literature using six electronic bibliographic databases: PubMed/Medline, CINAHL®, ISI Web of Science℠, Business Source® Premier, PsycInfo®, and CSA Sociological Abstracts databases. We did not limit the search to health services research journals because several key articles on the subject appear in business, educational, and human service journals. Excluding this work would have rendered the review incomplete, potentially limiting its value to health services researchers, policy makers, and practitioners.

With assistance from a reference librarian, we generated a master list of search terms and tailored the list to each electronic database. Search terms included *organization*, *institution*, *organizational transformation*, *organizational adjustment*, *strategic change*, *structural change*, *change dynamics*, *innovation*, *organizational decision making*, *adoption of innovations*, *change management*, *readiness*, *readiness creation*, and *readiness intervention*. To keep the review manageable, we limited the search to articles published between January 1990 and July 2007.

We identified 1,469 nonduplicated titles (see Figure 1). Two authors (BW and SL) independently reviewed the titles using predetermined inclusion/exclusion criteria and resolved disagreements through rereview and discussion until they reached consensus.

Figure 1
Schema Portraying Results of Literature Search
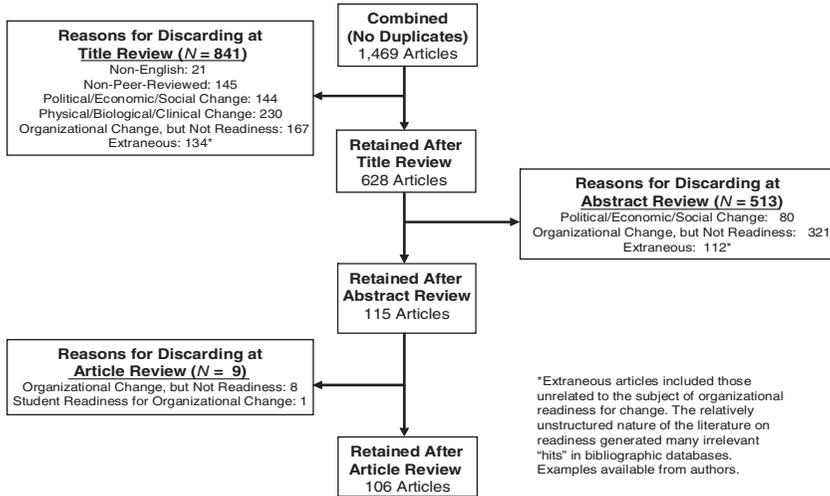
Included articles had to appear in English in a peer-reviewed journal. Moreover, included articles had to focus on organizational change (see definition above). This criterion eliminated articles that focused on social, economic, or political change, as well as those focused on individual-level change in health behavior (e.g., smoking cessation) or clinical practice (e.g., physician use of guidelines). Finally, included articles had to emphasize, or at least mention, organizational readiness for change. We accepted many synonyms for organizational readiness for change, such as commitment to change, willingness to change, acceptance and attitudes toward change, reactions to change, and readiness to take action. Following Armenakis and colleagues (1993), we did not treat lack of resistance to change as synonymous with readiness for change. These authors observe that readiness connotes a positive, energetic stance toward an intentional change, not merely the absence of a negative, energetic stance. Reducing resistance, they contend, does not itself promote readiness. We considered, but chose not to include, articles that focused on employee acceptance of new information systems because, in most cases, these articles focus on end user reactions to an already installed and implemented information system.

Using these criteria, we excluded 841 articles at the title-review stage. Figure 1 enumerates the reasons for excluding articles. (EndNote libraries for each step of the review process are available from the authors.) Two authors (BW and HA) then independently reviewed abstracts for the remaining 628 articles using the same criteria and process. This review resulted in the exclusion of 513 additional articles. Two authors (BW and HA) then reviewed the full text of the remaining 115 articles, and

excluded 8 articles that mentioned organizational readiness for change only in pass-ing, and 1 article that focused on student readiness to accept organizational change in a university setting. This review left 106 peer-reviewed articles.

We also used ISI Web of Science[SM] to search for articles that cited a seminal arti-cle on organizational readiness for change (i.e., Armenakis et al., 1993). An addi-tional 8 articles identified from this search survived the title-review, abstract-review, and full-text-review process.

We assigned each article retained after full-text review a unique identification number and used a structured data abstraction form to extract key information from each article (e.g., research discipline, construct definition, construct measures, reli-ability assessment, and validity assessment). Table 1 shows the "dictionary" that we used to structure the data abstraction form. We then created tables to display, cate-gorize, and analyze the information we extracted.

Results

Description of Articles

Of the 106 articles included in our review, 34 (or 31%) offered only conceptual discussions of organizational readiness for change (see Table 2). The remainder reported some form of empirical research. These included cross-sectional surveys ($N = 49$), nonequivalent control group designs ($N = 1$), one-group pretest, posttest designs ($N = 2$), multiple-case studies ($N = 10$), single-case studies ($N = 5$), or other forms of qualitative research such as focus groups and individual interviews ($N = 7$).

Fifty-one articles (47%) appeared in a health services research journal, broadly defined (e.g., including nursing, substance abuse treatment, and medical informatics journals). Fifty-three articles (49%) focused on health care organizations. Thirty-five (33%) focused on business organizations, six (6%) focused on educational organiza-tions, and four (4%) focused on government or human service organizations. Seven articles (6.5%) did not focus on a particular industry or sector: They were either general in focus or included organizations from multiple industries or sectors. The annual rate of articles appearing in health services research journals or focusing on health care organizations increased over time.

Conceptualization of Organizational Readiness for Change

Our review revealed little consistency with regard to conceptual terminology (see Table 2). Although 83 articles (77%) used some variant of the term readiness for change, other commonly used terms included change acceptance, change commitment, attitudes toward change, reactions to change, and agency capacity. To some extent, such diversity in terms reflected our review's broad search strategy and liberal inclusion/exclusion criteria. However, many authors seemed to refer to the same phenomenon despite differences in the terms they used. For example, Armenakis and colleagues

Table 1
Coding Form Used to Abstract Article Information

Author and Year	Author and Year
Industry setting	Industry or sector discussed in article: H = heath care B = business E = education P = government HS = human service G = general M = multiple
HSR journal	Article published in health services research journal, broadly defined. Includes medical, nursing, allied health, substance abuse, and medical informatics journals: Y = yes N = no

Construct Name	Name of Construct Used by Authors
Article type	Article is conceptual in focus or reports empirical research. Include as conceptual articles that describe tools or checklists for assessing readiness, but do not apply them in empirical research: C = conceptual E = empirical
Study design	NEQC = nonequivalent control group 1GPP = one-group pre–post S = survey MC = multiple-case study SC = single-case study OQ = other qualitative method (e.g., focus groups)

Conceptual Definition	Definition of Construct Provided by Author
Construct level	The level of theory to which the construct applies: I = individual level of analysis O = organizational level of analysis I/O = ondividual and organizational levels of analysis NS = not specified
Change process	The stage in the organizational change process to which the construct applies: A = adoption stage I = implementation stage P = postimplementation NS = not specified

Note: HSR = health services research

(1993, p. 683) used the term *readiness for change* to indicate "organizational members' beliefs, attitudes, and intentions regarding the extent to which changes were needed and the organization's capacity to make those changes." Herscovitch and Meyer (2002, p. 475) used the term *commitment to change* to refer to "a force (mind-set) that binds

Table 2
Conceptualization of Organizational Readiness for Change

Author (Year)	Industry Setting	HSR Journal	Construct Name	Article Type	Study Design	Conceptual Definition	Construct Level	Change Process
Abdinnour-Helm, Lengnick-Hall, and Lengnick-Hall (2003)	B	No	Attitudes toward orga- nizational change	E	S	Not defined	I	I
Adelman and Taylor (1997)	E	No	Readiness	C	—	Enhanced climate and culture for change (M/C)	NS	I
Armenakis, Harris, and Mossholder (1993)	G	No	Readiness for change	C	—	People's beliefs, attitudes, and intentions regarding extent to which changes are needed and organization's capacity to make those changes	O	I
Armenakis and Harris (2002)	G	No	Readiness for change	C	—	Preparation for and support of the change by organization's members	O	I

Author (Year)	Industry Setting	HSR Journal	Construct Name	Article Type	Study Design	Conceptual Definition	Construct Level	Change Process
Backer (1995)	H	Yes	Readiness for change	C	—	State of mind about the need for innovation and the capacity to undertake technology transfer	O	I
Backer (1997)	H	Yes	Readiness for change	C	—	State of mind that is the precursor of actual behaviors needed to adopt an innovation (or to resist it)	O	I
Bamberg, Akroyd, and Adams (1992)	H/E	Yes	Readiness to innovate	E	S	Not defined	O	A
Barger (1998)	H/E	Yes	School readiness for practice arrangement	C	—	Not defined	O	A

(continued)

387

Table 2 (continued)

Author (Year)	Industry Setting	HSR Journal	Construct Name	Article Type	Study Design	Conceptual Definition	Construct Level	Change Process
Barrett, Haslam, Lee, and Ellis (2005)	B	No	Stages of change (readiness)	E	SC	Perceived need for change and organization's ability to implement change successfully	I	I
Bloom, Devers, Wallace, and Wilson (2000)	H	Yes	Readiness for capitation	E	S	The risk-bearing capability and infrastructure to manage risk and the availability of a continua of services for the population	O	I
Brink et al. (1995)	H	Yes	Receptivity/readiness to adopt	E	NEQC	Not defined	I	A
By (2007)	B	No	Change management and readiness	E	OQ	The cognitive precursors to the behaviors of either resistance to or support for	NS	NS

Author (Year)	Industry Setting	HSR Journal	Construct Name	Article Type	Study Design	Conceptual Definition	Construct Level	Change Process
						change effort. Also, the extent to which employees hold positive views about the need for organizational change and believe that such changes are likely to have positive implications for themselves and the wider organization		
Campbell (2006)	E	No	Attitudes and reactions to change	E	S	Characteristics associated with embracing change and seeing it as presenting positive opportunities for improvement and enhancement	I	NS

(continued)

Table 2 (continued)

Author (Year)	Industry Setting	HSR Journal	Construct Name	Article Type	Study Design	Conceptual Definition	Construct Level	Change Process
Carkhuff and Crago (2004)	B	Yes	Learning readiness	C	—	Staff willingness to embrace organizational change	O	I
Carney (2000)	H	Yes	Commitment; acceptance or resistance to change	E	OQ	Not defined	I	P
Carney (2002)	H	Yes	Commitment; acceptance or resistance to change	C	—	Not defined	I	I
Chan and Ngai (2007)	B	No	Organizational readiness	E	MC	Level of Internet knowledge among non-IT professionals and whether there are adequate computer systems within the firm to access and use the Internet without major problems	O	NS

Author (Year)	Industry Setting	HSR Journal	Construct Name	Article Type	Study Design	Conceptual Definition	Construct Level	Change Process
Chatterji (2002)	E	No	School reform readiness	E	S	The degree to which an array of research-supported indicators of standards-based reform are influencing measurable school outcomes in directions desired by reformers and policy makers	O	I
Chonko, Jones, Roberts, and Dubinsky (2002)	B	No	Readiness for change	C	—	The cognitive precursors to the behaviors of either resistance to or support for change effort. Individual sales representatives' beliefs, attitudes, and intentions	I	I

(continued)

Table 2 (continued)

Author (Year)	Industry Setting	HSR Journal	Construct Name	Article Type	Study Design	Conceptual Definition	Construct Level	Change Process
						regarding the extent to which changes are needed and perceptions of the organization's ability to deal with change		
Clark, Cavanaugh, Brown, and Sambamurthy (1997)	B	No	Change readiness	E	SC	The ability of an information systems organization to deliver strategic IT applications within short development cycle times by utilizing a highly skilled internal IS workforce	O	I
Cochran, Bromley, and Swando (2002)	GOV	No	Receptivity to organizational change	E	S	Positive attitudes and sentiments of the deputies prior to implementing change	I	I

Author (Year)	Industry Setting	HSR Journal	Construct Name	Article Type	Study Design	Conceptual Definition	Construct Level	Change Process
Cochrane (1997)	H	Yes	Readiness to become a PSO	C	—	Not defined	O	A
Coetsee (1999)	G	No	Acceptance (commit-ment) to change	C	—	Commitment = Knowledge × Information × Empowerment × Rewards and Recognition × Shared Vision (goals and values)	I	I
Cole, Harris, and Bernerth (2006)	B	No	Change attitudes	E	S	Not defined	I	I
Collins, Phields, and Duncan (2007)	H	Yes	Agency capacity	C	—	The efficient use of human, physical, and knowledge resources and the processes employed to transform these resources into services	O	I

(continued)

393

Table 2 (continued)

Author (Year)	Industry Setting	HSR Journal	Construct Name	Article Type	Study Design	Conceptual Definition	Construct Level	Change Process
Cook and Scott (2005)	H	Yes	Readiness for change	E	SC	Not defined	O	A
Chwelos, Benbasat, and Dexter (2001)	B	No	Readiness	E	S	Sufficient IT sophistication and financial resources to undertake adoption	I	I
Cunningham et al. (2002)	H	No	Readiness for organiza-tional change	E	S	A demonstrable need for change, a sense of one's ability to suc-cessfully accomplish change and an opportu-nity to partic-ipate in the change process	I	I
Cunningham (2006)	H	No	Commitment to change	E	S	A force (mind-set) that binds an individual to a course of action deemed nec-essary for the successful	I	I

Author (Year)	Industry Setting	HSR Journal	Construct Name	Article Type	Study Design	Conceptual Definition	Construct Level	Change Process
						implementation of a change initiative	I	I
Dahlan, Ramayah, and Mei (2002)	B	No	Readiness to adopt data mining technologies	E	S	Individuals' beliefs, attitudes, intentions, and behavior toward change	I	I
Demiris, Patrick, and Khatri (2003)	H	No	Agency readiness for telehealth	C	—	Not defined	O	I
Demiris, Courtney, and Meyer (2007)	H	Yes	Readiness and receptiveness for the use of new software and hardware applications	E	S	Not defined	I	A
Devereaux et al. (2006)	H	Yes	Organizational readiness for change	E	S, OQ	Capacity to implement change designed to improve performance	I/O	I

(continued)

Table 2 (continued)

Author (Year)	Industry Setting	HSR Journal	Construct Name	Article Type	Study Design	Conceptual Definition	Construct Level	Change Process
Eby, Adams, Russell, and Gaby (2000)	B	No	Readiness for change	E	S	The cognitive precursor to the behaviors of either resistance to, or support for, a change effort	I	I
Fedor, Caldwell, and Herold (2006)	B	No	Commitment to change	E	S	A behavioral intention to work toward the success of the change rather than just reflecting a favorable disposition toward it	I/O	I
Fuller et al. (2007)	H	Yes	Organizational readiness for change	E	S	Not defined (but uses the TCU ORC instrument)	O	A
Gagne, Koestner, and Zuckerman (2000)	B	No	Acceptance of change	E	1GPP	Not defined	I	I
Greener, Joe, Simpson, Rowan-Szal, and Lehman (2007)	H	Yes	Organizational functioning factors	E	S	Not defined (but uses the TCU ORC instrument)	O	I

Author (Year)	Industry Setting	HSR Journal	Construct Name	Article Type	Study Design	Conceptual Definition	Construct Level	Change Process
Guha et al. (1997)	B	No	Cultural readiness	E	MC	Facilitation of the integration of individual learning with organizational learning by influencing an organization's ability to learn, share information, and make decisions	O	I
Hailey and Balogun (2002)	B	No	Readiness for change	E	SC	The extent to which staff are aware of the need for change, understand the extent and implications of the change, and are motivated toward achieving the change	O	I

(continued)

397

Table 2 (continued)

Author (Year)	Industry Setting	HSR Journal	Construct Name	Article Type	Study Design	Conceptual Definition	Construct Level	Change Process
Hanpachern, Morgan, and Griego (1998)	B	No	Readiness for change	C	S	Not defined	I	I
Hardison, (1998)	H/B	Yes	Readiness to undertake CQI transformation	E	—	Not defined	O	A
Hebert and Korabeck (2004)	H	Yes	Stakeholder readiness	E	OQ	Not defined	I	A
Herscovitch and Meyer (2002)	H	No	Commitment to change	E	S	A force (mind-set) that binds an individual to a course of action deemed necessary for the successful implementation of a change initiative	I	I
Holt, Armenakis, Feild, and Harris (2007)	G	No	Readiness for organizational change	E	S	A comprehensive attitude that is influenced by content, process, context, and individuals;	I	N

Author (Year)	Industry Setting	HSR Journal	Construct Name	Article Type	Study Design	Conceptual Definition	Construct Level	Change Process
						reflects the extent to which individual/s are cognitively and emotionally inclined to accept, embrace, and adopt a particular plan to purposefully alter the status quo		
Horwath and Morrison (2000)	HS	No	Readiness for change	C	—	Not defined	O	NS
Hostgaard et al. (2004)	H	Yes	Attitudes toward change	E	S	Not defined	I	I
Ingersoll, Kirsch, Merk, and Lightfoot (2000)	H	Yes	Organizational readiness	E	S	A state of preparedness for change that is influenced by the organization's previous history of change, its plans for	I	I

(continued)

399

Table 2 (continued)

Author (Year)	Industry Setting	HSR Journal	Construct Name	Article Type	Study Design	Conceptual Definition	Construct Level	Change Process
						continuous organiza-tional refine-ment, and its ability through its social and technical sys-tems to initi-ate and sustain that change		
Jansen (2000)	B	No	Readiness for change	C	—	Not defined	O	NS
Jansen (2004)	E	Yes	Change-related commitment	E	S, OQ	Not defined	I	I
Jennett, Yeo, Pauls, and Graham (2003)	H	Yes	Organizational readiness for telemedicine	E	OQ	A multifaceted concept related to planning and the workplace environment	O	I
Jennett et al. (2005)	H	Yes	Telehealth readiness	E	MC	The realization of needs and expressed dissatisfac-tion with the present situa-tion and con-ditions; the active	O	I

Author (Year)	Industry Setting	HSR Journal	Construct Name	Article Type	Study Design	Conceptual Definition	Construct Level	Change Process
						participation of people in the idea of telehealth; the establishment of efficient structures for telehealth in the organization		
Jones, Jimmieson, and Griffiths (2005)	GOV	No	Readiness for change	E	1GPP	The extent to which employees hold positive views about the need for organizational change, as well as the extent to which employees believe that such changes are likely to have positive implications for themselves and the wider organization	I	I

(continued)

401

Table 2 (continued)

Author (Year)	Industry Setting	HSR Journal	Construct Name	Article Type	Study Design	Conceptual Definition	Construct Level	Change Process
Jones and Moss (2006)	H	Yes	Acceptance and diffusion of new technology	C	—	Relative to the expectation that the technology will bring about outcomes beneficial to the individual users—not simply the organization	I	I
Joshi and Lauer (1999)	B	No	Employees' reactions to change	E	SC	Acceptance or resistance based on employee evaluation of the system as being favorable or unfavorable in terms of its impact on their equity assessment	I	I
Karsh (2004)	H	Yes	Readiness for change	C	—	Not defined	O	I
Kerber and Buono (2005)	B	No	Change capacity	C	—	The willingness and ability of change makers to assume responsibility for the	O	I

Author (Year)	Industry Setting	HSR Journal	Construct Name	Article Type	Study Design	Conceptual Definition	Construct Level	Change Process
						change, the existence of a supportive infrastructure that facilitates change, and sufficient resources for the change		
Langdon and Lawson (1997)	H	Yes	PACS readiness	C	—	Not defined	O	A
Lee and Cheung (2004)	B	No	Organizational readiness	E	MC	Composed of IT sophistication, financial resources, and customer readiness	O	A
Lehman, Greener, and Simpson (2002)	H	Yes	Readiness for change	E	S	Not defined but includes four domains (motivational readiness, institutional resources, staff attributes, organizational climate)	O	NS

(continued)

403

Table 2 (continued)

Author (Year)	Industry Setting	HSR Journal	Construct Name	Article Type	Study Design	Conceptual Definition	Construct Level	Change Process
Levesque, Prochaska, and Prochaska (1999)	E	No	Readiness for integrated service delivery	E	S	Not defined	I	NS
Levesque et al. (2001)	H	No	Readiness for CQI	E	S	Not defined	I	NS
Luo, Hilty, Worley, and Yager (2006)	H	Yes	Readiness for change	E	S	Not defined	O	I
Madsen, Miller, and John (2005)	H/O	No	Readiness for organizational change	E	S	An individual is ready for change when he or she understands, believes, and intends to change because of a perceived need	I	NS
Maurer (2001)	G	No	Change readiness	C	—	Not defined	O	I
McCluskey and Cusick (2002)	H	Yes	Readiness for change	C	—	Not defined	I	NS
Medley et al. (1999)	H	Yes	Readiness for managed care	E	S	Not defined	O	A
Meyer, Srinivas, Lal, and Topolnytsky (2007)	B	No	Commitment to organizational change	E	S1GP P	A mind-set that binds an individual to a course of	I	I

Author (Year)	Industry Setting	HSR Journal	Construct Name	Article Type	Study Design	Conceptual Definition	Construct Level	Change Process
						action deemed necessary for the successful implementation of a change initiative		
Miller, Wilson, and Hickson (2004)	B	No	Readiness of organizational context	E	MC	The degree to which what is done fits with prevailing norms and expectations both within the organization and in the operating environment	O	I
Molla and Licker (2005a)	B	No	Organizational e-readiness	E	S	Managers' perception and evaluation of the degree to which they believe that their organization has the awareness, resources, commitment, and governance to	O	A

(continued)

405

Table 2 (continued)

Author (Year)	Industry Setting	HSR Journal	Construct Name	Article Type	Study Design	Conceptual Definition	Construct Level	Change Process
Molla and Licker (2005b)	B	No	Organizational e-readiness	E	S	adopt e-commerce Managers' perception and evaluation of the degree to which they believe that their organization has the awareness, resources, commitment, and governance to adopt e-commerce	O	A
Motwani, Mirchandani, Madan, and Gunasekaran (2002)	B	No	Cultural readiness	E	MC	Facilitation of the integration of individual learning with organizational learning by influencing an organization's ability to learn, share information, and make decisions	O	I

Author (Year)	Industry Setting	HSR Journal	Construct Name	Article Type	Study Design	Conceptual Definition	Construct Level	Change Process
Motwani, Subramanian, and Gopalakrishna (2005)	B	N	Cultural readiness	E	MC	Facilitation of the integration of individual learning with organizational learning by influencing an organization's ability to learn, share information, and make decisions	O	I
Moulding, Silagy, and Weller (1999)	H	Yes	Readiness to adopt	C	—	Not defined	I	A
Narine and Persaud (2003)	H	Yes	Readiness for change	C	—	An organization's plan for change and its ability to execute it	O	I
Neiva, Ros, and da Paz (2005)	B	No	Attitudes toward organizational change	E	S	Not defined	I	NS

407

Table 2 (continued)

Author (Year)	Industry Setting	HSR Journal	Construct Name	Article Type	Study Design	Conceptual Definition	Construct Level	Change Process
Nelson, Raskind-Hood, Galvin, Essien, and Levine (1998)	H	Yes	Public health agency readiness to partner	E	S	Capacity to implement proactive changes in function, structure, and strategy	O	A
Oliver and Demiris (2004)	H	Yes	Readiness for the use of advanced technology	E	S	The degree to which hospice workers and organizations were prepared for the implementation of telemedicine technology	I/O	A
Paddington, Gilmartin, and Detmer (2002)	H	Yes	Readiness for change	E	MC	Not defined	NS	NS
Peach, Jimmieson, and White (2005)	B	No	Readiness for organizational change	E	S	The extent to which employees hold positive views about the need for change, as well as the extent to which employees	I	I

Author (Year)	Industry Setting	HSR Journal	Construct Name	Article Type	Study Design	Conceptual Definition	Construct Level	Change Process
						believe that such changes are likely to have positive implications for them-selves and the wider organization		
Petry and Chandler (1995)	H	Yes	CHIN readiness	C	—	Whether an organization has the neces-sary internal capabilities and strategic relationships in place before con-necting with payers, physi-cians, employers, and other health care providers to share clinical and financial data	O	A
Prochaska, Prochaska, and Levesque (2001)	H	Yes	Readiness for change?	E	S	Not defined	I	NS

(continued)

409

Table 2 (continued)

Author (Year)	Industry Setting	HSR Journal	Construct Name	Article Type	Study Design	Conceptual Definition	Construct Level	Change Process
Prochaska et al. (2006)	E	No	University readiness to advance women scientists	E	S	Not defined	I	NS
Rafferty and Simons (2006)	B	No	Readiness for change	E	S	Individuals' beliefs, attitudes, and intentions regarding the extent to which changes are needed and the organization's capability to successfully undertake those changes	I	I
Rampazzo, De Angeli, Serpelloni, Simpson, and Flynn (2006)	H	Yes	Readiness for change	E	S	Not defined (but uses the TCU ORC instrument)	O	A
Rangarajan, Chonko, Jones, and Roberts (2004)	B	No	Organization readiness for change	C	—	The extent to which the individual employees perceive that the organization has the	NS	I

Author (Year)	Industry Setting	HSR Journal	Construct Name	Article Type	Study Design	Conceptual Definition	Construct Level	Change Process
						capacity to enhance successful change		
Reuben et al. (2003)	H	Yes	Readiness to implement GITT	C	—	Not defined	O	I
Rowden (2001)	B	No	Readiness for change	C	—	Not defined	O	NS
Saldana, Chapman, Henggeler, and Rowland (2007)	H	Yes	Organizational readiness for change	E	S	Not defined (but uses TCU ORC instrument)	I/O	A
Sen, Sinha, and Ramamurthy (2006)	B	No	Organizational readiness	E	S	The ability to recognize the value of new information, assimilate it, and apply it effectively to realize economic benefits	O	I
Simon (1996)	B	No	Change readiness	C	—	Wanting to change	NS	NS
Simpson (2002)	H	Yes	Readiness for change	E	MC	Not defined	O	NS
Simpson and Dansereau (2007)	H	Yes	Readiness for change	C	—	Not defined	O	A
Simpson and Flynn (2007)			Readiness for change	C	—	Not defined	O	I

(continued)

411

Table 2 (continued)

Author (Year)	Industry Setting	HSR Journal	Construct Name	Article Type	Study Design	Conceptual Definition	Construct Level	Change Process
Simpson, Joe, and Rowan-Szal (2007)	H	Yes	Organizational readiness for change	E	S	Not defined (but uses the TCU ORC instrument)	O	A
Snyder and Fields (2006)	H	Yes	Organizational innovation readiness	E	S	The level of fit between the information technology innovation and the organization (seven subdimensions)	O	I
Snyder-Halpern (1998)	H	Yes	Organizational readiness for nursing research programs	E	S	Not defined	O	I
Snyder-Halpern (2001)	H	Yes	Organizational innovation readiness	E	OQ	The level of fit between the information technology innovation and the organization (seven subdimensions)	O	I
Snyder-Halpern (2002)	H	Yes	Organizational innovation readiness	E	S	The level of fit between the information technology innovation and the organization (seven subdimensions)	O	I

412

Author (Year)	Industry Setting	HSR Journal	Construct Name	Article Type	Study Design	Conceptual Definition	Construct Level	Change Process
Stablein et al. (2003)	H	Yes	Hospital readiness for CPOE	E	OQ	Not defined	O	I
Stockdale, Mendel, Jones, Arroyo, and Gilmore (2006)	H	Yes	Organizational capacity for change	C	—	The ability and potential of community organizations to partner with other organizations, provide some or all components of an evidence-based intervention, and change and adapt to implement interventions to improve quality of care in the community	O	NS
Tan, Tyler, and Manica (2007)	B	No	Perceived organizational e-readiness	E	S	Managers' perception and evaluation of the degree to which they believe that their organization has the awareness, resources, commitment, and governance to adopt e-commerce	O	A

413

(continued)

Table 2 (continued)

Author (Year)	Industry Setting	HSR Journal	Construct Name	Article Type	Study Design	Conceptual Definition	Construct Level	Change Process
Travers and Downs (2000)	H	No	User acceptance	E	MC	Not defined	I	P
Wanberg and Banas (2000)	GOV	No	Openness to changes	E	S	Willingness to support the change and a positive affect about the potential consequences of the change	I	I
Weeks, Roberts, Chonko, and Jones (2004)	B	No	Organizational readiness for change	E	S	Individual sales managers' beliefs, attitudes, and intentions regarding the extent to which changes is needed; and perceptions of the organization's ability to deal with change under dynamic business conditions	I	I
West (1998)	H	Yes	Change readiness	E	S	Not defined	O	I
Zender (2005)	H	Yes	Personal level of readiness for EHR deployment	E	S	Not defined	I	I

Note: See Table 1; IT = information technology; TCU ORC = Texas Christian University Organizational Readiness for Change; IS = information system; PSO = provider-sponsored organization; CQI = continuous quality improvement; GITT = geriatrics interdisciplinary team training; CPOE = computerized physician order entry.

an individual to a course of action deemed necessary for the successful implementation of a change initiative." In both cases, authors pointed to a psychological state in which organizational members were positively disposed to implement initial organizational change.

Fifty-nine articles (55%) offered no conceptual definition of the organizational readiness for change construct, regardless of the term used to denote it. Instead, the authors of these articles relied on readers' commonsense understanding of the terms that they used (e.g., employee reactions or attitudes toward change). Generally speaking, we observed two broad approaches in how authors described readiness. Some described readiness in psychological terms, emphasizing organizational members' attitudes, beliefs, and intentions. Among those taking the psychological approach, several authors drew upon Armenakis and colleagues' (1993) definition of readiness cited above (Barrett, Haslam, Lee, & Ellis, 2005; By, 2007; Chonko, Jones, Roberts, & Dubinsky, 2002; Dahlan, Ramayah, & Mei, 2002; Eby, Adams, Russell, & Gaby, 2000; Jones, Jimmieson, & Griffiths, 2005; Rafferty & Simons, 2006; Weeks, Roberts, Chonko, & Jones, 2004). Other authors drew upon Prochaska and DiClemente's (1983) transtheoretical model of change (Horwath & Morrison, 2000; Levesque et al., 2001; Levesque, Prochaska, & Prochaska, 1999; McCluskey & Cusick, 2002; Moulding, Silagy, & Weller, 1999; Prochaska et al., 2006; Prochaska, Prochaska, & Levesque, 2001). The last model posits that behavior change occurs in five stages: precontemplation, contemplation, preparation, action, and maintenance. Presumably, authors drawing on the transtheoretical model equated readiness with the preparation stage, which is defined as intending to take action in the immediate future, such as the next 30 days. As an alternative to the psychological approach, some authors described readiness in structural terms, emphasizing organizational capabilities and resources. Among those taking the structural approach, authors crafted their own unique conceptions of readiness. The specific resources or capabilities mentioned as indicators of readiness varied greatly depending on the type of organizational change described in the article (e.g., telemedicine, capitation, and quality improvement).

We observed some divergence with regard to the readiness construct's level of theory, that is, the level or target (e.g., individual, group, or organizational) to which the construct applied. In 41 articles (46%), readiness appeared to be an individual-level construct. This individual-level focus was often, although not always, the case when readiness was described in psychological terms. For example, Holt and his colleagues (Holt, Armenakis, Feild, & Harris, 2007) indicated that readiness for organizational change reflected the extent to which an individual or individuals were cognitively and emotionally inclined to accept, embrace, and adopt a particular plan to purposefully alter the status quo. Likewise, Eby and her colleagues (2000) noted that although organizational members experienced a common context, individuals' perceptions of organization readiness could vary depending on his or her unique interpretation of that context. By contrast, in 57 articles (55%), readiness appeared to be an organization-level construct. This group included all articles that described

readiness in structural terms, such as the organization's managed care contracting capabilities or its information technology (IT) infrastructure. However, this group also included some articles that described readiness as organizational members' shared or collective perceptions of motivation and capabilities. For example, Lehman, Greener, and Simpson (2002) viewed organizational readiness for change as including collective perceptions of motivational readiness, institutional resources, and organizational climate. In four articles (4%), readiness appeared to be both an individual-level and organization-level construct. Finally, in five articles (5%), the level of the readiness construct could not be determined.

Furthermore, we also observed some divergence as to whether organizational readiness for change described a general state of affairs that existed in an organization, or whether it described the organization's preparedness for a specific change or type of change. Lehman et al. (2002), for example, considered organizational readiness for change as a set of general factors that included overall motivational readiness (e.g., perceived need for program improvement), institutional resources (e.g., office space), staff attributes (e.g., adaptability), and organizational climate (e.g., clarity of mission and goals). These authors acknowledged that these general factors might be necessary but not always sufficient for change to occur, noting that "other factors can influence whether specific interventions are adopted and implemented" (p. 198). However, these authors did not see the inclusion of such factors as appropriate in a more general assessment of organizational readiness for change.

By contrast, several authors discussed organizational readiness not in general terms, but rather in terms of specific types of organizational change, such as telemedicine, capitation, new practice arrangements, integrated service delivery, or interorganizational collaboration. These authors identified organizational characteristics and employee attributes that were often quite specific to the type of change being discussed and were not indicative of organizational readiness for other forms of change. For example, Bloom et al.'s (Bloom, Devers, Wallace, & Wilson, 2000) discussion of organizational readiness for capitation emphasized the organization's contracting, financial management, utilization review capabilities. By comparison, Stablein et al.'s (2003) discussion of organizational readiness for computerized physician order entry highlighted the importance of IT infrastructure, IT staff expertise, care management processes, and organizational culture.

Finally, we noted some conceptual ambiguity about which stage in the organizational change process the readiness construct applied. Organizational change is not an instantaneous event, but rather a process that unfolds over time. In practice, organizational change is complex and nonlinear (Van de Ven & Polley, 1999; Van de Ven & Poole, 1995). Yet, scholars find it analytically useful to regard the change process as a sequence of linear stages (Rogers, 2003; Zaltman, Duncan, & Holbek, 1973; Zmud & Apple, 1992). Rogers (2003), for example, distinguished two broad stages: initiation and implementation. Zaltman and colleagues (1973) made a similar distinction. In 25 articles (23%), change referred to the initiation (or adoption) of a new

technology, program, or practice. In 41 articles (38%), change referred to the implementation of a new technology, program, or practice following a decision to adopt it. In four articles (4%), change involved both initiation and implementation. In five articles (5%), the stage of change to which the readiness construct applied could not be determined.

Analysis of the Measurement of Organizational Readiness for Change

Our review identified 43 instruments for measuring organizational readiness for change that had been used in empirical research, and that had closed-ended questions with response formats permitting psychometric assessment. We used Trochim's (2001) classification of validity and reliability types to organize our assessment (see Table 3). He regards construct validity as an umbrella term that includes translational validity and criterion-related validity (Trochim, 2001). Translational validity includes both face and content validity. Criterion-related validity includes predictive, concurrent, convergent, and discriminant validity. Reliability includes interrater or interobserver reliability, parallel forms reliability, test–retest reliability, and inter-item reliability (e.g., Cronbach's alpha). In this review, we combined face and content validity into a single category. We did the same for the various forms of reliability assessment.

Most currently available instruments for measuring organizational readiness for change exhibited limited evidence of reliability or validity (see Table 4). For example, only 22 instruments (51%) appeared to have undergone any discernible process for assessing face or content validity. In other words, half the time, authors did not report whether they assessed the extent to which the instrument's items fully represented the construct's theoretical content. For 21 instruments, authors altered item wording from existing instruments, used only portions of existing instruments, or combined items from existing instruments, but did not discuss their reasons for doing so (Chwelos, Benbasat, & Dexter, 2001; Cunningham et al., 2002; Dahlan et al., 2002; Demiris, Courtney, & Meyer, 2007; Devereaux et al., 2006; Eby et al., 2000; Fedor, Caldwell, & Herold, 2006; Hanpachern, Morgan, & Griego, 1998; Hostgaard & Nohr, 2004; Madsen, Miller, & John, 2005; Oliver & Demiris, 2004; Rafferty & Simons, 2006; Tan, Tyler, & Manica, 2007; Weeks et al., 2004). For 12 instruments, authors provided only sample items, making it difficult for others to determine the instrument's item content and make independent judgments of face validity (Bamberg, Akroyd, & Adams, 1992; Eby et al., 2000; Hanpachern et al., 1998; Jones et al., 2005; Madsen et al., 2005; Medley & Nickel, 1999; Oliver & Demiris, 2004; Rafferty & Simons, 2006; Snyder & Fields, 2006; Snyder-Halpern, 2001, 2002; Wanberg & Banas, 2000).

Fifteen instruments (33%) exhibited evidence of predictive validity based on linear regression analysis. Two additional instruments showed a significant bivariate association with a theoretically meaningful outcome (Madsen et al., 2005; Miller, Wilson, & Hickson, 2004). Studies using these instruments generally focused on

Table 3
Types of Validity and Reliability Examined in This Literature Review

Construct validity: The degree to which inferences can legitimately be made from an instrument to the
    theoretical construct that it purportedly measures

  Translation validity: Translation validity is the degree to which an instrument accurately translates
  (or carries) the meaning of the construct

      Face validity: A summary perception that an instrument's items translate or carry the meaning of
        the construct. Procedures for assessing face validity include informal review by experts or
        more formal review through a Delphi process

      Content validity: A check of the instrument's items against the content domain of the construct.
        Examples include expert review based on a clear definition of the construct and a checklist of
        characteristics that describe the construct. If the construct is multidimensional, factor analysis
        could be used to verify the existence of those theoretically meaningful dimensions

  Criterion-related validity: An empirical check on the performance of an instrument against some criteria

      Predictive validity: The degree to which an instrument predicts a theoretically meaningful
        outcome. Examples include regression analysis in which the instrument serves as an
        independent variable. Predictive validity is not demonstrated if the instrument serves as a
        dependent variable

      Concurrent validity: The degree to which an instrument distinguishes groups it should
        theoretically distinguish (e.g., a depression screener distinguishes depressed and nondepressed
        patients). Concurrent validity is not demonstrated if there is no reasonable hypothesized
        difference among groups on the instrument

      Convergent validity: The degree to which an instrument performs in a similar manner to other
        instruments that purportedly measure the same construct (e.g., two measures show a strong
        positive correlation). Convergent validity is most often assessed through confirmatory factor
        analysis

      Discriminant validity: The degree to which an instrument performs in a different manner to
        other instruments that purportedly measure different constructs (e.g., the two measures show
        a zero or negative correlation). Discriminant validity is most often assessed through
        confirmatory factor analysis

  Reliability: The consistency or repeatability of an instrument's measurement. Examples include
    interrater or interobserver reliability, test–retest reliability, parallel forms reliability, and internal
    consistency reliability (e.g., Cronbach's alpha)

individual-level outcomes such as job satisfaction, turnover intentions, information system usage, or information system user satisfaction. Only four studies examined the organization-level outcomes of readiness for change (Chwelos et al., 2001; Medley & Nickel, 1999; Sen, Sinha, & Ramamurthy, 2006; Tan et al., 2007). For 11 of the instruments identified in our review, authors examined only the antecedents, not the consequences, of organizational readiness for change. Although valuable, these studies did not provide evidence of predictive validity.

    Other forms of construct validity were less often assessed. For example, only 12 instruments exhibited evidence of concurrent validity. In half these cases, however, authors provided no theoretical rationale for why the instrument should distinguish between studied groups (e.g., program leaders vs program staff). Similarly, less than one quarter of the instruments identified in our review exhibited evidence of

Table 4

Assessment of Validity and Reliability for Readiness for Change Instruments

Instrument Name	Key Citations	Face/Content Validity	Predictive Validity	Concurrent Validity	Convergent Validity	Discriminant Validity	Reliability
Readiness for organizational change	Madsen et al. (2005)						✓
Readiness for change	Rafferty and Simons (2006)	✓					✓
Readiness for telemedicine	Oliver and Demiris (2004)						✓
Readiness	Miller et al. (2004)	✓					
Stages of change (01)	Levesque et al. (1999)	✓		✓			
	Levesque et al. (2001)	✓		✓			
Stages of change (02)	Prochaska et al. (2006)	✓					
Readiness for managed care	Medley and Nickel (1999)	✓	✓	✓			✓
Organizational e-readiness	Molla and Licker (2005a, 2005b)	✓			✓	✓	✓
Organizational innovation technology innovation model	Snyder and Fields (2006) Snyder-Halpern (2001, 2002)	✓			✓		✓
Innovation readiness scale	Snyder-Halpern (1998)	✓			✓		✓
Organizational readiness for change	Ingersoll et al. (2000)	✓	✓		✓	✓	✓
Organizational readiness for change	Weeks et al. (2004)		✓				✓
Perceived organizational e-readiness	Tan et al. (2007)	✓	✓				✓
Openness toward change	Wanberg and Banas (2000)	✓	✓				✓
Readiness for change	Jones et al. (2005)		✓				✓
Readiness for organizational change	Holt et al. (2007)	✓	✓	✓	✓	✓	✓

(continued)

419

Table 4 (continued)

Instrument Name	Key Citations	Face/Content Validity	Predictive Validity	Concurrent Validity	Convergent Validity	Discriminant Validity	Reliability
Change-related commitment	Jansen (2004)		✓		✓	✓	✓
Commitment to change	Herscovitch and Meyer (2002)	✓	✓	✓	✓	✓	✓
	Meyer et al. (2006)						
	Cunningham (2006)						
Organizational readiness	Sen et al. (2006)	✓	✓		✓	✓	✓
TCU organizational readiness for change	Greener et al. (2007)	✓	✓	✓	✓	✓	✓
	Fuller et al. (2007)						
	Lehman et al. (2002)						
	Saldana et al. (2007)						
	Simpson et al. (2007)						
	Rampazzo et al. (2006)						
Attitudes toward change	Neiva et al. (2005)	✓					
Employee attitudes toward change	Abdinnour-Helm et al. (2003)			✓			
Readiness to innovate	Bamberg et al. (1992)						✓
Capitation readiness	Bloom et al. (2000)		✓				
Readiness to adopt	Brink et al. (1995)			✓			
Proactive change orientation	Campbell (2006)	✓					✓
School readiness for reforms	Chatterji (2002)	✓	✓				✓
Readiness	Chwelos et al. (2001)	✓					✓
Receptivity to organizational change	Cochran et al. (2002)	✓					✓

420

Instrument Name	Key Citations	Face/Content Validity	Predictive Validity	Concurrent Validity	Convergent CValidity	Discriminant Validity	Reliability
Change attitudes	Cole et al. (2006)		√				√
Readiness for organizational change	Cunningham et al. (2002)		√				√
Data mining readiness index	Dahlan et al. (2002)	√					√
Readiness and receptiveness	Demiris et al. (2007)	√					
Functional readiness for change evaluation	Devereaux et al. (2006)	√		√			√
Readiness for change	Eby et al. (2000)						√
Change commitment	Fedor et al. (2006)						√
Acceptance of organizational change	Gagne et al. (2000)						√
Readiness for change	Hanpachern et al. (1998)	√					√
Change readiness	Hostgaard and Nohr (2004)	√					
Proactive organizational change	Nelson et al. (1998)	√					
Computerized physician order entry readiness	Stablein et al. (2003)	√					
Change readiness	West (1998)						
Personal readiness for EHR	Zender (2005)						

Note: TCU = Texas Christian University; EHR = electronic health records.

421

convergent validity ($N = 9$) or discriminant validity ($N = 7$). In the absence of such evidence, it was difficult to determine whether the instrument measured the intended construct or some related construct, such as self-efficacy, empowerment, trust in management, organizational morale, or organizational performance.

Most instruments (78%) exhibited evidence of inter-item reliability. However, several articles reported coefficient alphas with values less than .70, the accepted minimum threshold for newly developed measures (Brink et al., 1995; Cunningham et al., 2002; Greener, Joe, Simpson, Rowan-Szal, & Lehman, 2007; Saldana, Chapman, Henggeler, & Rowland, 2007).

Our review identified seven instruments that had undergone a systematic assessment of validity and reliability. Two instruments were developed specifically for information systems adoption and implementation. Molla and Licker's (2005a, 2005b) Organizational e-Readiness Scale measured organizational readiness to adopt e-commerce. Sen and colleagues' (2006) Organizational Readiness Scale measured an organization's data warehouse process maturity. Both instruments showed evidence of content, predictive, convergent, and discriminant validity. Molla and Licker's (2005b) instrument also showed evidence of concurrent validity. Because these instruments contained items specifically tailored to information systems adoption and implementation, their potential usefulness to health services researchers seemed limited.

Ingersoll and colleagues (Ingersoll, Kirsch, Merk, & Lightfoot, 2000) employed an organizational readiness instrument to examine the relationship of organizational culture and readiness for change to employee commitment in an organization undergoing patient-focused redesign. They measured organizational readiness with the Innovativeness and Cooperativeness subscales of the Pasmore Sociotechnical Systems Assessment Survey (STSAS). The Innovativeness subscale included items that measure rewards for innovation, propensity for risk taking, and extent to which organizational leaders and member maintained a futuristic orientation. The Cooperativeness subscale included items that measured teamwork, flexibility, changes in organizational structure, and the extent to which individuals and subunits worked together to accomplish organizational goals. The STSAS had been extensively tested, and both subscales exhibited desirable psychometric properties. However, the use of these STSAS subscales to measure organizational readiness for change raised questions about the instrument's translational validity. That is, it is unclear whether the theoretical content of the readiness construct is adequately captured by the ideas of innovativeness and cooperativeness.

Lehman and colleagues (2002) developed the Texas Christian University (TCU) Organizational Readiness for Change (ORC) instrument. The 118-item instrument covered four dimensions: motivation for change, adequacy of resources, staff attributes, and organizational climate. These four dimensions, in turn, consisted of 18 subscales. Although the instrument was developed and tailored for the substance abuse and health services field, alternative versions had been developed for other applications. Simpson, Joe, and Rowan-Szal (2007) noted that more than 4,000 ORC

surveys had been administered in more than 650 organizations over the past 5 years. Researchers have used the instrument to assess readiness at both the program level and the staff level of analysis. Initial testing showed reasonable support for the instrument's factor structure and reliability. In a principal components analysis at the program level, 13 of the 18 scales exhibited evidence of unidimensionality. Likewise, 13 of the 18 scales showed coefficient alphas greater than .70. In recent studies, TCU ORC scales have shown variable levels of reliability, with some studies reporting coefficient alphas well below the accepted .70 threshold (Rampazzo, De Angeli, Serpelloni, Simpson, & Flynn, 2006; Saldana et al., 2007). While the TCU ORC instrument has been shown to differentiate groups of respondents and types of organizations in theoretically meaningful ways, the instrument's concurrent validity is difficult to judge because no consistent pattern of results occurs for individual scales or readiness dimensions either within or between studies. Likewise, the TCU ORC instrument has shown statistically significant associations with theoretically meaningful outcomes, the instrument predictive validity is also difficult to judge because no consistent pattern of results occurs for individual scales or for readiness dimensions within or across outcomes. Curiously, some researchers used the TCU ORC instrument to measure the construct of organizational functioning (Courtney, Joe, Rowan-Szal, & Simpson, 2007; Greener et al., 2007).

Holt and colleagues (2007) developed a Readiness for Organizational Change instrument through a systematic process of measurement development and psychometric testing. The 25-item instrument captured 4 dimensions of readiness: perceived appropriateness of the proposed change, perceived management support for the proposed change, perceived personal capability to implement the proposed change, and perceived personal benefits of the proposed change. Confirmatory factor analysis in an initial and a replication sample supported a four-factor structure of the instrument. The instrument also exhibited evidence of convergent, discriminant, concurrent, and predictive validity. Specifically, the readiness scale (a) exhibited positive associations with measures of locus of control and general attitudes toward change, (b) exhibited negative associations with measures of rebelliousness and negative affect, (c) discriminated among groups that were expected to have differing levels of readiness, and (d) predicted job satisfaction and affective commitment. In both the initial and replication sample, the reliability estimates for three of the four readiness dimensions exceeded .70. In both samples, the personal valence dimension (i.e., perceived personal benefits of the proposed change) showed coefficient alphas of .65 and .66, respectively. The instrument was developed to measure readiness at the individual level of analysis.

Jansen (2004) developed a Change-Related Commitment measure consisting of eight items assessing organizational members' agreement and willingness to work toward the change goal. The measure showed high inter-item reliability (alpha = .93). Confirmatory factor analysis provided evidence that change-related commitment was distinguishable, yet related to perceived change momentum and change-related interaction among organizational members. Longitudinal analysis of an organization

trying to change its culture showed that change-related commitment predicted subsequent perceived change momentum. The instrument was developed to measure readiness at the individual level of analysis.

Finally, Herscovitch and Meyer (2002) developed a Commitment to Change measure consisting of 22 items tapping three forms of commitment: affective commitment (i.e., want to change), continuance commitment (i.e., have to change), and normative commitment (i.e., ought to change). The three subscales showed high reliability (alpha = .94, .94, and .96) and, in confirmatory factor analysis, they were empirically distinguishable from each other. The three subscales performed consistently with a 1-item measure of commitment to change, yet were empirically distinguishable for a similar three-component scale of organizational commitment. Commitment to change predicted behavioral responses to change (e.g., compliance, cooperation, and championing). Moreover, the instrument differentiated groups of employees exhibiting these different behavioral responses to change. The instrument was developed to measure readiness at the individual level of analysis.

Discussion

In this article, we sought to provide a comprehensive assessment of how organizational readiness for change had been defined and measured in the peer-reviewed literature in health services research and related fields. Overall, we observed little consistency in terminology or conceptualization, limited evidence of reliability or validity for most currently available instruments, and few rigorously conducted empirical studies of the consequences of organizational readiness for change. These findings held true for articles published in health services research journals, as well as those published in the psychological, sociological, and general management journals. We offer below several observations and recommendations for advancing theory, measurement, and research in this area.

Addressing Conceptual Issues

Clarifying the conceptual meaning of the readiness construct might promote greater terminological consistency and more rapid theoretical progress. Our reflections on the literature suggest that organizational readiness for change is a two-dimensional construct that refers to organizational members' motivation and capability to implement intentional organizational change. This two-dimensional view mirrors the colloquial use of the term readiness, which connotes being willing *and* able to do something. In the military, for example, unit readiness refers to a unit's psychological and behavioral preparedness to fight. A unit that is demoralized, but well trained and equipped, is no more ready for battle than is a unit that is gung ho but poorly trained or equipped. One recommendation is to reserve the term organizational readiness for change for those

conceptualizations that capture fully the theoretical content of the readiness construct that includes both the psychological and behavioral connotations of readiness. Other terms, such as change commitment and change acceptance, seem better suited for conceptualizations that include only the motivational aspects of readiness.

Further reflection suggests that the behavioral aspect of organizational readiness for change implies more than simply organizational capacity. Organizational members must possess the raw potential—the expertise, the resources, the opportunity—to successfully implement an intentional organizational change. Yet, raw potential does not automatically translate into action. For organizational members to activate this potential, they must perceive not only that they actually have the potential, but also that they can activate it in an efficacious matter (Bandura, 1986, 1997). That is, they must perceive that they have at hand the requisite expertise, resources, and opportunities, and that they can skillfully execute those courses of action that are necessary to implement the change successfully. An organization might have all the necessary human, financial, and material resources to implement a change, yet lack the capability to mobilize, coordinate, and apply those resources in an efficacious manner to produce change. Two recommendations follow from this discussion. First, organizational readiness for change should be distinguished conceptually and linguistically from organizational capacity. Second, organizational readiness for change should be seen as a perception-based construct that embraces not only organizational members' motivation to implement change, but also their perceived behavioral capability, or, more accurately, perceived efficacy to implement change.

Although the notion of readiness seems equally pertinent at the organizational and individual levels (and perhaps even at the group level), greater conceptual clarity would result if authors used the term organizational readiness for change to refer to the organization-level construct and used the term individual readiness for organizational change to refer to the individual-level construct. When conceived as an organization-level construct, organizational readiness for change becomes particularly useful for theory and research on the implementation of complex innovations. Complex innovations, such as electronic medical records, quality improvement programs, and open-access scheduling systems, entail collective, coordinated action by many interdependent individuals, each of whom contributes something important to the change effort. As in other team sports, problems arise when some interdependent individuals are motivated to implement the change, but others are not. Likewise, when interdependence is high, a *shared* sense of confidence in *collective* capabilities matters. Colloquially speaking, in such circumstances, what is important is not what I think I can do, or even what I think you can do, but rather what we think we can do together.

Viewing organizational readiness for change as having a specific change referent rather than as a general state of affairs would more clearly differentiate the readiness construct from other constructs like organizational culture and organizational climate. It seems likely that an organization's readiness for change is specific to a given intentional organizational change. For example, a health care organization might exhibit

a positive workplace climate or even an organizational culture that values innovation and change, yet still exhibit low readiness for implementing a new pay-for-performance reward system. Likewise, a health care organization could exhibit a high level of readiness to implement electronic medical records, yet also exhibit a low level of readiness to implement an open-access scheduling system.

Finally, the organizational readiness for change construct seems most useful when it focuses on organizational members' preparedness to *implement* intentional organizational change. This viewpoint follows from our reflections above. If the readiness construct implies both motivation and capability, then it seems poorly suited for capturing organizational members' interest in or willingness to consider *adopting* new ideas, technologies, programs, or practices. Other constructs, such as receptivity or openness to change, seem more appropriate for describing organizational members' attitudes and beliefs about change in general (e.g., evidence-based clinical practice) or about specific, contemplated, but not yet adopted changes (e.g., the American Diabetes Association's guidelines on glycemic control). Similarly, other constructs like change acceptance or resistance to change seem more appropriate than organizational readiness for change for denoting members' reactions to intentional organizational changes that are already installed (i.e., already put into place). This seems especially true when attention focuses on individual, as opposed to collective, reactions to intentional organizational change.

Addressing Measurement Issues

Most currently available instruments for measuring organizational readiness for change display limited evidence of validity and reliability. Our review identifies only seven instruments that have undergone a systematic psychometric assessment. Two of these instruments focus narrowly on information systems adoption and implementation. A third consists of subscales intended to measure other constructs, which raises questions about the instrument's translational validity. A fourth exhibits unstable psychometric properties across studies and is sometimes used to assess a different construct (i.e., organizational functioning). Three additional instruments show desirable psychometric properties and merit further testing and application. These instruments are designed, however, to assess readiness at the individual level of analysis. While they have been shown to predict individual-level outcomes (e.g., individual responses to organizational change), their utility for predicting organization-level outcomes (e.g., successful implementation, collective innovation use, or changes in organizational performance) remains unknown.

Given limited evidence of reliability and validity for most publicly available instruments, those interested in assessing organizational readiness for change should exercise caution in using these instruments. The extent to which they actually measure what they purportedly measure is uncertain. As others have noted, poor measurement practices are not uncommon (Conway & Huffcutt, 2003; Hinkin, 1995;

Schriesheim, Powers, Scandura, Gardiner, & Lankau, 1993; Vandenberg, 2006; Vandenberg & Lance, 2000). Our review suggest an obvious, but nonetheless important, recommendation: Health services researchers and others interested in organizational readiness for change need to give greater attention to measurement development, testing, and refinement. In addition, as we discuss below, the reliability and validity of organizational readiness for change measures could be enhanced by attending to several specific measurement issues.

To support the accumulation of scientific knowledge, an organizational readiness for change instrument's item content should be general enough to make the instrument useful for a broad range of intentional organizational changes. At the same time, given the discussion above, the instrument's instructions should focus the respondents' attention to a specific, impending organizational change. Since organizational readiness may vary depending on the organizational change in question, providing a specific change referent might make it easier for respondents to answer the questions. Moreover, providing respondents with a common reference point could reduce the noise that results when respondents choose different reference points. This could increase reliability. As noted earlier, giving the instrument a specific change referent would more clearly differentiate the readiness construct from other constructs like organizational culture and climate. This could enhance discriminant validity. Moreover, referencing a specific, impending change could make the instrument a proximal indicator of subsequent behavior. This could increase predictive validity. The challenge for making the instrument generally applicable, especially with regard to assessing the capabilities component of readiness, is to develop items that tap commonly occurring implementation tasks. Possibilities include identifying key change activities, assigning change activities to the right people, mobilizing needed resources, providing necessary training, monitoring and adjusting change activities as needed, encouraging and rewarding people to change, and routinizing the change.

Conceiving organizational readiness for change as an organization-level construct raises the following measurement question: Should the readiness instrument's items be self-referenced or group referenced? This question is pertinent for assessing collective capabilities. One approach is to aggregate individuals' appraisals of their personal capabilities to carry out the particular tasks that they will perform in the change effort. The other approach is to aggregate individuals' appraisals of their organization's capabilities operating as a whole. The latter approach is more holistic in that it encompasses the interactive and coordinative aspects of operating in groups and larger collectivities. However, individuals might find it more difficult to appraise collective (or conjoint) capabilities. Bandura (2000) suggests that the choice between these approaches should be guided by the level of task interdependence. Measurement based on individuals' assessments of personal capabilities is suitable when the collective outcome is the sum of individual performances. Measurement based on individuals' assessments of collective capabilities (or conjoint) is preferable when collective outcomes depend on adept teamwork.

As our review indicates, several currently available instruments include items that capture potential antecedents of organizational readiness for change (e.g., perceived need for change) or that derive from measures of other constructs (e.g., innovativeness). The resulting conflation of related yet distinct constructs perpetuates conceptual ambiguity and lowers construct validity. Optimally, an instrument for measuring organizational readiness for change would include only those items that capture the construct's theoretical content. (Nunnally [1978] refers to such items as *direct* measures.) This means that items tapping the motivational dimension of organizational readiness for change would measure organizational members' resolve, drive, and determination to engage in those courses of action necessary to implement the change. The instrument would not include items that capture the construct of change valence, such as perceived need for change, perceived urgency of change, perceived appropriateness of change, the anticipated benefits or costs of change. Similarly, items tapping the capability dimension of organizational readiness for change would measure organizational members' proficiency, adeptness, and aptitude to organize and execute those courses of action necessary to implement the change. That is, the items would focus on organizational members' perceptions of action capabilities rather than their assessments of outcome expectancy (e.g., perceived probability of realizing anticipated benefits).

Finally, assessing organizational readiness for change introduces several methodological challenges. Since this article focuses on conceptual and measurement issues, we discuss these challenges only briefly. One challenge concerns the timing of the assessment itself. If the readiness construct focuses on the implementation of intentional organizational change, then readiness assessment should take place after the decision to adopt the change has occurred, but before the implementation process has begun. Assessing organizational readiness for change within this window of time can be challenging in practice, especially in multiorganizational research. A related challenge concerns the identification of the appropriate target group for the assessment. Multiple organizational members should be surveyed to avoid single-source biases, elite bias, and champion bias. However, not all organizational members should be surveyed since not all organizational members are involved in or affected by the intentional organizational change. Identifying and surveying only those organizational members who are expected to implement the change (implementers) and those expected to use the new idea, technology, program, or practice (users) requires insider knowledge and organizational support. Finally, treating organizational readiness for change as an organization-level construct calls for multiorganizational research using longitudinal study designs, as well as careful attention to the statistical aggregation of individual-level responses to the organizational level of analysis. Care must be exercised to ensure proper alignment of the level of theory, the level of measurement, and the level of statistical analysis (Klein, Dansereau, & Hall, 1994).

Limitations

Our review covers only those articles published in peer-reviewed journals. Our review might be subject to a publication bias if the "gray literature" contains conceptualizations and measures of organizational readiness for change that do not also appear in peer-reviewed articles. A Google search indicates that many consulting firms report having instruments for assessing organizational readiness for change. We could not include these instruments because they are proprietary and, therefore, not available for independent use by researchers, managers, or change agents. In addition, we learned that researchers at the Veterans Administration had developed an instrument for assessing organizational readiness for evidence-based health care interventions. Our literature search identified no peer-reviewed published article describing the instrument or reporting its psychometric properties.

The peer-reviewed literature on organizational readiness for change is not easily searched because it is not well structured. There are, for example, no widely accepted keywords or search terms for accessing this literature. We sought to be as inclusive as possible in our review in terms of the bibliographic databases, search terms, and inclusion and exclusion criteria we used. Although we feel confident that our review reflects the most commonly used approaches to conceptually and operationally defining organizational readiness for change, we cannot rule out the possibility that we have missed some novel conceptualization or some new or infrequently used instrument.

Conclusion

The development of a reliable and valid instrument for assessing organizational readiness for change would both be useful for both research and practice. For health services researchers engaged in implementation research, a psychometrically robust instrument would accelerate the testing and refinement of theories about the determinants of effective implementation of intentional organizational change. For those researchers conducting efficacy or effectiveness trials of promising but complex health care interventions (e.g., advanced clinic access, crew resource management, and clinical decision support), a robust instrument could be used to increase implementation fidelity in intervention sites and thereby reduce Type III error (i.e., evaluating an intervention that has not been adequately implemented). Finally, for health care managers and other change agents, a robust instrument could be useful as a diagnostic tool for guiding an implementation effort. If assessment reveals low or uneven levels of readiness, the organization can attempt to raise readiness levels by building support, checking for gaps in infrastructure, earmarking additional resources, and engaging in other preparatory activities. In light of these potential benefits, we encourage health services researchers and others to develop a psychometrically robust instrument for measuring organizational readiness for change.

References

Abdinnour-Helm, S., Lengnick-Hall, M. L., & Lengnick-Hall, C. A. (2003). Pre-implementation attitudes and organizational readiness for implementing an Enterprise Resource Planning system. *European Journal of Operational Research, 146* (2), 258-273.

Adelman, H. S., & Taylor, L. (1997). Toward a scale-up model for replicating new approaches to schooling. *Journal of Educational and Psychological Consultation, 8*(2), 197-230.

Alexander, J. A., Weiner, B. J., Shortell, S. M., Baker, L. C., & Becker, M. P. (2006). The role of organizational infrastructure in implementation of hospitals' quality improvement. *Hospital Topics, 84*(1), 11-20.

Amatayakul, M. (2005). EHR? Assess readiness first. *Healthcare Financial Management, 59*(5), 112-113.

Argyris, C., & Schon, D. A. (1978). *Organizational learning*. Reading, MA: Addison-Wesley.

Armenakis, A. A., & Harris, S. G. (2002). Crafting a change message to create transformational readiness. *Journal of Organizational Change Management, 15*(2), 169-183.

Armenakis, A. A., Harris, S. G., & Mossholder, K. W. (1993). Creating readiness for organizational change. *Human Relations, 46*(6), 681-703.

Ash, J. S., Gorman, P. N., Seshadri, V., & Hersh, W. R. (2004). Computerized physician order entry in U.S. hospitals: Results of a 2002 survey. *Journal of the American Medical Informatics Association, 11*(2), 95-99.

Backer, T. E. (1995). Assessing and enhancing readiness for change: Implications for technology transfer. *NIDA Research Monograph, 155*, 21-41.

Backer, T. E. (1997). Managing the human side of change in VA's transformation. *Hospital and Health Services Administration, 42*(3), 433-459.

Bamberg, R., Akroyd, H. D., & Adams, D. T. (1992). Differences in innovation-related characteristics between single skilled and multi skilled health practitioner educational programs. *Journal of Allied Health, 21*(3), 197-205.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W.H. Freeman.

Bandura, A. (2000). Exercise of human agency through collective efficacy. *Current Directions in Psychological Science, 9*(3), 75-78.

Barger, S. E. (1998). Assessing school readiness for a practice arrangement using decision tree methodology. *Journal of Professional Nursing, 14*(6), 323-328.

Barrett, J. H., Haslam, R. A., Lee, K. G., & Ellis, M. J. (2005). Assessing attitudes and beliefs using the stage of change paradigm—Case study of health and safety appraisal within a manufacturing company. *International Journal of Industrial Ergonomics, 35*(10), 871-887.

Beckhard, R., & Harris, R. T. (1977). *Organizational transitions: Managing complex change*. Reading, MA: Addison-Wesley.

Berinato, S. (2003). All systems down [Electronic version]. *CIO Magazine*. Retrieved March 24, 2004, from http://www.cio.com/archive/021503/systems.html

Bloom, J. R., Devers, K., Wallace, N. T., & Wilson, N. (2000). Implementing capitation of Medicaid mental health services in Colorado: Is "readiness" a necessary condition? *Journal of Behavioral Health Services and Research 27*(4), 437-445.

Blumenthal, D., & Kilo, C. M. (1998). A report card on continuous quality improvement. *Milbank Quarterly, 76*(4), 511, 625-648.

Bowditch, J. L., & Buono, A. F. (2001). *A primer on organizational behavior* (5th ed.). New York: John Wiley.

Brink, S. G., Basenengquist, K. M., Oharatompkins, N. M., Parcel, G. S., Gottlieb, N. H., & Lovato, C. Y. (1995). Diffusion of an effective tobacco prevention program. 1. Evaluation of the dissemination phase. *Health Education Research, 10*(3), 283-295.

By, R. T. (2007). Ready or not . . . . *Journal of Change Management, 7*(1), 3-11.

Campbell, D. (2006). Embracing change: Examination of a "capabilities and benevolence" beliefs model in a sample of military cadets. *Military Psychology, 18*(2), 131-148.

Carkhuff, M., & Crago, M. (2004). Advanced organizers: A framework to implement learning readiness in support of broad-scale change. *Journal of Continuing Education in Nursing, 35*(5), 216-221.

Carney, M. (2000). The development of a model to manage change: Reflection on a critical incident in a focus group setting. An innovative approach. *Journal of Nursing Management, 8*(5), 265-272.

Carney, M. (2002). The management of change: Using a model to evaluate the change process. *Seminars for Nurse Managers, 10*(3), 206-211.

Cassidy, J. (1994). System analyzes readiness for integrated delivery. *Health Progress, 75*(3), 18-20, 22.

Chan, S. C. H., & Ngai, E. W. T. (2007). A qualitative study of information technology adoption: How ten organizations adopted Web-based training. *Information Systems Journal, 17*(3), 289-315.

Chatterji, M. (2002). Measuring leader perceptions of school readiness for reforms: Use of an iterative model combining classical and Rasch methods. *Journal of Applied Measurement, 3*(4), 455-485.

Chonko, L. B., Jones, E., Roberts, J. A., & Dubinsky, A. J. (2002). The role of environmental turbulence, readiness for change, and salesperson learning in the success of sales for change. *Journal of Personal Selling and Sales Management, 22*(4), 227-245.

Chwelos, P., Benbasat, I., & Dexter, A. S. (2001). Research report: Empirical test of an EDI adoption model. *Information Systems Research, 12*(3), 304-321.

Clark, C. E., Cavanaugh, N. C., Brown, C. V., & Sambamurthy, V. (1997). Building change-readiness capabilities in the IS organization: Insights from the Bell Atlantic experience. *MIS Quarterly, 21*(4), 425-455.

Cochran, J. K., Bromley, M. L., & Swando, M. J. (2002). Sheriff's deputies' receptivity to organizational change. *Policing—An International Journal of Police Strategies and Management, 25*(3), 507-529.

Cochrane, J. D. (1997). Assessing readiness for PSOs? *Integrated Healthcare Report*, 4-10.

Coetsee, L. (1999). From resistance to commitment. *Public Administration Quarterly, 23*(2), 204-222.

Cole, M. S., Harris, S. G., & Bernerth, J. B. (2006). Exploring the implications of vision, appropriateness, and execution of organizational change. *Leadership and Organization Development Journal, 27*(5), 352-367.

Collins, C., Phields, M. E., & Duncan, T. (2007, January-February). An agency capacity model to facilitate implementation of evidence-based behavioral interventions by community-based organizations. *Journal of Public Health Management and Practice, 13*(1), S16-S23.

Conway, J. M., & Huffcutt, A. I. (2003). A review and evaluation of exploratory factor analysis practices in organizational research. *Organizational Research Methods, 6*(2), 147-168.

Cook, S., & Scott, M. (2005). Framework for the implementation of integrated care pathways: Part 2. *Journal of Integrated Care Pathways, 9*(1), 39-45.

Courtney, K. O., Joe, G. W., Rowan-Szal, G. A., & Simpson, D. D. (2007). Using organizational assessment as a tool for program change. *Journal of Substance Abuse Treatment, 33*(2), 131-137.

Cunningham, C. E., Woodward, C. A., Shannon, H. S., MacIntosh, J., Lendrum, B., Rosenbloom, D., et al. (2002). Readiness for organizational change: A longitudinal study of workplace, psychological and behavioural correlates. *Journal of Occupational and Organizational Psychology, 75*(4), 377-392.

Cunningham, G. B. (2006). The relationships among commitment to change, coping with change, and turnover intentions. *European Journal of Work and Organizational Psychology, 15*(1), 29-45.

Dahlan, N., Ramayah, T., & Mei, L. L. (2002). Readiness to adopt data mining technologies: An exploratory study of telecommunication employees in Malaysia. *Practical Aspects of Knowledge Management, 2569*, 75-86.

Demiris, G., Courtney, K. L., & Meyer, W. (2007). Current status and perceived needs of information technology in Critical Access Hospitals: A survey study. *Informatics in Primary Care, 15*(1), 45-51.

Demiris, G., Patrick, T., & Khatri, N. (2003). Assessing home care agencies' readiness for telehealth. *Annual Symposium Proceedings AMIA Symposium*, 825.

Devereaux, M. W., Drynan, A. K., Lowry, S., MacLennan, D., Figdor, M., Fancott, C., et al. (2006). Evaluating organizational readiness for change: A preliminary mixed-model assessment of an interprofessional rehabilitation hospital. *Healthcare Quarterly, 9*(4), 66-74.

Eby, L. T., Adams, D. M., Russell, J. E. A., & Gaby, S. H. (2000). Perceptions of organizational readiness for change: Factors related to employees' reactions to the implementation of team-based selling. *Human Relations, 53*(3), 419-442.

Fedor, D. B., Caldwell, S., & Herold, D. M. (2006). The effects of organizational changes on employee commitment: A multilevel investigation. *Personnel Psychology, 59*(1), 1-29.

Fuller, B. E., Rieckmann, T., Nunes, E. V., Miller, M., Arfken, C., Edmundson, E., et al. (2007). Organizational readiness for change and opinions toward treatment innovations. *Journal of Substance Abuse Treatment, 33*(2), 183-192.

Gagne, M., Koestner, R., & Zuckerman, M. (2000). Facilitating acceptance of organizational change: The importance of self-determination. *Journal of Applied Social Psychology, 30*(9), 1843-1852.

Greener, J. M., Joe, G. W., Simpson, D. D., Rowan-Szal, G. A., & Lehman, W. E. (2007). Influence of organizational functioning on client engagement in treatment. *Journal of Substance Abuse Treatment, 33*(2), 139-147.

Guha, S., & Grover, V. (1997). Business process change and organizational performance: Exploring an antecedent model. *Journal of Management Information Systems, 14*(1), 119-154.

Hailey, V. H., & Balogun, J. (2002). Devising context sensitive approaches to change: The example of glaxo wellcome. *Long Range Planning, 35*(2), 153-178.

Hanpachern, C., Morgan, G. A., & Griego, O. V. (1998). An extension of the theory of margin: A framework for assessing readiness for change. *Human Resource Development Quarterly, 9*(4), 339-350.

Hardison, C. (1998). Readiness, action, and resolve for change: Do health care leaders have what it takes? *Quality Management in Health Care, 6*(2), 44-51.

Hebert, M. A., & Korabek, B. (2004). Stakeholder readiness for telehomecare: Implications for implementation. *Telemedicine Journal and E-Health, 10*(1), 85-92.

Herscovitch, L., & Meyer, J. P. (2002). Commitment to organizational change: Extension of a three-component model. *Journal of Applied Psychology, 87*(3), 474-487.

Hinkin, T. R. (1995). A review of scale development practices in the study of organizations. *Journal of Management, 21*(5), 967-988.

Hirschhorn, L. (1988). *The workplace within: Psychodynamics of organizational life*. Cambridge, MA: MIT Press.

Holt, D. T., Armenakis, A. A., Feild, H. S., & Harris, S. G. (2007). Readiness for organizational change: The systematic development of a scale. *Journal of Applied Behavioral Science, 43*(2), 232-255.

Holt, D. T., Armenakis, A. A., Harris, S. G., & Feild, H. S. (2006). Toward a comprehensive definition of readiness for change: A review of research and instrumentation. In R. W. Woodman & W. A. Pasmore (Eds.), *Research in organizational change and development* (pp. 295-346). Greenwich, CT: JAI.

Horwath, J., & Morrison, T. (2000). Identifying and implementing pathways for organizational change—Using the framework for the assessment of children in need and their families as a case example. *Child and Family Social Work, 5*(3), 245-254.

Hostgaard, A. M., & Nohr, C. (2004). Dealing with organizational change when implementing EHR systems. *Medinfo, 11*(Pt 1), 631-634.

Ingersoll, G., Kirsch, J., Merk, S., & Lightfoot, J. (2000). Relationship of organizational culture and readiness for change to employee commitment to the organization. *Journal of Nursing Administration, 30*(1), 11-20.

Institute of Medicine. (1999). *Ensuring quality cancer care*. Washington, DC: National Academy Press.

Institute of Medicine. (2000). *To err is human*. Washington, DC: National Academy Press.

Institute of Medicine. (2001). *Crossing the quality chasm*. Washington, DC: National Academy Press.

ISI Web of Science^{SM}. Retrieved April 7, 2008, from http://apps.isiknowledge.com/InboundService.do? Func=Frame&product=WOS&action=retrieve&SrcApp=EndNote&UT=000180993200008&SID=1

E1K8J1OibEmBLEI5Pi&Init=Yes&SrcAuth=ResearchSoft&mode=FullRecord&customersID=Rese
archSoft&DestFail=http%3A%2F%2Fwww.isinet.com%2Fisi%2Fproducts%2Fesource%2Fservice
.html

Jansen, K. J. (2000). The emerging dynamics of change: Resistance, readiness, and momentum. *Human Resource Planning, 23*(2), 53-55.

Jansen, K. J. (2004). From persistence to pursuit: A longitudinal examination of momentum during the early stages of strategic change. *Organization Science, 15*(3), 276-294.

Jennett, P., Jackson, A., Ho, K., Healy, T., Kazanjian, A., Woollard, R., et al. (2005). The essence of tele-health readiness in rural communities: An organizational perspective. *Telemedicine Journal and E-Health, 11*(2), 137-145.

Jennett, P., Yeo, M., Pauls, M., & Graham, J. (2003). Organizational readiness for telemedicine: Implications for success and failure. *Journal of Telemedicine and Telecare, 9*, S27-S30.

Jones, R. A., Jimmieson, N. L., & Griffiths, A. (2005). The impact of organizational culture and reshaping capabilities on change implementation success: The mediating role of readiness for change. *Journal of Management Studies, 42*(2), 361-386.

Jones, S., & Moss, J. (2006). Computerized provider order entry: Strategies for successful implementation. *Journal of Nursing Administration, 36*(3), 136-139.

Joshi, K., & Lauer, T. W. (1999). Transition and change during the implementation of a computer-based manufacturing process planning system: An analysis using the equity implementation model. *IEEE Transactions on Engineering Management, 46*(4), 407-416.

Karsh, B. T. (2004). Beyond usability: Designing effective technology implementation systems to promote patient safety. *Quality and Safety in Health Care, 13*(5), 388-394.

Kerber, K., & Buono, A. F. (2005). Rethinking organizational change: Reframing the challenge of change management. *Organization Development Journal, 23*(3), 23-38.

Kimberly, J. R., & Quinn, R. E. (1984). *Managing organizational transitions*. Homewood, IL: R.D. Irwin.

Kirch, D. G., Grigsby, R. K., Zolko, W. W., Moskowitz, J., Hefner, D. S., Souba, W. W., et al. (2005). Reinventing the academic health center. *Academic Medicine, 80*(11), 980-989.

Klein, K. J., Dansereau, F., & Hall, R. J. (1994). Levels issues in theory development, data collection, and analysis. *Academy of Management Review, 19*(2), 195-229.

Kotter, J. P. (1996). *Leading change*. Boston: Harvard Business Press.

Kuhar, P. A., Lewicki, L. J., Modic, M. B., Schaab, D., Rump, C., & Bixler, S. (2004). The Cleveland Clinic's magnet experience. *Orthopaedic Nursing, 23*(6), 385-390.

Langdon, W., & Lawson, C. (1997). PACS readiness assessment. Road map to digital imaging. *Healthcare Informatics, 14*(11), 53-54, 56.

Lee, M. K. O., & Cheung, C. M. K. (2004). Internet retailing adoption by small-to-medium sized enterprises (SMEs): A multiple-case study. *Information Systems Frontiers, 6*(4), 385-397.

Lehman, W. E. K., Greener, J. M., & Simpson, D. D. (2002). Assessing organizational readiness for change. *Journal of Substance Abuse Treatment, 22*(4), 197-209.

Levesque, D. A., Prochaska, J. M., & Prochaska, J. O. (1999). Stages of change and integrated service delivery. *Consulting Psychology Journal: Practice and Research, 51*(4), 226-241.

Levesque, D. A., Prochaska, J. M., Prochaska, J. O., Dewart, S. R., Hamby, L. S., & Weeks, W. B. (2001). Organizational stages and processes of change for continuous quality improvement in health care. *Consulting Psychology Journal: Practice and Research, 53*(3), 139-153.

Lewin, K. (1951). *Field theory in social science: Selected theoretical papers*. New York: Harper.

Luo, J. S., Hilty, D. M., Worley, L. L., & Yager, J. (2006). Considerations in change management related to technology. *Academic Psychiatry, 30*(6), 465-469.

Madsen, S. R., Miller, D., & John, C. R. (2005). Readiness for organizational change: Do organizational commitment and social relationships in the workplace make a difference? *Human Resource Development Quarterly, 16*(2), 213-233.

Maurer, R. (2001). Build a foundation for change. *Journal for Quality and Participation, 24*(3), 38-39.

McCluskey, A., & Cusick, A. (2002). Strategies for introducing evidence-based practice and changing clinician behaviour: A manager's toolbox. *Australian Occupational Therapy Journal, 49*, 63-70.

Medley, T. W., & Nickel, J. T. (1999). Predictors of home care readiness for managed care: A multivariate analysis. *Home Health Care Services Quarterly, 18*(2), 27-42.

Meyer, J. P., Srinivas, E. S., Lal, J. B., & Topolnytsky, L. (2007). Employee commitment and support for an organizational change: Test of the three-component model in two cultures. *Journal of Occupational and Organizational Psychology, 80*(2), 185-211.

Miller, S., Wilson, D., & Hickson, D. (2004). Beyond planning: Strategies for successfully implementing strategic decisions. *Long Range Planning, 37*(3), 201-218.

Molla, A., & Licker, P. S. (2005a). eCommerce adoption in developing countries: A model and instrument. *Information and Management, 42*, 877-899.

Molla, A., & Licker, P. S. (2005b). Perceived e-readiness factors in e-commerce adoption: An empirical investigation in a developing country. *International Journal of Electronic Commerce, 10*(1), 83-110.

Motwani, J., Mirchandani, D., Madan, M., & Gunasekaran, A. (2002). Successful implementation of ERP projects: Evidence from two case studies. *International Journal of Production Economics, 75*(1-2), 83-96.

Motwani, J., Subramanian, R., & Gopalakrishna, P. (2005). Critical factors for successful ERP implementation: Exploratory findings from four case studies. *Computers in Industry, 56*(6), 529-544.

Moulding, N., Silagy, C., & Weller, D. (1999). A framework for effective management of change in clinical practice: Dissemination and implementation of clinical practice guidelines. *Quality in Health Care, 8*(3), 177-183.

Narine, L., & Persaud, D. (2003). Gaining and maintaining commitment to large-scale change in healthcare organizations. *Health Services Management Research, 16*(3), 179-187.

Neiva, E. R., Ros, M., & da Paz, M. d. G. a. T. (2005). Attitudes towards organizational change: Validation of a scale. *Psychology in Spain, 9*, 81-90.

Nelson, J. C., Raskind-Hood, C., Galvin, V. G., Essien, J. D. K., & Levine, L. M. (1999). Positioning for partnerships—Assessing public health agency readiness. *American Journal of Preventive Medicine, 16*(3), 103-117.

Nunnally, J. C. (1978). *Psychometric theory* (2nd ed.). New York: McGraw-Hill.

O'Connor, E. J., & Fiol, C. M. (2006). Creating readiness and involvement. *Physician Executive, 32*(1), 72-74.

Oliver, D. R. P., & Demiris, G. (2004). An assessment of the readiness of hospice organizations to accept technological innovation. *Journal of Telemedicine and Telecare, 10*(3), 170-174.

Paddington, S., Gilmartin, M., & Detmer, D. (2002). Preparing to implement the NSF for diabetes. *Diabetes Primary Care, 4*(1), 13-18.

Peach, M., Jimmieson, N. L., & White, K. M. (2005). Beliefs underlying employee readiness to support a building relocation: A theory of planned behavior perspective. *Organization Development Journal, 23*(3), 9-22.

Pearson, M. L., Wu, S., Schaefer, J., Bonomi, A. E., Shortell, S. M., Mendel, P. J., et al. (2005). Assessing the implementation of the chronic care model in quality improvement collaboratives. *Health Services Research, 40*(4), 978-996.

Petry, J. M., & Chandler, M. M. (1995). Assessing your CHIN (community health information network) readiness. *Healthcare Information Management, 9*(2), 15-20.

Prochaska, J. M., Mauriello, L. M., Sherman, K. J., Harlow, L., Silver, B., & Trubatch, J. (2006). Assessing readiness for advancing women scientists using the transtheoretical model. *Sex Roles, 54*(11-12), 869-880.

Prochaska, J. M., Prochaska, J. O., & Levesque, D. A. (2001). A transtheoretical approach to changing organizations. *Administration and Policy in Mental Health, 28*(4), 247-261.

Prochaska, J. O., & Diclemente, C. C. (1983). Stages and processes of self-change of smoking—Toward an integrative model of change. *Journal of Consulting and Clinical Psychology, 51*(3), 390-395.

Rafferty, A. E., & Simons, R. H. (2006). An examination of the antecedents of readiness for fine-tuning and corporate transformation changes. *Journal of Business and Psychology, 20*(3), 325-350.

Rampazzo, L., De Angeli, M., Serpelloni, G., Simpson, D. D., & Flynn, P. M. (2006). Italian survey of organizational functioning and readiness for change: A cross-cultural transfer of treatment assessment strategies. *European Addiction Research, 12*(4), 176-181.

Rangarajan, D., Chonko, L. B., Jones, E., & Roberts, J. A. (2004). Organizational variables, sales force perceptions of readiness for change, learning, and performance among boundary-spanning teams: A conceptual framework and propositions for research. *Industrial Marketing Management, 33*(4), 289-305.

Reuben, D., Yee, M., Cole, K., Waite, M., Nichols, L., Benjamin, B., et al. (2003). Organizational issues in establishing geriatrics interdisciplinary team training. *Gerontology and Geriatrics Education, 24*(2), 13-34.

Rogers, E. M. (2003). *The diffusion of innovations* (5th ed.). New York: Free Press.

Rowden, R. W. (2001). The learning organization and strategic change. *SAM Advanced Management Journal (07497075), 66*(3), 11.

Saldana, L., Chapman, J. E., Henggeler, S. W., & Rowland, M. D. (2007). The Organizational Readiness for Change scale in adolescent programs: Criterion validity. *Journal of Substance Abuse Treatment, 33*(2), 159-169.

Schein, E. H., & Bennis, W. G. (1965). *Personal and organizational change through group methods: The laboratory approach*. New York: Wiley.

Schriesheim, C. A., Powers, K. J., Scandura, T. A., Gardiner, C. C., & Lankau, M. J. (1993). Improving construct measurement in management research—Comments and a quantitative approach for assessing the theoretical content adequacy of paper-and-pencil survey-type instruments. *Journal of Management, 19*(2), 385-417.

Scott, C. D., Jaffe, D. T., & Scott, C. D. (1995). *Managing change at work: Leading people through organizational transitions* (Rev. ed.). Menlo Park, CA: Crisp.

Sen, A., Sinha, A. P., & Ramamurthy, K. (2006). Data warehousing process maturity: An exploratory study of factors influencing user perceptions. *IEEE Transactions on Engineering Management, 53*(3), 440-455.

Senge, P. M. (1990). *The fifth discipline: The art and practice of the learning organization*. New York: Currency Doubleday.

Shortell, S. M., Bennett, C. L., & Byck, G. R. (1998). Assessing the impact of continuous quality improvement on clinical practice: What it will take to accelerate progress. *Milbank Quarterly, 76*(4), 510, 593-624.

Silverstein, S. (2006). Sociotechnologic issues in clinical computing: Common examples of healthcare IT failure [Electronic version]. Retrieved April 7, 2008, from www.ecds.md/download.php?694ad6195a84e5617b2b34ccdcd749eb

Simon, N. J. (1996). Organizational development: Meeting the challenge of change: The issue of readiness. *Competitive Intelligence Review, 7*(2), 86-88.

Simpson, D. D. (2002). A conceptual framework for transferring research to practice. *Journal of Substance Abuse Treatment, 22*(4), 171-182.

Simpson, D. D., & Dansereau, D. F. (2007). Assessing organizational functioning as a step toward innovation. *Science and Practice Perspectives, 3*(2), 20-28.

Simpson, D. D., & Flynn, P. M. (2007). Moving innovations into treatment: A stage-based approach to program change. *Journal of Substance Abuse Treatment, 33*(2), 111-120.

Simpson, D. D., Joe, G. W., & Rowan-Szal, G. A. (2007). Linking the elements of change: Program and client responses to innovation. *Journal of Substance Abuse Treatment, 33*(2), 201-209.

Smith, M. E. (2002). Success rates for different types of organizational change. *Performance Improvement, 41*(1), 26-33.

Snyder, R. A., & Fields, W. L. (2006). Measuring hospital readiness for information technology (IT) innovation: A multisite study of the Organizational Information Technology Innovation Readiness Scale. *Journal of Nursing Measurement, 14*(1), 45-55.

Snyder-Halpern, R. (1998). Measuring organizational readiness for nursing research programs. *Western Journal of Nursing Research, 20*(2), 223-237.

Snyder-Halpern, R. (2001). Indicators of organizational readiness for clinical information technology/ systems innovation: A Delphi study. *Int J Med Inform, 63*(3), 179-204.

Snyder-Halpern, R. (2002). Development and pilot testing of an Organizational Information Technology/Systems Innovation Readiness Scale (OITIRS). *Proceedings/AMIA Symposium*, 702-706.

Stablein, D., Welebob, E., Johnson, E., Metzger, J., Burgess, R., & Classen, D. C. (2003). Understanding hospital readiness for computerized physician order entry. *Joint Commission Journal on Quality and Safety, 29*(7), 336-344.

Stockdale, S. E., Mendel, P., Jones, L., Arroyo, W., & Gilmore, J. (2006). Assessing organizational readiness and change in community intervention research: Framework for participatory evaluation. *Ethnicity and Disease, 16*(1 Suppl 1), S136-S145.

Strabel, P. (1996). Why do employees resist change? *Harvard Business Review, 74*(3), 86-92.

Sweeney, Y. T., & Whitaker, C. (1994). Successful change: Renaissance without revolution. *Seminars for Nurse Managers, 2*(4), 196-202.

Tan, J., Tyler, K., & Manica, A. (2007). Business-to-business adoption of eCommerce in China. *Information & Management, 44*(3), 332-351.

Tannenbaum, M. (2006). Hospital vexed by new computer system. *Mountain View Voice, 14*(29), 5, 10.

Travers, D. A., & Downs, S. M. (2000). Comparing user acceptance of a computer system in two pediatric offices: A qualitative study. *Proceedings/AMIA Symposium*, 853-857.

Trochim, W. M. K. (2001). *The research methods knowledge base*. Cincinnati, OH: Atomic Dog.

Van de Ven, A., & Polley, D. (1999). *The innovation journey*. New York: Oxford University Press.

Van de Ven, A., & Poole, M. (1995). Explaining development and change in organizations. *Academy of Management Review, 20*(3), 510-540.

Vandenberg, R. J. (2006). Introduction: Statistical and methodological myths and urban legends: Where, pray tell, did they get this idea? *Organizational Research Methods, 9*(2), 194-201.

Vandenberg, R. J., & Lance, C. E. (2000). A review and synthesis of the measurement invariance literature: Suggestions, practices, and recommendations for organizational research. *Organizational Research Methods, 3*(1), 4-70.

Wanberg, C. R., & Banas, J. T. (2000). Predictors and outcomes of openness to changes in a reorganizing workplace. *Journal of Applied Psychology, 85*(1), 132-142.

Weeks, W. A., Roberts, J., Chonko, L. B., & Jones, E. (2004). Organizational readiness for change, individual fear of change, and sales manager performance: An empirical investigation. *Journal of Personal Selling and Sales Management, 24*(1), 7-17.

West, T. (1998). Comparing change readiness, quality improvement, and cost management among Veterans Administration, for-profit, and nonprofit hospitals. *Journal of Health Care Finance, 25*(1), 46-58.

Zaltman, G., Duncan, R., & Holbek, J. (1973). *Innovations and organizations*. New York: Wiley.

Zender, A. (2005). Ready for the EHR? A new survey measures EHR implementation and individual readiness. *Journal of AHIMA, 76*(3), 54-55.

Zmud, R. W., & Apple, L. E. (1992). Measuring technology incorporation/infusion. *Journal of Product Innovation Management, 9*, 148-155.