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Searching for Outcomes of Leadership: A 25-Year Review

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A significant question in management research is, "What criteria should be used to evaluate the effects of leadership?" In this review, the authors systematically summarize various ways the field of leadership has (and has not) sought to answer questions about whether, when, and how leadership affects outcomes. A total of 1,161 empirical studies over 25 years, spanning micro- and macro-oriented perspectives, were content coded to answer six basic questions that set the scope of leadership science. The authors first descriptively summarize these criterion issues in the empirical literature and draw comparisons across areas (e.g., To what extent have leader-member exchange, transformational, and strategic leadership research differentially examined various outcomes?). Second, the authors explore the implications of criterion selection issues for the further advancement of leadership theory and offer concrete recommendations for future leadership research.

Keywords: *leadership; outcomes; leader-member exchange; LMX; transformational; review; upper echelons; criterion issues*

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Jack Welch is the greatest CEO GE has ever had.
 Jack Welch is an asshole.

These two opposing propositions, which were vigorously debated by junior managers at a leadership development program within General Electric during Jack Welch's tenure (Tichy & Sherman, 1993), portray a fundamental question of this article. Both statements may be true (or just one, or perhaps neither)—depending on the choices one makes about how to evaluate leadership. Similarly, a group of subordinates may all be satisfied with an appointed leader and view him or her as effective, yet the group may be less productive than other groups in the organization.

Criterion choices have decisive implications for interpreting leadership. Different perspectives, types of data, time frames, and levels of criteria may result in different conclusions about a given leader or group of leaders. Whereas the criterion problem is well documented in job performance research (e.g., Austin & Villanova, 1992), it is largely ignored in the leadership literature (Day, 2001). Primary research in leadership, as with much organizational research, has paid far more attention to the development of theoretical explanations of what constitutes leadership than to defining the types of criteria needed to fully and appropriately evaluate leadership in relation to theoretically relevant criteria (Day, 2001; Kaiser, Hogan, & Craig, 2008; Zaccaro & Klimoski, 2001). The time has come for a systematic examination of criterion issues in leadership research.

The purpose of this article is to systematically investigate the choices of criteria used in highly respected academic research outlets over the past quarter century in order to take stock of what we know, and can maximally know, about leadership outcomes as well as to point a direction forward in helping us to more fully understand the phenomena of leadership and leadership theory. If, as a field, we are investigating certain criteria while ignoring other potentially relevant types of outcomes (and particularly if these outcomes are part of our leadership theories), we will be able to neither fully understand the effects (and noneffects) of leadership nor advance leadership concepts and theories.

Our purpose is not to examine whether and how leaders matter (see Avolio, Reichard, Hannah, Walumbwa, & Chan, 2009, and Finkelstein, Hambrick, & Cannella, 2009, for two treatments of this topic) but rather to systematically assess *the criteria* that we use in determining whether and how leadership matters. And unlike valuable reviews that have focused significantly on conceptual issues in predicting and understanding the leadership side of the equation (e.g., Avolio, Walumbwa, & Weber, 2009; House & Aditya, 1997), the current review examines the manner in which leadership is linked to the outcome side of the equation.

The current review makes two basic assumptions.

Assumption 1: Taking stock of the manner in which leadership outcomes are conceptually and operationally considered is a critical next step in the progression of leadership science. Theoretical understanding and evidence-based prescriptions rest on empirical studies that make choices about types, levels, and metrics of criteria to examine. These choices set the ceiling on the capacity to fully understand the effects of leadership, both theoretical and practical.

Assumption 2: There is a lot of research on leadership that is not always labeled as such. Leadership is a driving force in the organization of individuals, teams, and entire organizations (Kaiser et al., 2008); leadership enables individuals to be successful, small teams to synergize, and entire organizations to accomplish goals through the differentiated yet synchronized efforts of these

individuals and teams (DeChurch, Hiller, Murase, & Doty, in press). In order to fully examine the nature of leadership criteria that apply to the range of organizational units of analysis, we set the scope of our review on all findings that bear on leader-outcome relationships, regardless of the subfield, or even whether the primary study used the term *leadership* in the article. In particular, we sought to understand leadership criteria related to top managers from the strategic management literature and realized that much of this research does not explicitly include the word *leadership* and, often, is not included in the body of literature informing mainstream leadership research in management.

Mapping the Criterion Space

In order to understand the criterion space, we take a descriptive, systematic approach and organize our review around six criterion-related questions. These questions, detailed in Table 1, are adapted from discussions of organizational effectiveness criteria (Cameron & Whetten, 1983) and criteria for assessing (senior-level) leaders (Day, 2001) and include the following:

1. From whose perspective is leadership judged?
2. Which type of leadership measure is used (method to collect data)?
3. On which criterion domains are leadership effects assessed (effectiveness, behavior, motivation, or cognitive)?
4. At what time frame are leadership criteria being examined?
5. At what level of analysis are leadership criteria being examined?
6. What is the organizational level at which leadership effects on criteria are being examined?

The first two questions concern the perspective from which leadership is judged and the source/method used to collect data. Although these questions directly concern the predictor (i.e., leadership) side of the equation, they are important operational aspects of leadership research that set the magnification settings for examining the more direct criterion-specific issues. It would not be meaningful to consider criteria in a “predictor vacuum.”

A second reason for beginning the review with two predictor issues that set important boundaries on criterion effects is that different approaches to studying leadership outcomes use different methods and sources for understanding leadership, and a systematic characterization of these may shed additional light on the inferences we can make around leadership effects. An integrated understanding of criterion-relevant practices within the micro- and macro-oriented management literatures, in particular, may foster a more integrated science of leadership. Thus, we seek to accomplish this by organizing criteria within common overarching dimensions meaningful to both micro and macro aspects of leadership. Whose perspectives of leadership and the method for studying leadership are two overarching dimensions that are so paramount to criterion issues that we include them as the first two critical questions.

Question 1: From Whose Perspective Is Leadership Judged?

Leadership may be assessed from a variety of perspectives including peers, self, subordinates, superiors, or subject matter experts. But these different sources (i.e., raters) are generally subject to their own idiosyncrasies and, when over-relied upon in assessing leadership, may not help us understand the whole picture. Different raters often have different opportunities

Table 1
Organizing Framework: Criterion Issues in Leadership Research

Issues in Evaluating Leadership Criteria	Indicators Examined in the Current Review	Indicator Categories in the Current Review
Question 1: From whose perspective is leadership judged (and linked to leadership criteria)?	Source of leadership measure	Self-report, superior, subordinate, peer, SME, manipulation
Question 2: Which type of leadership measure is used (method to collect data; which underpins relationship between leadership and criteria)?	Types of data	Survey, interview, observation, manipulation, database/company records
Question 3: On which criterion domains are leadership effects assessed?	Outcome categories	Effectiveness, attitude, behavior, cognitive
Question 4: At what time frame are leadership criteria being examined?	Temporal separation	Cross-sectional, short-term longitudinal, longitudinal
Question 5: At what level of analysis are leadership criteria being examined?	Level of outcome variable	Individual, small group, unit, organization
Question 6: What is the organizational level at which leadership effects on criteria are being examined?	Organizational level of leader	Top management, midlevel management, lower level, mixed

Note: SME = subject matter expert.

to observe, may have different goals, and may be evaluating or weighting different factors in their assessment (Murphy & Cleveland, 1995), thus consideration of multiple perspectives can be beneficial in triangulating and differentiating findings (Shadish, Cook, & Campbell, 2002). If most of what we know about leadership is from one point of view, or if there is no balance in perspective, we run the serious risk of failing to fully understand leadership phenomena and their link criteria.

We know that perspective matters in evaluating leader-member exchange (LMX) quality, for example. In an original and then an updated meta-analysis, Gerstner and Day (1997) and then Sin, Nahrgang, and Morgeson (2009) found a population correlation between leader and member evaluations of LMX of .37. Others (e.g., Atwater & Yammarino, 1992; Bass & Yammarino, 1991) have found that self and other agreement on transformational leadership ratings can vary. Our goal in this review is not to explore the reasons for different perspectives or the extent of differences but rather to assess the degree to which various perspectives have been assessed in the literature as a whole. We describe the proportion of studies to utilize leadership as reported by the leader (self-report), superior, subordinate, peers, expert observers, or manipulation (in the case of experiments of quasi-experiments) with the goal of helping to identify opportunities for future research and theory building and testing.

Question 2: Which Type of Leadership Measure Is Used?

The second question regarding assessment of leadership has to do with the method/source used to collect data. Even though different data collection methods are available (e.g., surveys, interviews, databases/company records, manipulation, and observation), surveys are generally the preferred methodological data collection method in leadership and management research

(Friedrich, Byrne, & Mumford, 2009; Greenberg, 2007; Scandura & Williams, 2000). Because each methodology has strengths and weaknesses, too much reliance on one particular methodology limits researchers to a particular type of information and also weakens the field's capability to infer causal relationships between leadership and its outcomes. Survey methods are not exempt from this limitation, and concern has been recently noted by several journal editors (Colquitt, 2008; Friedrich et al., 2009; Greenberg, 2007). Some types of methods are more likely to be useful for certain types of data, such as databases for obtaining records of company performance and surveys for affective (emotion-based) outcomes of leadership. Still, triangulation from different data sources enriches our understanding of leadership phenomena. Therefore, this study systematically describes the extent to which various types of data sources have been used in leadership research.

Question 3: On Which Criterion Domains Are Leadership Effects Assessed?

The impact of leadership is sometimes reflected in various bottom-line performance measures, but leaders and leadership also influence important criteria such as commitment and satisfaction, perceptions, motivation, citizenship behaviors, and behavioral processes. Are we ignoring some criteria that may be helpful in understanding leadership and the effects of leaders? Have we made any improvements over the past 25 years? The third research question centrally addresses the breadth and balance of leadership criteria that have been examined: These include a categorization of leadership impact on the broad outcome domains of effectiveness, attitudes, behaviors, and cognition. Table 2 summarizes these four common outcome domains and the 10 individual criteria subsumed within them, along with specific examples.

Ultimately, the effects of leaders and leadership are presumed to result in effectiveness and performance outcomes—which we consider under the first criterion domain of effectiveness. More specifically, tangible outcomes (e.g., profitability, bankruptcy, objective performance on a test), general evaluations of leadership effectiveness, and ratings of performance (both formal and informal ratings) are included within this broad criterion category.

The second domain of leadership criteria is what we broadly refer to as attitude: This domain includes attitude, motivation, and emotion. In many different conceptualizations of the phenomenon, leadership is significantly about motivating people and gaining their commitment, and effective leaders change the way people feel (Lord & Brown, 2004; Yukl, 2010)—all examples of attitudinal criteria. Transformational leadership, LMX, and behavioral leadership theories all suggest that leadership affects the way individuals view themselves and relate to the organization, the leader, and others within the organization (Bass & Avolio, 1994; Graen & Uhl-Bien, 1995; House & Aditya, 1997) on dimensions such as satisfaction, commitment, cynicism, self-esteem, and identification.

Motivation, which has attitudinal, behavioral, and cognitive components, is often thought of as a drive or desire toward a future end-state. Although there are multiple competing theories in the field of motivation, each of which describes motivation processes differently (Locke & Latham, 2004), it is categorized in this review under the broad heading of attitude, with acknowledgment that this is a difficult and imperfect categorization. Specific outcomes that were categorized under the motivation heading in this review include efficacy, general motivation, and empowerment.

Table 2
Samples of Leadership Outcomes

Criterion Domain	Criterion Category	Criteria Example	Article Example
Effectiveness	Tangible	Bankruptcy	Daily & Dalton, 1995
		Sale growth	McGee, Dowling, & Megginson, 1995
		Market valuation at IPO	Certo, Daily, Cannella, & Dalton, 2003
		Objective tests	Dvir, Eden, Avolio, & Shamir, 2002
		Profit	Ensley & Pearce, 2001
		Game derived index	LePine, Hollenbeck, Ilgen, & Hedlund, 1997
		Return on sales, return on assets, and return on invested capital	Henderson, Miller, & Hambrick, 2006
	Leadership effectiveness	Leader's effectiveness	Morgeson, 2005
	Performance rating	Annual performance rating	Foti & Hauenstein, 2007
		Creativity rating	Tierney, Farmer, & Graen, 1999
Attitude	Attitude	Informal performance rating	Tsui & O'Reilly, 1989
		Cynicism	Bommer, Rich, & Rubin, 2005
		Identification	Chun, Yammarino, Dionne, Sosik, & Moon, 2009
		Organizational commitment	Kinicki & Vecchio, 1994
		Satisfaction	Erez, LePine, & Elms, 2002
		Self-esteem	De Cremer, van Knippenberg, van Knippenberg, Mullenders, & Stinglhamber, 2005
		Trust	Konovsky & Cropanzano, 1991
	Reverence	Conger, Kanungo, & Menon, 2000	
	Motivation	Efficacy	Shamir, Zakay, Breinin, & Popper, 1998
		Empowerment	Avolio, Zhu, Koh, & Bhatia, 2004
Self-concordance		Bono & Judge, 2003	
Emotion	Intrinsic motivation	Piccolo & Colquitt, 2006	
	Emotional exhaustion	Harvey, Stoner, Hochwarter, & Kacmar, 2007	
	Anxiety, depression, and somatic complaints	Hooper & Martin, 2008; Schaubroeck, Walumbwa, Ganster, & Kepes, 2007	
Behavior	Group process	Psychological strain	O'Driscoll & Beehr, 1994
		Cooperation	De Cremer & Tyler, 2007; Kahai, Sosik, & Avolio, 2003
		Communication process	Marks, Zaccaro, & Mathieu, 2000
		Transition, action, and interpersonal phase	Mathieu, Gilson, & Ruddy, 2006
	OCB	Five-factor model by Organ (1988)	Podsakoff, MacKenzie, Moorman, & Fetter, 1990; Whittington, Goodwin, & Murray, 2004
		Helping behavior	Den Hartog, De Hoogh, & Keegan, 2007; Van Dyne, Kamdar, & Joireman, 2008
	Self-reported behavior	Prosocial behavior	George & Bettenhausen, 1990
		Turnover behavior	Nishii & Mayer, 2009
		Turnover intention	Bauer, Erdogan, Liden, & Wayne, 2006
	Cognition	Perceptual	Upward influence tactics
Climate			Salvaggio et al., 2007
Leader prototypicality			van Knippenberg & van Knippenberg, 2005
Perceived organizational support			Uhl-Bien & Maslyn, 2003
	Perceived organizational structure	Miller & Droge, 1986	
	Self-schema	Engle & Lord, 1997	

Note: OCB = organizational citizenship behavior.

Leaders and leadership can also affect emotions, most notably in followers, but also potentially in peers, superiors, or customers/clients. The idealized influence component of transformational leadership, for example, is expected to result in arousal of emotions through displays

of courage and dedication (Bass, 1996), and emotional effects may be present in various people who the leader comes into contact with. Emotional outcomes of leadership include exhaustion and strain, anxiety, depression, or other factors such as arousal or feelings.

Behavioral outcomes, the third domain of leadership effects in our framework, include actual behaviors and observable or reported processes of specific actions. Leadership may affect specific actions or clusters of actions that an individual, group, or unit may take. Behaviors include group processes (DeChurch & Marks, 2006), organizational citizenship behaviors (OCBs; Whittington, Goodwin, & Murray, 2004), and self-reported behaviors or behavioral intentions such as turnover (Bauer, Erdogan, Liden, & Wayne, 2006).

The fourth criterion domain that leadership may affect is cognition. Although attitudes may have a cognitive component to them, we include cognition as a separate category in order to separate out the nonattitudinal and nonemotional effects that leaders may have on the way that individuals process information or see themselves and their work groups/organizations. Perceptions of group climate (Salvaggio et al., 2007) and leadership prototypicality (van Knippenberg & van Knippenberg, 2005) as well as how one views oneself vis-à-vis the group (working self-concept; Lord & Brown, 2004) are examples of cognitive outcomes.

Question 4: At What Time Frame Are Leadership Criteria Being Examined?

The fourth question considers the time frame at which leader effects are evaluated. Most theories in management and organizational psychology (including leadership) either implicitly or explicitly consider time (Avolio, Walumbwa, et al., 2009; Day, 2001; Ployhart & Vandenberg, 2010). In asserting that leadership is causing a particular criterion, it is important to consider effects at various time frames according to theory and often with appropriate temporal separation (Mitchell & James, 2001). The extent to which leadership and leadership effects have been examined longitudinally, however, is not known yet is important to the process of theory building and disconfirmation (Platt, 1964). We classify time effects based on the presence of lag between the measurement/manipulation of leadership and outcomes and include cross-sectional, short-term longitudinal (e.g., multiple measures taken at different times within a day), and longitudinal.

A time lag does not mean that the relationship between leadership and outcomes is unidirectionally causal, but it does put us in a better position to understand how leadership affects outcomes at various time frames, make stronger inferences, and better examine leadership theories. Effects of leadership may be transitory, such as when a leader elevates an individual's self-identity through the occasional use of collective language (Lord & Brown, 2004), and/or may take days, weeks, or months to appear (Daily & Dalton, 1995; Dvir, Eden, Avolio, & Shamir, 2002).

Question 5: At What Level of Analysis Are Leadership Criteria Being Examined?

The fifth and sixth questions consider two vital levels issues relevant to the study of leadership: levels of analysis of the criteria and levels of the management hierarchy (Chun, Yammarino,

Dionne, Sosik, & Moon, 2009; DeChurch et al., in press). Question 5 addresses the level of analysis at which leader effects are examined; these include the individual level, small group or team level, unit level, and organizational level (Yammarino, Dionne, Chun, & Dansereau, 2005). Leadership is presumed to have an effect not just on individuals but also on groups, units, and sometimes even entire organizations, yet have we paid appropriate attention to all of the levels of effects that are conceptually relevant, and even critical for understanding the effects of leadership? The extent to which empirical leadership research has considered criteria at various levels of analysis has not been systematically documented. Part of the answer to this question depends on the approach to leadership being examined (DeChurch et al., in press). Or it may also be informative to examine, for example, how different levels of effects tend to focus on different categories of criteria or use different methods to obtain leadership information.

Question 6: What Is the Organizational Level at Which Leadership Effects on Criteria Are Being Examined?

The broad context of leadership is important, and although there have been several attempts to explicitly consider context in leadership research, Liden and Antonakis (2009) have argued that we are just now again seeing more explicit acknowledgment and testing of context as a frame around which we should draw leadership inferences. Although not often explicitly considered as a context variable affecting the manifestation, interpretation, and outcomes related to leadership, the hierarchical level of the leader matters, probably a lot more than our field acknowledges (Zaccaro & Klimoski, 2001). Indeed, the phenomenon of leadership shares some consistency across levels of the hierarchy, but there are also potentially important differences in the kind of competencies required, expectations, and, likely, outcomes. But are we examining leaders at different levels? In this article, the breadth and balance of leader levels are examined in order to better understand how criteria are considered at different organizational levels.

Method

Literature Search

We scanned the title, abstract, tables, and figures of every article published in every issue of 11 journals over the 25-year period beginning January 1985 and ending December 2009. The journals chosen were *Academy of Management Journal*, *Administrative Science Quarterly*, *Journal of Applied Psychology*, *Journal of Management*, *Journal of Organizational Behavior*, *Journal of Vocational Behavior*, *The Leadership Quarterly*, *Management Science*, *Organizational Behavior and Human Decision Processes*, *Personnel Psychology*, and *Strategic Management Journal*. We chose to examine these 11 journals because they are highly respected outlets for leadership research within the fields of management and organizational psychology (Podsakoff, MacKenzie, Bachrach, & Podsakoff, 2005; Tahai & Meyer, 1999). Out of these 11 journals, 9 are ranked within the top 10 management journals based on a ranking of 28

management journals selected by Podsakoff and colleagues (2005), who found that 82% of citations from 1985 to 1999 were attributable to the top two quartiles of those journals.

The Leadership Quarterly, although not on Podsakoff and colleagues' list, was included because it is a well-established and regarded outlet exclusively for leadership research (established in 1990), and *Journal of Organizational Behavior* was included because of its significant impact and emphasis on publishing (among other topics) leadership research. Although our search did not include every management journal, the articles published in the 11 journals selected in this study are extensively reviewed and, we contend, tend to exhibit the highest level of research quality. Thus, this sample of studies enabled us to identify the state of the science in leadership research within the field of management.

In order to locate articles that examined outcomes of leaders/leadership, we were careful not to solely limit our search to studies that used words such as *manager* or *leader* since many studies that examine leader outcomes may not use these words. For example, the relationship between CEO characteristics and outcomes is commonly studied in the strategic management literature, but often these investigations do not mention the word *leader* or *manager* in the title, abstract, or keywords. In order to most systematically search for any articles that might meet our criteria for inclusion, we manually searched each article in each issue of each journal for each year. This preliminary search focused on finding any of the following words appearing anywhere in the article (body, title, abstract, tables, figures, keywords): *leader, leadership, manager, management, supervisor, top management team, CEO, executive, board of directors, ownership, stock, mentor, mentee, president, strategic, power, influence, senior officer, directorship, and stakeholders*. At this first stage, 3,396 articles met the preliminary criteria and were further examined. Commentaries and book reviews were omitted from the article search process.

At the second stage, we carefully reviewed each article and excluded articles that did not contain primary data (i.e., meta-analyses and/or reviews) and those articles that did not both assess something about a leader (such as leader or managerial characteristics, styles, behaviors, beliefs) and contain at least one outcome of leadership. We did not include studies that examined leadership traits, characteristics, or leadership style as the criterion variable. Our reasoning is that we believe it is beneficial to systematically understand the types of outcomes that are related to leadership and note that there are a number of high-quality reviews of leadership constructs and theories (e.g., Avolio, Walumbwa, et al., 2009; House & Aditya, 1997).

A total of 1,161 empirical studies met our final inclusion criteria and were content analyzed. There were 1,087 articles with a single sample and 74 articles composed of multiple independent samples (ranging from 1 to 7 independent samples). Multiple samples were treated as separate studies when results were separately reported within the article. For many of our analyses, counts became larger than the total number of studies because a sample or article may have examined criteria from multiple domains, at multiple levels, or from various theoretical perspectives.

Coding

Coding categories were developed to provide a systematic basis for coding methodological and broad theoretical aspects of articles. In addition to coding around the six central questions

of the article, we coded the theoretical orientation/framework, whether leadership was explicitly mentioned in the title or abstract of the article, and the total number of study outcomes.

Question 1: From Whose Perspective Is Leadership Judged?

The perspective of the assessor of the leader/leadership was coded into eight categories: self-report, superior, subordinate, peer, subject matter expert (SME)/researcher, manipulation, company record/database, and not reported. Because this question pertained to the leader or leadership side of the equation (not the criteria), self-report indicated a leader's self-perception. If participants providing leadership ratings were located at levels above the focal leader, perspective was coded as superior/supervisor. Peers were defined as raters at the same level of the leader and subordinates as raters located below the hierarchical level of the focal leader. In cases where researchers or SMEs provided the measurement of leadership, the SME/researcher category was coded. Information about leaders from existing data sets was categorized as coming from a company record/database when no specific information about raters was given. This includes, for example, information about personal demographics or characteristics of a senior executive coded from an industry database such as the *Dun & Bradstreet Reference Book of Corporate Management*. In cases where the information about leadership was stored in a company record or database but these ratings were from an identifiable source, such as peer or subordinate, only the identifiable source was coded—we were concerned with who, at the root source, provided the information about leadership. Some studies did not report specific information about the perspective source of leadership measure and were categorized as not reported (NR). Some studies used more than one source to measure leadership and were coded as such.

Question 2: Which Type of Leadership Measure Is Used?

In order to examine the types of leadership measures utilized in empirical research, we coded the leadership measures for each study into one of six subcategories: survey, interview, observation, manipulation, database/company records, and NR. Interview and observational data consist of field studies in which behaviors and attitudes were explicitly quantified rather than simply qualitatively examined. Data taken from databases or company records were coded in the database/company records category if this archival source was used and no clear identification of survey, interview, or observational techniques was clearly apparent as the primary underlying methodology for obtaining the measure of leadership.

Question 3: On Which Criterion Domains Are Leadership Effects Assessed?

In order to examine the breath of leadership criteria examined, we classified the domain of leadership criteria into 1 of 10 domains: tangible outcomes, leadership effectiveness, performance ratings, attitudinal constructs, motivational constructs, emotional constructs, group processes, organizational citizenship, self-reported behavior, and perceptual/cognitive outcomes.

We consider each of the 10 categories separately but also organize them into four overarching domains: effectiveness, attitude, behavior, and cognition. Table 2 presents our framework for organizing criterion domains and categories and includes example articles within each criterion category.

Effectiveness. The broad effectiveness domain includes three types of outcomes: tangible, leadership effectiveness, and performance ratings. Tangible outcomes include variables such as sales volume, stock price, production rates, return on equity, and simulation performance score. Leadership effectiveness was coded in cases where the outcome domain was followers' (or others') evaluations of the leaders' effectiveness (e.g., [Seltzer & Bass, 1990](#)). Performance ratings include formal as well as informal performance ratings. Formal ratings include any performance ratings collected from formal performance appraisal systems, while informal ratings include perceptions or private opinions of performance outside of a formal performance appraisal but not specifically or solely about leader effectiveness (e.g., [Tsui & O'Reilly, 1989](#)).

Attitude. The broad attitude domain includes any attitudinal, motivational, and emotional criterion categories. The attitude category includes any evaluative component of one's psychological states toward oneself, others, or outside objects. Examples include satisfaction ([Erez, LePine, & Elms, 2002](#)), organizational commitment ([Settoon, Bennett, & Liden, 1996](#)), and trust ([Konovsky & Cropanzano, 1991](#)). Motivation, an internal force that influences one's behavior and is characterized in direction, intensity, and duration ([Spector, 2006](#)) includes Maslow's need hierarchy ([Dvir et al., 2002](#)), job characteristics ([Piccolo & Colquitt, 2006](#)), and self-efficacy ([Walumbwa, Avolio, & Zhu, 2008](#)). Some variables in this category were labeled as motivation (e.g., intrinsic motivation: [Piccolo & Colquitt, 2006](#)), while others that were not labeled clearly as motivation were interpreted based on their scales (e.g., self-direction: [Bono & Judge, 2003](#)). Emotion, a psychological state or reaction to external events and situations ([Spector, 2006](#)), includes both states and moods. States are defined as the immediate experience of a particular emotion, while moods are defined as the long-term condition of positive or negative emotional states. Some studies have examined, for example, followers' moods ([Bono & Ilies, 2006](#); [Sy, Côté, & Saavedra, 2005](#)), while others have examined burnout ([De Hoogh & Den Hartog, 2009](#)).

Behavior. The behavior domain includes three behavioral categories of criteria: group process, OCB, and self-reported behavior. Group process is defined as "activities targeted toward organizing taskwork to achieve collective goals" ([Marks, Mathieu, & Zaccaro, 2001](#)). This category includes variables such as cooperativeness ([Barsade, Ward, Turner, & Sonnenfeld, 2000](#)), coordination ([DeChurch & Marks, 2006](#)), participation ([Kahai, Sosik, & Avolio, 2003](#)), and workload sharing ([Erez et al., 2002](#)). The OCB category ([Smith, Organ, & Near, 1983](#)) includes prosocial, helping, and citizenship behavior directed toward the individual or organization. Self-reported behaviors are any other behaviors or behavioral intentions that do not fall into the other categories. Examples of self-reported behaviors are compliance (e.g., [Rahim, 1989](#)), upward influence tactics ([Cable & Judge, 2003](#)), and turn-over intentions and behavior (e.g., [Bauer et al., 2006](#); [Nishii & Mayer, 2009](#)).

Cognition. The last major domain is cognition and includes perceptual types of criteria, interpretations, or recognition of sensory stimuli. Examples are climate perceptions (Smith-Jentsch, Salas, & Brannick, 2001) and leadership prototypicality (van Knippenberg & van Knippenberg, 2005).

Question 4: At What Time Frame Are Leadership Criteria Being Examined?

Time frames were classified based on the amount of time lag between the measurement/manipulation of leadership and the measurement of outcomes and include cross-sectional, short-term longitudinal, and longitudinal. We characterized studies as short-term longitudinal if they involved experimentation or if the outcome was measured within a day of measuring leadership.

Question 5: At What Level of Analysis Are Leadership Criteria Being Examined?

Level of analysis of the criteria was assessed as falling into one of the following categories for each criterion within a study: individual, small group, unit, or organization. The classification of criteria examining individuals and organizations was straightforward, whereas the classification of team and unit studies involved a degree of judgment. Teams differ from units in three important ways: (a) they are less interdependent overall and include higher levels of within-collective variation in interdependence than do teams (i.e., in units some members work closely, but others work more independently), (b) they often include multiple goals and subgoals, and subgoals typically involve some degree of goal conflict, and (c) they are larger than teams, and the increased size also increases both the likelihood of coalition formation and the cognitive information processing load (Mathieu, Marks, & Zaccaro, 2001).

We utilized two pieces of information in making the team versus unit classification. First, coders carefully read for any description of the type of work and tasks completed and considered the nature of interdependencies. Collectives with lower degrees of interdependence, multiple competing goals, and meaningful subgroups were classified as units, whereas those exhibiting high levels of interdependence, and united by a shared goal, were classified as teams. Second, we considered the size of collectives. Sundstrom, McIntyre, Halfhill, and Richards (2000), in their summary of teams research, report that most teams possess fewer than 10 members, and 10 was thus used as the general criterion for further differentiating between teams and units where few inferences were able to be reasonably made about the nature of the work and tasks performed by the collective.

For the criteria to be coded as existing at the organizational level, outcomes had to be manifest as direct properties at the highest organizational level. Typical examples for this category are stock price and return on asset or equity but also include assessments of organization-level properties such as perceived organization-level strategies and perceived organizational performance. When a study aggregated lower-level data to a higher level, the higher level of analysis/conceptualization was used as the criterion-level categorization for that variable.

Question 6: What Is the Organizational Level at Which Leadership Effects on Criteria Are Being Examined?

The organizational level at which leaders functioned was evaluated along six subcategories: top management team (TMT), middle management, lower level, mixed, NR, and laboratory. Leadership functioning at the top of an organization was considered as TMT if we were able to identify that the individuals studied either were the CEO/president or reported directly to the CEO and were part of the C-level executive management team.

Middle management was broadly defined in this study. Unlike supervisors at lower levels who interact directly with employees at the lowest end, middle managers typically attend to higher-level goals of their business units, manage significant projects, and manage multiple organizational levels below their level (Uyterhoeven, 1989). Although managers at lower levels closely supervise and support the lowest level employees, they do not have to manage multiple hierarchical levels below them.

Coders examined the description of the study sample(s), and if they could identify information suggesting the existence of multiple levels below the focal manager/leader, they coded the sample as middle manager. If the study described its sample as being located at the bottom of the hierarchy, it was coded as lower level. Student leaders in activities or class projects were categorized as lower level because they did not usually have to manage multiple levels below them but had to continuously work with other students located at one level below. When studies sampled from a combination of any of these levels, it was coded as mixed. A number of studies were conducted in laboratory settings and were coded as laboratory. If studies did not provide any information regarding the organizational level of the sample, or if a reasonable inference could not be made based on information given, leader level was coded as NR.

Theoretical Approaches to Leadership

In addition to reviewing criterion issues in leadership research, we also consider criterion issues in more detail as they relate to particular approaches/theories of leadership research. Although there are many leadership theories, we focus our review on five primary management-oriented theories that have been the locus of significant research attention over the past 25 years and capture more than 80% of the studies in our sample: (a) leaders traits, (b) leader behaviors, (c) LMX, (d) transformational/neocharismatic leadership, and (e) strategic leadership.

Categories were developed based to a large extent on House and Aditya's (1997) review of the field of leadership. Studies were coded as being focused on traits if leader traits (such as personality or other individual difference characteristics) were examined; leadership behaviors included studies examining task and/or relationship behaviors in the Ohio State and Michigan tradition or other specific behaviors. LMX and transformational leadership studies were almost always explicitly labeled in the primary study according to their approach/theoretical orientation. Studies were coded as strategic if the primary emphasis was on top-level executive effects. Studies that incorporated multiple approaches/theoretical orientations were coded according to their multiple relevant categorizations.

Studies using theories or approaches that did not fit within these five categories were, for most of our analyses, assigned to the “other” category. Implicit leadership, shared leadership, and authentic leadership, for example, fell into the “other” category. Collectively, the “other” theoretical category accounted for less than 20% of studies in our sample. This decision does not imply that these theories are less important—our decision was made based on the goal of broadly summarizing the most commonly studied theoretical approaches.

Number of Criteria in a Study

The number of criteria examined in a given study was taken as the simple sum. If a similar variable was examined at multiple levels within the same study, it was counted once at each level.

Leadership Explicit—Any Other Codings?

Not all studies in our sample directly and prominently reference the word *leader* or *leadership* but nonetheless examined something about leadership and an outcome. As an index of the extent to which studies about leadership outcomes directly and centrally reference the word *leader* or *leadership*, we coded studies as to whether they used the word *leader* or *leadership* explicitly in the title, abstract, or keywords.

Coding Training and Agreement Check

Five raters were involved in the coding process, including three of the study authors. All raters met as an entire group on multiple occasions for a total of more than 30 hours in order to discuss the nature of the coding task, develop and refine coding categories, and develop the same cognitive schema for coding each category. All raters then individually coded 10 articles and met to discuss discrepancies until a common frame was reached. Throughout the entire coding process, raters frequently discussed questions about coding categories to ensure similarity in coding. As a final check on our coding consistency at the end of the coding process, 40 articles were randomly coded by two coders to calculate agreement. Agreement between coders ranged from 77.19% to 90% across all categories.

Results

Tables 3–22 present frequencies and percentages that describe criterion-meaningful characteristics of leadership research conducted over the past quarter century. We organize these findings around our six primary questions and, where meaningful, by leadership theory/approach. We present results that are most central to our questions and those that are the most noteworthy, with a realization that it was not possible to present every possible combination of categories.

Readers may note that in different tables, seemingly similar breakdowns do not result in identical row and column totals because studies may contain multiple categorizations. Consider Tables 5 and 10. Table 5 indicates a total of 1,895 examinations of criterion type (e.g., performance rating, attitude, OCB) by year. Table 10 indicates a total of 2,119 examinations of criterion type (e.g., performance rating, attitude, OCB) by level of the criterion (individual, team, unit, organization). These differences result from using the differential counting of studies in particular subcategories based on the theme of the table. Let us consider a study by Chen, Kirkman, Kanfer, Allen, and Rosen (2007) as an example that illustrates why certain articles were counted differently in different tables/analyses. Chen and colleagues examined leadership effects on empowerment at the individual as well as team levels. Empowerment is counted only once in Table 5 because this table represents criterion by year, while it is counted twice in Table 10 because the criterion appears at each level. Or a study may look at two types of criteria, but the study uses a transformational framework, thus being counted twice in a breakdown by criteria type and once in a breakdown by theoretical approach/orientation. In the end, table numbers are best thought of as representing “examinations” and not studies. Alternative choices about coding and counting would have resulted in slight differences in our results, but not a meaningful change in the overall picture; we believe our choice represents the most accurate depiction of what is known about criteria in leadership research.

Question 1: From Whose Perspective Is Leadership Judged?

We first examine the state of leadership science regarding the perspective of leadership judgment. Table 3 presents an overview of how leadership has been represented in the empirical record spanning the past 25 years. Looking first at the overall summary, subordinate ratings represented nearly 45% of all leadership examinations, followed by self-reports (18%) and databases/company records (16%). Also notable are the perspectives least represented in the empirical record; peer- and superior-rated leadership together capture less than 3% of the science of leadership, and the effects of manipulated aspects of leadership on outcome criteria represent less than 9% of leadership science.

In looking at the relative distribution of these sources of leadership broken out by 5-year time intervals, we see that the relative use of subordinate ratings has been fairly stable over time, though their use represents a larger proportion of the findings in the most recent time period (52% compared to 44% for 2000–2004). Conversely, leadership as represented by databases/company records comprised relatively less of the findings in the most current time period (2005–2009; 11% for 2005–2009 compared to 19% for 2000–2004). SME/researcher ratings of leadership combined with leadership manipulations represented 26% of the leadership effects estimated in 1985–1989 but only 13% to 18% of effects in subsequent time periods. Overall, Table 3 indicates that what we know about leadership is largely based on subordinate perspectives of leadership, that the relative proportion of subordinate perspective research has increased relative to other perspectives, and that self-reports and archival records of leadership represent a significant part of the empirical record.

Table 3
Perspective of Leadership Across Time Periods

	1985–1989		1990–1994		1995–1999		2000–2004		2005–2009		Total (1985–2009)	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Self-report	19	17.12	36	18.85	55	21.24	61	17.48	65	17.52	236	18.42
Superior	1	0.90	5	2.62	1	0.39	3	0.86	6	1.62	16	1.25
Subordinate	45	40.54	77	40.31	103	39.77	152	43.55	194	52.29	571	44.57
Peer	0	0.00	6	3.14	6	2.32	5	1.43	3	0.81	20	1.56
SME/researcher	14	12.61	16	8.38	24	9.27	31	8.88	27	7.28	112	8.74
Manipulation	15	13.51	10	5.24	23	8.88	29	8.31	34	9.16	111	8.67
Database/company records	16	14.41	39	20.42	46	17.76	66	18.91	41	11.05	208	16.24
NR	1	0.90	2	1.05	1	0.39	2	0.57	1	0.27	7	0.55
Total	111	100.00	191	100.00	259	100.00	349	100.00	371	100.00	1,281	100.00

Note: SME = subject matter expert; NR = not reported.

Question 2: Which Type of Leadership Measure Is Used?

The second central question further explores the leadership perspectives that have been linked to outcome criteria over the past quarter century by classifying the relative utilization of leadership perspectives gleaned from different methods: surveys, interviews, observations, manipulations, and databases. Table 4 presents a summary of the types of leadership measures utilized over the past 25 years. First, examining the total column, we see that the most commonly used leadership measure is the survey (63%), followed by the database/company records (23%). Experimental manipulations accounted for 9% of high-quality-outlet leadership research, whereas observations and interviews together make up less than 5%.

Second, examining the use of different leadership measures over time shows that the relative and absolute use of survey measures of leadership has steadily increased, ranging from a relative low of 57% of the examinations of leadership-criterion relationship in the first period (1985–1989) to a high of 70% of examinations in the most recent period (2005–2009). Another notable finding is the consistently low utilization of observational measures of leadership to evaluate leadership; the proportion of examinations utilizing observations ranges from a low smaller than 1% to almost 4%. Linking leadership to criteria when leadership is understood through information obtained in databases and/or company records increased from 21% in the first period to 26%, 27%, and 27% in the second, third, and fourth periods, respectively, but then decreased in the most recent period to 17%.

Question 3: On Which Criterion Domains Are Leadership Effects Assessed?

Question 3 explores the type of outcomes that leadership has been linked to: effectiveness, attitudinal, behavioral, and cognitive. Table 5 displays the leadership-outcome examinations over the past 25 years. First, examining the total allocation across criterion domains, we see

Table 4
Method of Collection of Leadership Data Across Time Periods (1985–2009)

	1985–1989		1990–1994		1995–1999		2000–2004		2005–2009		Total (1985–2009)	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Survey	60	56.60	109	59.89	140	59.07	200	60.42	245	70.00	754	62.52
Interview	2	1.89	11	6.04	8	3.38	6	1.81	10	2.86	37	3.07
Observation	4	3.77	4	2.20	2	0.84	5	1.51	4	1.14	19	1.58
Manipulation	16	15.09	10	5.49	24	10.13	31	9.37	31	8.86	112	9.29
Database/company records	22	20.75	47	25.82	63	26.58	89	26.89	60	17.14	281	23.30
NR	2	1.89	1	0.55	0	0.00	0	0.00	0	0.00	3	0.25
Total	106	100.00	182	100.00	237	100.00	331	100.00	350	100.00	1,206	100.00

Note: NR = not reported.

Table 5
Criterion Domain Across Time Periods (1985–2009)

		1985–1989		1990–1994		1995–1999		2000–2004		2005–2009		Total (1985–2009)	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Effectiveness	Tangible	43	27.04	77	28.95	98	25.79	138	26.64	125	21.85	481	25.38
	Leadership effectiveness	15	9.43	22	8.27	27	7.11	34	6.56	44	7.69	142	7.49
	Performance rating	4	2.52	15	5.64	24	6.32	24	4.63	42	7.34	109	5.75
Attitude	Attitude	31	19.50	50	18.80	76	20.00	106	20.46	101	17.66	364	19.21
	Motivation	4	2.52	7	2.63	8	2.11	14	2.70	19	3.32	52	2.74
	Emotion	7	4.40	11	4.14	11	2.89	16	3.09	29	5.07	74	3.91
Behavior	Group process	1	0.63	2	0.75	6	1.58	14	2.70	17	2.97	40	2.11
	OCB	0	0.00	5	1.88	14	3.68	15	2.90	36	6.29	70	3.69
	Self-reported behavior	13	8.18	15	5.64	24	6.32	38	7.34	56	9.79	146	7.70
Cognition	Perceptual	41	25.79	62	23.31	92	24.21	119	22.97	103	18.01	417	22.01
Total		159	100.00	266	100.00	380	100.00	518	100.00	572	100.00	1,895	100.00

Note: OCB = organizational citizenship behavior.

that slightly more than one third (39%) of findings relate leadership to effectiveness criteria; effectiveness includes tangible metrics (25%), formal and informal performance evaluations (6%), and leadership effectiveness metrics (7%). Smaller proportions of examinations linked leadership to the attitude domain (26% collectively), behavioral domain (14% collectively), and cognitive domain (22%). The four specific criteria of group process, motivation, OCB, and emotion criteria each accounted for less than 4%.

Examining the types of criteria over time shows that the relative focus on effectiveness, attitudes, behaviors, and cognition has been relatively static over time, with a few notable

Table 6
Leader-Criterion Time Frame Across Time Periods (1985–2009)

	1985–1989		1990–1994		1995–1999		2000–2004		2005–2009		Total (1985–2009)	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Cross-sectional	64	61.54	114	63.33	144	62.34	189	57.80	186	53.60	697	58.62
Short-term longitudinal	17	16.35	15	8.33	23	9.96	40	12.23	47	13.54	142	11.94
Longitudinal	22	21.15	47	26.11	63	27.27	98	29.97	113	32.56	343	28.85
NR	1	0.96	4	2.22	1	0.43	0	0.00	1	0.29	7	0.59
Total	104	100.00	180	100.00	231	100.00	327	100.00	347	100.00	1,189	100.00

Note: NR = not reported.

exceptions. Attention to OCBs as a behavioral outcome of leadership began in the early 1990s and has steadily increased over time, ranging from a low of representing 2% of studies in the second period to a high of representing 6% of studies in the most recent period—from 5 to 36 studies. Examining the effects of leadership on group process has increased minimally from below 1% (first period) to 3% (most recent period).

Question 4: At What Time Frame Are Leadership Criteria Being Examined?

The fourth question we examine is the time frame over which leadership has been linked to criteria in past research. Examinations were sorted into three temporal categories: cross-sectional, short-term longitudinal, and longitudinal. The overall distribution of leadership-criterion temporal effects and the distributions within all five of the 5-year time intervals are presented in Table 6.

Looking first at the total column of Table 6 shows that 59% of the 25-year empirical record is based on cross-sectional data where leadership-outcome relationships are estimated based on measurements taken at the same time. Cross-sectional data accounted for a greater percentage of studies in the first three time periods and fell from a high of 63% of studies to a low of 54% of studies by the most recent time period (2005–2009). Table 6 also shows that over time, there has been a notable increase in the proportion and number of findings based on longitudinal designs ranging from a low of 21% (22 studies) of examinations in the first period (1985–1989) to a high of 33% (113 studies) in the most recent period (2005–2009).

Table 7 further explores the temporal architecture of leadership research according to criterion domains, and results show clear differences in the temporal structure of research by different outcomes. Longitudinal data (48%) were utilized more often than cross-sectional data (39%) when leadership was linked to tangible criteria. However, cross-sectional data were the dominant temporal structure with all other criterion domains. Research linking leadership to leadership effectiveness (61% of leadership-criterion effects are cross-sectional), performance ratings (78% cross-sectional), attitudinal states (69% cross-sectional), motivation (64% cross-sectional), emotion (60% cross-sectional), group process (55% cross-sectional),

Table 7
Leader-Criterion Time Frame by Criterion Domain (1985–2009)

	Effectiveness						Attitude					
	Tangible		Leadership Effectiveness		Performance Rating		Attitudinal		Motivation		Emotion	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Cross-sectional	192	38.95	92	60.93	85	77.98	262	69.31	35	63.64	46	59.74
Short-term longitudinal	59	11.97	28	18.54	4	3.67	49	12.96	8	14.55	18	23.38
Longitudinal	237	48.07	30	19.87	20	18.35	65	17.20	12	21.82	13	16.88
NR	5	1.01	1	0.66	0	0.00	2	0.53	0	0.00	0	0.00
Total	493	100.00	151	100.00	109	100.00	378	100.00	55	100.00	77	100.00

	Behavior				Cognitive					
	Group Process		OCB		Self-Reported Behavior		Perceptual		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Cross-sectional	24	54.55	60	84.51	110	73.33	291	67.83	1,197	61.17
Short-term longitudinal	12	27.27	4	5.63	16	10.67	62	14.45	260	13.29
Longitudinal	8	18.18	7	9.86	24	16.00	74	17.25	490	25.04
NR	0	0.00	0	0.00	0	0.00	2	0.47	10	0.51
Total	44	100.00	71	100.00	150	100.00	429	100.00	1,957	100.00

Note: OCB = organizational citizenship behavior; NR = not reported.

OCB (85% cross-sectional), self-reported behavior (73% cross-sectional), and cognition (68% cross-sectional) all showed a higher reliance on cross-sectional linkages than on linkages obtained with even minimal time separation between the measurement of leadership and the criterion.

Question 5: At What Level of Analysis Are Leadership Criteria Being Examined?

The fifth central question considers the level of analysis of leadership criteria. In this review, we considered four criterion levels: individual, team, unit, and organizational level. Table 8 presents the perspective of leadership examined at each level of analysis. Overall, the predominant level of criterion (731 of 1,393 examinations) is the individual level, followed by the organizational level (431 examinations) and the team level (156 examinations). There are notably few examinations at the unit level (75).

Examining criterion level by perspective of leadership judgment, we find that at the individual level of analysis, 61% of findings are based on subordinate perspectives of leadership, 17% on leader self-report, and 12% on manipulations of leadership. However, this pattern changes as the level of the entity increases across individual, team/unit, and organizational level. As a matter of comparison, at the organizational level, only 13% of findings linking

Table 8
Perspective of Leadership by Level of Criterion (1985–2009)

	Individual		Team		Unit		Organization		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Self-report	121	16.55	36	23.08	7	9.33	93	21.58	257	18.45
Superior	12	1.64	3	1.92	0	0.00	2	0.46	17	1.22
Subordinate	448	61.29	70	44.87	48	64.00	55	12.76	621	44.58
Peer	10	1.37	4	2.56	0	0.00	7	1.62	21	1.51
Researcher	29	3.97	13	8.33	10	13.33	79	18.33	131	9.40
Manipulation	90	12.31	23	14.74	8	10.67	7	1.62	128	9.19
Database	15	2.05	7	4.49	2	2.67	187	43.39	211	15.15
NR	6	0.82	0	0.00	0	0.00	1	0.23	7	0.50
Total	731	100.00	156	100.00	75	100.00	431	100.00	1,393	100.00

Note: NR = not reported.

leadership to outcomes rely on the subordinate perspective of leadership, a marked difference compared to the 61%, 45%, and 64% of criteria provided by subordinates at the individual, team, and unit levels, respectively.

Self-report accounts for 22% of criteria at the organizational level (compared to 17% at the individual level), and 43% utilize databases to generate leadership information (compared to 2% of those at the individual level).

Table 9, which shows the type of data used to measure leadership by level of criteria, exhibits similarities to Table 8 in that research examining criteria at the organizational level is markedly different from research at the other levels. Research linking leadership to individual-, team-, and unit-level outcomes relied most on survey-based data (78%, 67%, and 75%, respectively), whereas research linking leadership to organizational-level outcomes relied on surveys in 34% of studies.

Table 10 presents the type of outcome examined at each level of analysis. The focus on tangible outcomes increases at higher levels of outcomes: Tangible outcomes represent 64% of organizational-level examinations compared to 11% of individual-level studies. Conversely, a focus on leadership effectiveness, attitudinal domains, and behavioral domains generally decreases at higher levels of criteria. For example, leadership at the individual level is focused on attitudes in 25% of studies, whereas leadership at the organizational level is focused on attitudes in 5% of studies. Ratings of leader effectiveness range from composing 8% to 10% of examinations of outcome criteria residing at the individual, team, and unit levels but compose only 3% of examinations of organization-level criteria. Taken together, Table 10 shows that criteria are widely distributed among criterion categories at the lower levels of analyses (individual, team, and unit), whereas the two categories of tangible and perceptual outcomes account for 84% of criteria in research at the organizational level.

Table 11 presents the time frame of leadership effects studied at each level of analysis. There is a difference in the temporal architecture of data used to bear on leadership's effects at various levels of analysis. Almost 67% of individual-level criterion data was linked to leadership in a cross-sectional way. The relative reliance on cross-sectional data decreases

Table 9
Method of Collection of Leadership Data by Level of Criterion (1985–2009)

	Individual		Team		Unit		Organization		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Survey	525	77.89	99	67.35	55	75.34	142	33.89	821	62.53
Interview	18	2.67	4	2.72	1	1.37	18	4.30	41	3.12
Observation	13	1.93	6	4.08	1	1.37	2	0.48	22	1.68
Manipulation	95	14.09	23	15.65	8	10.96	4	0.95	130	9.90
Database/company records	23	3.41	15	10.20	8	10.96	250	59.67	296	22.54
NR	0	0.00	0	0.00	0	0.00	3	0.72	3	0.23
Total	674	100.00	147	100.00	73	100.00	419	100.00	1,313	100.00

Note: NR = not reported.

Table 10
Criterion Domain by Level of Criterion (1985–2009)

		Individual		Team		Unit		Organization		Total	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Effectiveness	Tangible	138	11.10	45	17.37	33	25.19	311	63.99	527	24.87
	Leadership effectiveness	114	9.17	20	7.72	13	9.92	15	3.09	162	7.65
	Performance rating	69	5.55	24	9.27	2	1.53	26	5.35	121	5.71
Attitude	Attitude	316	25.42	47	18.15	20	15.27	24	4.94	407	19.21
	Motivation	42	3.38	14	5.41	5	3.82	4	0.82	65	3.07
	Emotion	71	5.71	5	1.93	1	0.76	0	0.00	77	3.63
Behavior	Group process	12	0.97	37	14.29	8	6.11	4	0.82	61	2.88
	OCB	62	4.99	3	1.16	8	6.11	1	0.21	74	3.49
	Self-reported behavior	135	10.86	11	4.25	8	6.11	6	1.23	160	7.55
Cognition	Perceptual	284	22.85	53	20.46	33	25.19	95	19.55	465	21.94
Total		1,243	100.00	259	100.00	131	100.00	486	100.00	2,119	100.00

Note: OCB = organizational citizenship behavior.

Table 11
Leader-Criterion Time Frame by Level of Criterion (1985–2009)

	Individual		Team		Unit		Organization		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Cross-sectional	451	66.81	78	55.32	38	50.67	189	46.78	756	58.38
Short-term longitudinal	102	15.11	25	17.73	10	13.33	20	4.95	157	12.12
Longitudinal	119	17.63	38	26.95	27	36.00	190	47.03	374	28.88
NR	3	0.44	0	0.00	0	0.00	5	1.24	8	0.62
Total	675	100.00	141	100.00	75	100.00	404	100.00	1,295	100.00

Note: NR = not reported.

Table 12
Method of Collection of Leadership Data by
Organizational Level of Leader (1985–2009)

	TMT		Middle		Lower		Mixed		Lab		NR		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Self-report	93	21.68	32	30.19	43	20.19	23	15.65	7	7.61	38	12.93	236	18.33
Superior	1	0.23	4	3.77	3	1.41	5	3.40	0	0.00	3	1.02	16	1.24
Subordinate	57	13.29	57	53.77	135	63.38	88	59.86	5	5.43	229	77.89	571	44.16
Peer	4	0.93	5	4.72	5	2.35	2	1.36	1	1.09	3	1.02	20	1.55
Researcher	82	19.11	5	4.72	11	5.16	6	4.08	1	1.09	7	2.38	112	8.74
Manipulation	5	1.17	0	0.00	13	6.10	15	10.20	75	81.52	3	1.02	111	9.36
Database	187	43.59	2	1.89	3	1.41	6	4.08	2	2.17	8	2.72	208	16.09
NR	0	0.00	1	0.94	0	0.00	2	1.36	1	1.09	3	1.02	7	0.54
Total	429	100.00	106	100.00	213	100.00	147	100.00	92	100.00	294	100.00	1,281	100.00

Note: TMT = top management team; NR = not reported.

at each level of analysis, totaling still about 47% for organization-level criteria. Longitudinal data markedly increase at each level of analysis from 18% for individual-level criteria up to 47% at the organizational level.

Question 6: What Is the Organizational Level at Which Leadership Effects on Criteria Are Being Examined?

Question 6 considers research examining the leader's level within the organization—top, middle, and lower—broken down by leadership perspective, criterion domain, and time frame of leadership-criterion effects. Table 12 presents the perspective of leadership examined by leader level. Leaders and leadership at the top level of organizations are most often examined through database derivations (44%), followed by self-reports (22%), researcher ratings (19%), and subordinate reports (13%). Leadership at lower organizational levels is predominated by subordinate reports (63%) and self-reports (20%).

Table 13 displays the type of leadership measure broken out by leader organizational level. Top-level leaders are understood through databases (61%) whereas middle- and lower-level leadership is understood through survey measures (90% for middle-level leadership and 86% for lower-level leadership).

Table 14 presents the criterion domain by organizational level of the leader. Top-level leadership is examined mostly in relation to tangible effectiveness indicators (63%), whereas such indicators are the focus of 16% of midlevel leadership research and 13% of lower-level leadership research. Midlevel and lower-level leadership research focuses more heavily on attitudinal criteria (24% of midlevel leader effects and 25% of lower-level leadership effects).

Table 15 displays the time frame of effects by leader level. Research on top-level leadership shows the greatest relative attention to temporal lags in leadership and outcome relationships; 46% of TMT research is longitudinal (i.e., has a temporal lag between measurement of leadership and criterion), compared to 21% for midlevel leadership research and 23% for lower-level leadership research.

Table 13
Method of Collection of Leadership Data by
Organizational Level of Leader (1985–2009)

	TMT		Middle		Lower		Mixed		Lab		NR		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Survey	139	33.33	79	89.77	167	86.08	100	72.46	258	93.48	11	11.83	754	62.52
Interview	20	4.80	3	3.41	0	0.00	9	6.52	4	1.45	1	1.08	37	3.07
Observation	2	0.48	2	2.27	9	4.64	3	2.17	2	0.72	1	1.08	19	1.58
Manipulation	1	0.24	0	0.00	13	6.70	18	13.04	4	1.45	76	81.72	112	9.29
Database	253	60.67	3	3.41	5	2.58	8	5.80	8	2.90	4	4.30	281	23.30
Other	2	0.48	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	2	0.17
NR	0	0.00	1	1.14	0	0.00	0	0.00	0	0.00	0	0.00	1	0.08
Total	417	100.00	88	100.00	194	100.00	138	100.00	276	100.00	93	100.00	1,206	100.00

Note: TMT = top management team; NR = not reported.

Table 14
Criterion Domain by Organizational Level of Leader (1985–2009)

		TMT		Middle		Lower		Mixed		Lab		NR		Total	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Effectiveness	Tangible	297	63.06	24	16.00	45	12.68	30	13.82	57	10.69	28	16.57	481	25.38
	Leadership effectiveness	11	2.34	18	12.00	40	11.27	19	8.76	121	22.70	21	12.43	142	7.49
	Performance rating	24	5.10	18	12.00	22	6.20	9	4.15	33	6.19	3	1.78	109	5.75
Attitude	Attitude	25	5.31	36	24.00	87	24.51	48	22.12	33	6.19	32	18.93	364	19.21
	Motivation	3	0.64	4	2.67	14	3.94	8	3.69	136	25.52	7	4.14	52	2.74
	Emotion	1	0.21	2	1.33	15	4.23	12	5.53	5	0.94	10	5.92	74	3.91
Behavior	Group process	5	1.06	5	3.33	12	3.38	6	2.76	16	3.00	7	4.14	40	2.11
	OCB	1	0.21	4	2.67	21	5.92	13	5.99	29	5.44	2	1.18	70	3.69
	Self-reported behavior	9	1.91	10	6.67	29	8.17	16	7.37	34	6.38	13	7.69	146	7.70
Cognition	Perceptual	95	20.17	29	19.33	70	19.72	56	25.81	69	12.95	46	27.22	417	22.01
Total		471	100.00	150	100.00	355	100.00	217	100.00	533	100.00	169	100.00	1,895	100.00

Note: TMT = top management team; NR = not reported; OCB = organizational citizenship behavior.

Table 15
Leadership-Criterion Time Frame by Organizational Level of Leader (1985–2009)

	TMT		Middle		Lower		Mixed		Lab		NR		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Cross-sectional	188	46.65	63	75.00	133	68.56	90	64.75	16	17.78	207	74.19	697	58.62
Short-term longitudinal	24	5.96	2	2.38	17	8.76	20	14.39	72	80.00	7	2.51	142	11.94
Longitudinal	186	46.15	18	21.43	44	22.68	29	20.86	2	2.22	64	22.94	343	28.85
NR	5	1.24	1	1.19	0	0.00	0	0.00	0	0.00	1	0.36	7	0.59
Total	403	100.00	84	100.00	194	100.00	139	100.00	90	100.00	279	100.00	1,189	100.00

Note: TMT = top management team; NR = not reported.

Supplemental Analyses

In addition to the six key questions that ground our review, we present some additional analyses that explore relevant issues related to criterion practices in leadership research. First, we explore differences in research practices among the five most researched leadership theories. Second, we explore practices related to the number of criteria included per study. Third, we present findings regarding the proportion of studies in our sample that are explicitly acknowledged (in the title, abstract, or keywords) as being about leaders or leadership versus those that are not—partly in order to foster integration between micro and macro investigations that ultimately link leadership to criteria. Finally, we supplementarily examine the absolute and relative use of the major theoretical approaches over five 5-year time periods in search of growth patterns.

Leadership theoretical domains. Different theoretical approaches examine the leadership side of the equation differently. Table 16 presents the source of leadership perspective broken out by five theoretical domains—there are marked differences in sources across these theoretical domains. The three most frequent sources in trait research are self-report measures (34%), databases (21%), and subordinate ratings (20%). For research taking a behavioral perspective, almost half is based on subordinate reports of leaders' behavior (47%); self-reported behavior composes 24% of findings, and the third most commonly utilized source is a manipulation of leader behavior (14%). LMX research examines leadership almost exclusively (and perhaps somewhat expectedly) from the subordinate or leader perspective: More than 96% of findings linking LMX to outcomes are based on subordinate-rated LMX (83%) or leader-rated LMX (13%). Transformational leadership is rated by subordinates in 70% of examinations, manipulated in 11% of studies, and self-rated in 9% of examinations.

A very different pattern surfaces with strategic leadership: 47% of leadership is based on database information, 22% on self-ratings, and 17% on researcher observation. In fact, the subordinate perspective represents less than 10% of research on strategic leadership.

Table 17 presents the types of data for each of the five theories/approaches. Surveys are the most frequent data collection method for four of the five theoretical approaches: traits (53% of trait findings), behavior (73% of behavior findings), LMX (96% of LMX findings), and transformational leadership (77% of transformational findings). For the more macro-focused research on strategic leadership, 63% of findings are based on database methodology and 30% are based on survey research.

Table 18 presents the criterion domain by leadership theory and reveals striking differences by theoretical approach. The most frequently represented criterion domains differ across leadership theories. Tangible and attitudinal outcomes were the most examined criteria for trait, behavioral, LMX, and transformational approaches to leadership. Tangible outcomes are the most represented criteria for examinations of leader traits (34% of all trait examinations) and strategic leadership (67% of all strategic examinations), whereas attitude criteria are the most prevalent outcomes examined in LMX, transformational, and behavioral leadership approaches (26%, 25%, and 21%, respectively). Behavioral approaches to leadership and studies using an LMX orientation relied on behavioral outcome domains slightly more than trait and transformational research and certainly more than strategic leadership research.

Table 16
Method of Collection of Leadership Data by Leadership Theory (1985–2009)

	Traits		Behavior		LMX		Transformational		Strategic		Other		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Self-report	95	33.81	97	24.25	15	13.39	14	8.59	87	22.31	33	13.15	341	21.35
Superior	4	1.42	8	2.00	1	0.89	3	1.84	0	0.00	4	1.59	20	1.25
Subordinate	57	20.28	189	47.25	93	83.04	114	69.94	37	9.49	183	72.91	673	42.14
Peer	3	1.07	13	3.25	0	0.00	0	0.00	4	1.03	2	0.80	22	1.38
Researcher	36	12.81	26	6.50	1	0.89	11	6.75	68	17.44	10	3.98	152	9.52
Manipulation	23	8.19	57	14.25	1	0.89	18	11.04	8	2.05	16	6.37	123	7.70
Database	60	21.35	9	2.25	1	0.89	3	1.84	185	47.44	1	0.40	259	16.22
NR	3	1.07	1	0.25	0	0.00	0	0.00	1	0.26	2	0.80	7	0.44
Total	281	100.00	400	100.00	112	100.00	163	100.00	390	100.00	251	100.00	1,597	100.00

Note: LMX = leader-member exchange; NR = not reported.

Table 17
Method of Collection of Leadership Data by Leadership Theory (1985–2009)

	Traits		Behavior		LMX		Transformational		Strategic		Other		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Survey	136	52.51	272	72.73	95	95.96	114	76.51	114	29.84	205	87.61	936	62.53
Interview	8	3.09	14	3.74	2	2.02	7	4.70	16	4.19	6	2.56	53	3.54
Observation	5	1.93	12	3.21	0	0.00	3	2.01	2	0.52	2	0.85	24	1.60
Manipulation	25	9.65	57	15.24	1	1.01	20	13.42	7	1.83	16	6.84	126	8.42
Database	84	32.43	19	5.08	1	1.01	5	3.36	241	63.09	5	2.14	355	23.71
NR	1	0.39	0	0.00	0	0.00	0	0.00	2	0.52	0	0.00	3	0.20
Total	259	100.00	374	100.00	99	100.00	149	100.00	382	100.00	234	100.00	1,497	100.00

Note: LMX = leader-member exchange; NR = not reported.

Behavior and transformational approaches were the only two to appreciably examine motivation as an outcome (24 and 20 examinations, respectively).

Table 19 presents the time frame of effects examined in research conducted within each theoretical framework. The two designs that afford the strongest inferences of leadership-causing outcomes are short-term longitudinal and longitudinal designs. Examining these two time frames, we see that strategic leadership research shows the greatest utilization of designs with temporal precedence between leadership and outcomes (approximately 54% of findings), followed by transformational research (approximately 42%), trait research (approximately 38%), behavioral research (approximately 36%), and LMX research (approximately 23%). In absolute terms, (only) 21 LMX examinations have measured leadership and outcomes with temporal separation of one day or more; 36 transformational studies have done so.

Number of criteria. While not a focal question in our review, another interesting and important issue related to current practices in leadership science relates the number of criteria leadership is linked to in a given study. We present an overview of these practices in Table 20,

Table 18
Criterion Domain by Leadership Theory (1985–2009)

		Traits		Behavior		LMX		Transformational		Strategic		Other		Total	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Effectiveness	Tangible	122	34.37	93	15.17	20	10.36	42	14.63	281	67.39	64	13.68	622	26.66
	Leadership effectiveness	31	8.73	53	8.65	18	9.33	34	11.85	8	1.92	23	4.91	167	7.16
	Performance rating	20	5.63	35	5.71	22	11.40	25	8.71	19	4.56	24	5.13	145	6.22
Attitude	Attitude	46	12.96	128	20.88	50	25.91	71	24.74	12	2.88	118	25.21	425	18.22
	Motivation	1	0.28	24	3.92	2	1.04	20	6.97	0	0.00	15	3.21	62	2.66
	Emotion	10	2.82	24	3.92	5	2.59	8	2.79	1	0.24	34	7.26	82	3.51
Behavior	Group process	5	1.41	21	3.43	4	2.07	8	2.79	5	1.20	8	1.71	51	2.19
	OCB	8	2.25	26	4.24	16	8.29	17	5.92	3	0.72	21	4.49	91	3.90
	Self-reported behavior	23	6.48	68	11.09	18	9.33	9	3.14	3	0.72	44	9.40	165	7.07
Cognition	Perceptual	89	25.07	141	23.00	38	19.69	53	18.47	85	20.38	117	25.00	523	22.42
Total		355	100.00	613	100.00	193	100.00	287	100.00	417	100.00	468	100.00	2,333	100.00

Note: LMX = leader-member exchange; OCB = organizational citizenship behavior.

Table 19
Leadership-Criterion Time Frame by Leadership Theory (1985–2009)

	Traits		Behavior		LMX		Transformational		Strategic		Other		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Cross-sectional	156	61.42	234	63.93	76	76.77	86	58.11	165	44.84	159	67.37	802	59.01
Short-term longitudinal	32	12.60	64	17.49	2	2.02	26	17.57	22	5.98	19	8.05	153	11.26
Longitudinal	65	25.59	66	18.03	21	21.21	36	24.32	177	48.10	57	24.15	397	29.21
NR	1	0.39	2	0.55	0	0.00	0	0.00	4	1.09	1	0.42	7	0.52
Total	254	100.00	366	100.00	99	100.00	148	100.00	368	100.00	236	100.00	1,359	100.00

Note: LMX = leader-member exchange; NR = not reported.

Table 20
Number of Criteria by Leadership Theory

	Traits		Behavior		LMX		Transformational		Strategic		Other		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
1 criterion	101	40.73	100	28.49	22	22.45	27	18.62	194	53.44	43	18.53	487	33.89
2 criteria	52	20.97	84	23.93	33	33.67	31	21.38	73	20.11	46	19.83	319	22.20
3 criteria	29	11.69	59	16.81	21	21.43	36	24.83	40	11.02	45	19.40	230	16.01
4 or more criteria	66	26.61	108	30.77	22	22.45	51	35.17	56	15.43	98	42.24	401	27.91
Total	248	100.00	351	100.00	98	100.00	145	100.00	363	100.00	232	100.00	1,437	100.00

Note: LMX = leader-member exchange.

Table 21
Number of Criteria by Level of Criterion

	Individual		Team		Unit		Organization		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
1 criterion	147	22.58	29	21.17	20	28.17	199	50.00	395	31.42
2 criteria	155	23.81	33	24.09	14	19.72	84	21.11	286	22.75
3 criteria	116	17.82	27	19.71	14	19.72	46	11.56	203	16.15
4 or more criteria	233	35.79	48	35.04	23	32.39	69	17.34	373	29.67
Total	651	100.00	137	100.00	71	100.00	398	100.00	1,257	100.00

broken out by leadership theory, and note that differences in number of criteria examined exist across theoretical approach. Leader trait studies and strategic leadership studies most often examine only one criterion per study (41% and 53%, respectively). This stands in stark contrast to research on leader behaviors and transformational leadership where leadership is most often linked to at least four criteria (31% of behavior studies and 35% of transformational leadership studies). The most common practice in LMX research is to link LMX to two criteria (34%).

Table 21 examines the number of criteria included per study broken out by the level of analysis of the criteria. Meaningful differences in practices are observed between studies of leadership criteria at the individual, team, and unit levels versus those at the organizational level. The most common practice when examining criteria at lower levels of analysis is to include four or more criteria: 36% of individual-level examinations, 35% of team-level examinations, 32% of unit-level examinations, but only 17% of organizational-level examinations include four or more criteria. In fact, 50% of studies examining organizational-level criteria include only one criterion.

Is the study explicitly about leadership? Table 22 presents a breakdown of totals of whether or not a given study mentioned the word *leadership* in the title, abstract, or keywords, by leadership theory. Approximately 94% of studies on strategic management that provide relevant effects linking leadership to criteria do not explicitly reference the word *leadership*. This is only slightly larger than the 73% of trait studies that link leader traits to criteria without mentioning the word *leadership* (we should note that many strategic leadership studies use a trait perspective and were dual categorized) or the 60% of behavior studies that link leader behavior to criteria without mentioning leadership. On the other hand, the proportions reverse when considering LMX and transformational leadership studies; 72% of studies linking LMX to criteria include the word *leadership* in the title or abstract, as do 92% of studies linking transformational leadership to criteria.

Theoretical approaches across the 25 years. Table 23 displays the major theoretical approaches used in leadership research for 5-year time periods across the entire 25 years. The total number of examinations for each of the consecutive time periods increases from 120 in the 1985–1989 time period to 416 in the period from 2005 to 2009. Both LMX and

Table 22
Leadership Explicitness by Leadership Theory

	Traits		Behavior		LMX		Transformational		Strategic		Other		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Yes	68	27.42	142	40.46	71	72.45	134	92.41	24	6.61	68	29.31	507	35.28
No	180	72.58	209	59.54	27	27.55	11	7.59	339	93.39	164	70.69	930	64.72
Total	248	100.00	351	100.00	98	100.00	145	100.00	363	100.00	232	100.00	1,437	100.00

Note: LMX = leader-member exchange. Leadership explicitness indicates the number of studies in which the word *leader* or *leadership* was explicitly mentioned in the title, abstract, or keywords.

Table 23
Leadership Approaches Across Time Periods

	1985–1989		1990–1994		1995–1999		2000–2004		2005–2009		Total (1985–2009)	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Trait	25	20.83	45	20.00	46	15.86	60	15.54	72	17.31	248	17.26
Behavior	36	30.00	52	23.11	66	22.76	94	24.35	103	24.76	351	24.43
LMX	4	3.33	8	3.56	20	6.90	24	6.22	42	10.10	98	6.82
Transformational	2	1.67	16	7.11	24	8.28	41	10.62	62	14.90	145	10.09
Strategic	31	25.83	64	28.44	83	28.62	104	26.94	81	19.47	363	25.26
Other	22	18.33	40	17.78	51	17.59	63	16.32	56	13.46	232	16.14
Total	120	100.00	225	100.00	290	100.00	386	100.00	416	100.00	1,437	100.00

Note: LMX = leader-member exchange.

transformational approaches have risen dramatically in absolute and relative terms from the first time period beginning in 1985, which represents the early days of each theoretical approach. Behavioral, strategic, and trait research have decreased as far as the percentage of total leadership studies, but the absolute number for each has risen across all time periods except for a slight dip in recent examinations using a strategic leadership approach.

Discussion

Leadership represents a central topic in the management literature, and research has continued to flourish. Numerous narrative reviews have been conducted on the varying theoretical perspectives of leadership (Avolio, Walumbwa, et al., 2009; Bowers & Seashore, 1966; House & Aditya, 1997; Jenkins, 1947; Kaiser et al., 2008; Mann, 1959; Stogdill, 1950), and quantitative meta-analyses have examined predictors, correlates, and outcomes of various aspects and subsets of leadership (e.g., Bono & Judge, 2004; Gerstner & Day, 1997; Ilies, Nahrgang, & Morgeson, 2007; Judge, Bono, Ilies, & Gerhardt, 2002; Judge & Piccolo, 2004; Judge, Piccolo, & Ilies, 2004; Lowe, Kroeck, & Sivasubramaniam, 1996; Podsakoff, Bommer, Podsakoff, & MacKenzie, 2006; Sin et al., 2009; Wofford & Liska, 1993), yet there

exists no systematic assessment of leadership criteria. The current review was undertaken to take stock of critical issues regarding how leadership criteria are investigated and to do so with a degree of breadth, enabling both comparisons to be made across different research streams as well as a holistic assessment of the types of inferences that can and cannot be drawn from studying leadership and outcomes using existing methods and criteria. Our net was cast around the top empirical research that has examined some aspect of leadership and some outcome variable, published in the past 25 years. In classifying these studies around important criterion issues, we synthesize past research and produce an agenda of key suggestions for the science of leadership going forward.

Question 1: From Whose Perspective Is Leadership Being Judged?

The first central issue in examining how leadership has been examined in research concerns the perspective from which leadership is being evaluated. Past research has incorporated substantial variety in the use of perspectives; in addition to subordinate, self, peer, and superior ratings, variance in focal leadership processes has been infused through manipulations, measured using archival sources such as databases, and evaluated by trained observers. Despite the range of approaches available for representing leadership, thus far subordinate ratings clearly compose the bulk of leadership science.

There is no doubt that subordinate views are critical to understanding leadership. However, perspective on leadership matters. A number of studies have found different patterns of relationships when leadership is viewed by subordinates versus trained SME observers (e.g., [DeChurch & Marks, 2006](#); [LePine, 2003](#))—and furthermore, both [LePine](#) as well as [DeChurch and Marks](#) found different mediating relationships involving leadership based on the perspective. There is also a noted discrepancy between leader self-assessment and subordinate assessments of leadership, with different implications depending on whose perspective is measured and linked with outcomes ([Bass & Yammarino, 1991](#); [Gerstner & Day, 1997](#); [Sin et al., 2009](#)). Together, systematic differences in leadership as rated by different observers suggest that leadership is best studied and represented by multiple perspectives so that the underlying complexities of leadership's effects can be uncovered. It follows that perhaps many aspects of leadership exhibit different nuances in the mediating mechanisms and moderating boundary conditions that can be discovered and modeled only if the science relies on a range of perspectives in building and testing theory.

Furthermore, peer and superior evaluations of leadership are, according to our analysis, seemingly underrepresented in the literature, even though they are ideally suited to evaluate certain aspects of leadership. Whereas subordinates are well positioned to report on outcomes such as the motivation and direction provided by their leaders, the quality of their relationship with their leader, and their perception of many leader behaviors and styles, it is peers and superiors who are uniquely positioned to report on other aspects of leadership critical to alignment, strategy, positioning, and boundary spanning within organizations. More specifically, linking one's group effectively to other organizational entities and utilizing group output within the constraints of the position and organization are critical leadership tasks for many leaders and are perhaps best captured by the peer view. In addition, garnering resources,

strategically aligning the unit with the broader organization as a whole and the top of the organization, and championing the group to superiors would be ideally suited to the superior (and perhaps also peer) perspective.

A more systematic, thoughtful, and well-rounded consideration of perspectives may be a critical step in helping leadership science demarcate the range of ways in which leadership, in all its various forms, is related to important and varied criteria.

Question 2: Which Type of Leadership Measure Is Used?

The second primary question in understanding how leadership is linked to various criteria involves a systematic understanding of the types of leadership measures: survey, interview, observation, manipulation, and database/company records. Over the 25-year time period of this review, nearly two thirds of research linking leadership to outcomes has measured leadership using some type of survey and has increased to 70% in the 2005–2009 time period. Indeed, this reliance on surveys produces the benefit of between-study consistency—because most survey assessments of leadership in high-quality journals use previously developed (and generally “validated”) measures, as a field we are in a better position to make apples-to-apples comparisons between studies. To the extent that various researcher-dictated surveys have been designed carefully and thoroughly and are capturing the “space” of leadership, increasing reliance could represent increasing convergence in the field around measurement and some maturation in a field that has been criticized for being immature ([Zaccaro & Klimoski, 2001](#)). At the same time, with a phenomenon as complex and varied as leadership, we may be trading rigor for relevance ([Staw, 1995](#); [Vermeulen, 2005](#)) by not carefully exploring rich nuances in forms and varieties of leadership that are afforded by interviews and observations.

Examining leadership through manipulation of leadership has remained a fairly consistent part of the research record. Although there is often a tendency to dismiss manipulations as having less external validity, the question is not so simple, and we must always ask ourselves about the appropriateness and limits of the inferences we wish to draw from any research ([Shadish et al., 2002](#)). By manipulating leadership styles and specific behaviors, we are able to isolate mechanisms through which leadership has effects in a way that is more difficult without manipulation ([D. J. Brown & Lord, 1999](#)). Our findings suggest that attempts to understand the “black box” of leadership through manipulation have been a mainstay of top leadership research over the past quarter century.

Question 3: On Which Criterion Domains Are Leadership Effects Assessed?

The scope of activity that leadership has been linked to defines the boundary of leadership science. The most commonly studied outcomes are attitudes (such as job satisfaction and organizational commitment), cognitive perceptions (such as organizational support and perceived structure, culture, norms, and leadership self-schema), and tangible outcomes (such as sales, customer ratings, stock price, or productivity). Two notable omissions concern criteria

that are central to conceptual models of leadership but are significantly underemphasized in the empirical record on which the science rests: motivational constructs and group processes.

Both transformational leadership and LMX theory, two of the most commonly studied approaches to leadership, deal directly with leadership as a driver of various forms of motivation (and motivation is generally presumed to lead to tangible performance outcomes and OCBs). Yet despite the theoretical importance of this explanatory mechanism, only 36 articles published in 25 years in these top outlets bear directly on leadership's effects on motivational outcomes.

Group processes are similarly underemphasized. Leadership as a vehicle for joining people together toward a common purpose (represented in part by group processes) is practically an axiom of leadership (Stogdill, 1950; Yukl, 2010), yet only 27 studies in 25 years bear directly on this outcome of leadership. Leadership science is likely to be limited in making inferences and building theory to the extent that these variables go comparatively unstudied.

Question 4: At What Time Frame Are Leadership Criteria Being Examined?

Leadership is generally seen as having effects across various time periods, from immediate effects to significantly delayed effects (Yukl, 2010). Transitory, shorter-term, and long-term effects are implied in much of leadership theory—and thus an examination of the time frame of leadership effects is a critical consideration in summarizing leadership research. Our finding that just under 40% of leadership research is either short-term longitudinal or longitudinal is perhaps at first glance encouraging—however, a significant portion of the short-term and especially longer-term longitudinal research comes from the strategic management paradigm that is often not even considered within mainstream leadership research.

Transformational leadership and even more explicitly LMX theory, which both presume that individualized relationships build over time and that leadership has lasting, nontransitory effects, had a collective total of 57 investigations with a time lag between leadership and outcome measurement of more than a day. Only 21 of these investigations examined LMX and outcomes with true temporal separation, and almost none of those 21 tracked relationship development over time at several time periods—a logical test of one of the central pieces of LMX theory (Graen & Uhl-Bien, 1995). Short-term longitudinal investigations of LMX and transformational leadership (where leadership and outcome were measured within one day or where the study involved a manipulation) were, in combination, examined 28 times over the 25-year time span of our review. Overall, the analysis of time frame of leadership effects suggests that while some research attention is being paid to the longitudinal outcomes predicted by these theories, these findings need to be contrasted against 162 cross-sectional articles published examining either transformational leadership or LMX.

We do not believe that cross-sectional research is without importance. Yet because much of leadership theory suggests that leaders and leadership can have lasting effects, examining leader effects at a later point in time allows us to better understand how leadership may have effects at midrange and longer-range time frames—and perhaps varying or even opposite effects at different points in time. In addition, temporal separation allows stronger inferences of causality of leadership affecting outcomes.

Question 5: At What Level of Analysis Are Leadership Criteria Being Examined?

The level of analysis of criteria differs significantly across the micro and macro sides of management research on leadership. Organizational-level outcome research tells us the most about hard tangible linkages and surface relationships—how well leadership (typically at the top levels and largely measured from archival information) predicts tangible performance metrics at the organizational level. Individual-level (and sometimes team-level) research often tells us more about softer linkages and deeper mechanisms—examining leadership from the subordinate perspective in predicting individual attitudes and behaviors. Both approaches add value to understanding leadership, but more cross-pollination is warranted.

For macro research on leadership, which has historically fallen largely within the strategic management domain, a clear recommendation moving forward is to examine more of the softer mechanisms—rich processes such as collective attitudes, behaviors, group processes, and cognitions at higher levels of analysis. For example, how do (senior executive) leaders affect the collective efficacy of the unit or organization as it relates to accomplishing strategic objectives? Understanding the mechanisms and processes of leadership effects on collectives will require opening up the “black box,” and reliance on database evaluations of demographics and proxies of leaders and leadership is likely to be limited in this endeavor (Hambrick, 2007; Lawrence, 1997). On the other hand, micro research would be well served to increasingly demonstrate, in addition to the mechanism-rich explanations, that leadership is driving hard outcomes at various levels of analysis.

In addition, regardless of theoretical orientation, it is clear that there is relatively little research examining outcomes at the team and unit levels, despite the fact that a primary goal of leadership is often to enhance the collective—not just individuals within the collective.

Question 6: What Is the Organizational Level at Which Leadership Effects on Criteria Are Being Examined?

The vast majority of what we know about leadership at middle and lower levels, we know from surveys, and predominantly from surveys of subordinates. While survey data are usually easiest to collect and may allow for more empirical methodological rigor in the sense of using established scales and having consistency in the presentation of measures, our understanding of rich and novel leadership phenomena at different levels would be enhanced through more use of observations and interviews and could also serve to provide triangulation around existing findings. In addition, novel manipulations or experiments around level of leader may enhance our limited understanding of leadership at top, middle, and lower levels.

As far as perspective, understanding leadership from perspectives other than subordinates or self-reports could be informative at all levels, but particularly with regard to lower- and midlevel leadership. It might be particularly informative to seek out supervisor/superior or peer perspectives on leadership phenomena and compare and contrast them with other views—this is certainly an issue in performance evaluation research but has not appeared as a focal topic in leadership. And supervisor ratings may be more predictive of certain kinds of

outcomes, while self- or peer-ratings are more related to others. At the very least, our understanding of the nature of leadership at different levels might be enhanced through systematic consideration of methods and perspectives at different levels.

In contrast with studies of middle- and lower-level leadership, top-level leadership is studied predominantly through database-derived metrics of leadership, with a notable amount of surveys using self-report and researcher interpretations of leaders and leadership. Despite the vast impact senior strategic leaders are thought to have on constituencies both within and outside the organization (Kaiser et al., 2008; Resick, Whitman, Weingarden, & Hiller, 2009), it is notable that subordinate and peer perspectives have been sparsely examined over the past quarter century. Future strategic top-level leadership research could benefit by expanding perspectives to include peers (competitors, alliance partners, external stakeholders) and proximal and distal subordinates.

Part of the current state of research on senior leaders is likely due to the questions being asked—for example, research linking CEO tenure or TMT functional diversity to organizational performance or strategic outcomes does not require a subordinate or peer perspective. We do not dispute that the correct method and perspective to measure leaders or leadership should fit the questions, but perhaps as a field we are not collectively asking certain questions because of self-imposed limitations that come from failure to consider alternative techniques that may be best suited to answering relevant, unanswered questions (Edwards, 2008).

The findings regarding differences in criteria types by leader organizational level show that we know about top-level leaders' impact on tangible outcomes and far less about their effects on attitudes, processes, motivation, and behavior. Conversely, when it comes to mid- and lower-level leaders, overall the picture is more balanced, although it appears that we are likely to know little about these leaders' effects on motivation, emotion, and group processes, in particular.

Limitations

Despite some of the benefits of the scope of this review, our work also has several limitations that should be noted. In determining the beginning point of our review, we wanted to begin at a time point that adequately captured the “modern era” of leadership research. The latter part of the 1970s and the early 1980s saw the solid establishment of transformational leadership and LMX, two important paradigms in modern leadership (Avolio, Walumbwa, et al., 2009; House & Aditya, 1997), and we thus began our review at the beginning of 1985. This decision, however, is indeed somewhat imperfect—it serves to capture a long but manageable period of time. Longer or shorter time periods may have led to different findings, and we know from this review that leadership research is not static. The beginning point of our review thus limits our conclusions about leadership research to the past 25 years.

Another choice in this review that needs to be considered in interpreting the results and conclusions has to do with the choice of journals selected. We chose the 11 journals based on journal rankings (especially Podsakoff and colleagues, 2005) as well as careful consideration of primary leadership outlets (which resulted in the inclusion of *The Leadership Quarterly*,

arguably the premier niche journal in leadership from a management perspective). Yet our choice of journal inclusion and exclusion was still somewhat of a judgment call. Interesting, important, and highly relevant research in leadership does occur outside of the journals we selected in this review—and to the extent that competent research in journals outside the scope of our review uses different methods from our sample (say, e.g., leadership research in *Group & Organization Management*),¹ our findings may not representatively capture the entire field of management-oriented leadership research. In the end, our goal was to be broad enough while focusing on the most highly regarded research outlets. Interpretation of results should be done in this light.

Another limitation is that in deciding upon categorizations for such a diverse set of articles, we may be missing some of the nuances in particular studies. And while we examine breadth and balance of the total sum of research studies according to various breakdowns, a comparative lack of research in a particular domain does not necessarily mean that additional research is conceptually or theoretically of equal importance as compared with others. The reason that little research has been done in a particular domain may be the result of minimal conceptual or practical relevance. We have attempted to take this into account in our review, especially in our interpretations of the findings. We chose our approach with cognizance of the fact that a broad approach has the benefit of painting a big picture and at the same time the danger of overgeneralization and lack of nuance.

Finally, our study is indicative of what has been done, with an eye toward what needs to be done. Emerging ideas and theories were lumped into the “other” category in our breakdowns by leadership theory because of the limited literature on each of these approaches, but nonetheless this choice means we are not detailing emerging theories well. Authentic leadership (Walumbwa, Avolio, Gardner, Wernsing, & Peterson, 2008), shared leadership (Hiller, Day, & Vance, 2006; Pearce & Conger, 2003), and ethical leadership (M. E. Brown & Treviño, 2006), to name a few, have the potential to make significant advances in our understanding of leadership phenomena and outcomes and should continue to be studied. If systematic attention to the criterion space of these newer approaches is given, perhaps the potential contributions of these approaches will be realized sooner and leadership science will be maximally advanced.

Between Now and 2035

The current review enables a broad perspective on leadership research, and the findings suggest a number of avenues for future research. Among these, four seem particularly valuable.

Expand the perspective. Future leadership research would benefit greatly from incorporating a greater variety of perspectives into examinations of leadership and outcomes. The perspectives of peers, superiors, and trained observers all reveal unique aspects of leadership. Past research focusing predominantly on subordinate perspectives of leadership reveals important aspects of leadership effects downward, but subordinates are not in the best position to reveal aspects of leadership that may better predict the effectiveness of leaders in representing the subordinates to external stakeholders, to the viability of the group or organization,

or to the long-range development of subordinates. Expansion of perspectives is warranted, as is quantification of the different types of effects and conclusions that result from different perspectives, within both current theoretical approaches and emerging theories and approaches.

Broaden the criteria. A more complete understanding of the multifaceted effects of leadership requires investigation of varying, underexplored, conceptually relevant criteria—and will ultimately aid in advancing both theory and practice. Existing leadership theories predict and have relevance for a number of criteria that have not been fully explored, which may be stunting theoretical advances. And tools for selecting, training, and developing leaders are valuable to the extent that they are first shown to affect a variety of meaningful outcomes effectiveness but also motivation, emotions, attitudes, knowledge structures, and behaviors.

Leadership research over the past 25 years has paid considerable attention to the relationship between subordinate perceptions of leadership and subordinate individual-level attitude and perceptual outcomes and the relationship between senior leaders and tangible organizational outcomes. Greater attention is needed to the impact of leaders and leadership on emotional constructs (Bono & Ilies, 2006; Sosik & Godshalk, 2000), on motivational states and social identification (Dvir et al., 2002; Shamir, Zakay, Breinin, & Popper, 1998), and on cognitive constructions of meaning (Marks, Zaccaro, & Mathieu, 2000). A focus on such variables may also allow us to better understand the complex ways in which leadership is related to more “ultimate” tangible outcomes of performance or effectiveness. In addition, the effects of leaders and leadership are not always univocal; some effects of a given leadership style or leadership behaviors in a given situation may be positive and others may be negative—even at the same time—and should be simultaneously investigated.

Greater temporal mapping of relationships. Orson Welles once noted, in a parenthetical comment that he added to the screenplay for *The Big Brass Ring*, “If you want a happy ending, that depends, of course, on where you stop your story.” The current review reveals a troubling reliance on cross-sectional designs to demonstrate the impact of leadership on outcomes; as a science, leadership research may well be stopping the story too soon (Judge et al., 2004; Judge & Piccolo, 2004). Although time is an important consideration in nearly every aspect of management research, it is absolutely essential to leadership research, even if meaningful time frames differ based on scope, level, and theoretical domain of interest. Leaders may affect some motivational, attitudinal, behavioral, and cognitive factors in a matter of minutes or hours in a temporary or more lasting way or may change others over longer periods of time (Lord & Brown, 2004). Certain tangible outcomes related to leadership may accrue quickly, while others may be more beneficially understood over months or years—the extent to which leadership effects decay, reverse, or accelerate cannot be understood within the context of cross-sectional data. In order to make inferences and understand leadership phenomena, the next era of leadership research needs to carefully incorporate various time lags and measurement over time periods.

Integrate across micro and macro investigations of leadership. The study of leadership within the “traditional” leadership literature does not often intersect with the strategic perspective.

We stand to learn a significant amount about leadership if we can start to better bridge these separate conversations. More specifically, our review reveals a disconnect in the type of metrics and approaches utilized by different theoretical approaches. Strategic leadership is frequently linked to archival sources of tangible organizational performance (e.g., Jayaraman, Khorana, Nelling, & Covin, 2000; Kor, 2006; West & Schwenk, 1996), whereas LMX, transformational, and behavioral approaches to leadership are linked to perceptual variables, attitudes, and tangible outcomes (e.g., Judge et al., 2004). A valuable direction for future leadership is to more fully integrate the micro- and macro-oriented perspectives of leadership. For top-level leadership research, greater attention to attitudes, behaviors, and cognitions would be highly informative in their own right and as moderating mechanisms of tangible strategic outcomes. For example, how do the traits, characteristics, decisions, visions, and behaviors of top-level leaders affect individual-, team-, unit-, and organizational-level motivation, emotion, attitudes, and performance levels? For mid- and lower-level leadership, attention to the ways in which individual and team processes and motivational constructs bubble up (or not) to higher levels is warranted. How do bottom- and midlevel leaders' attempts to integrate laterally affect the overall functioning of the organization, for example?

Conclusion

By some metrics and perspectives, Jack Welch was a fantastic leader; by other metrics, he may have been less than fantastic. In leadership research, explicit and systematic attention to the criteria by which we understand leadership effects is vital. Choices about perspectives, sources, criteria types, time lags, leader level, and level of analysis set some of the boundary conditions for inferences about leadership. Our hope is that the current review of past practices stimulates greater attention to these and other criterion issues and ultimately shapes a richer science of leadership going forward.

Note

1. We thank an anonymous reviewer for this specific example.

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