

## Visualizing the landscape and evolution of leadership research<sup>☆</sup>

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### ABSTRACT

Complementing prior quantitative and qualitative reviews of the leadership literature, we conduct a bibliometric analysis of leadership articles. Our bibliometric review provides a different perspective by portraying the landscape and developmental trajectory of leadership research over time via co-citation and co-occurrence analyses. Using a scientific visualization tool *CiteSpace* and 6528 leadership works collected from the Web of Science database from 1990 to 2017, we detect and visualize the landscape of leadership research and track how this landscape has evolved. After mapping the landscape, we discuss the insights gleaned from our bibliometric review, with a focus on open questions, future research directions, and implications. In doing so, our review provides readers with a systematic understanding of the development of the leadership field and a roadmap to spark leadership research and move this literature forward.

### Introduction

*“To know where we are going with leadership research, we must know where we are, and where we have been—we must look backward and forward at the same time.”*

Hunt and Dodge (2000, p. 453)

Leadership is a widely discussed and popular topic with significant managerial implications (Bass & Bass, 2008; Day & Antonakis, 2012; Yukl, 2010). Over the years, leadership research has witnessed rapid growth, with thousands of scientific articles documenting various leadership-based phenomena and processes (Bass & Bass, 2008; Batistič, Černe, & Vogel, 2017). Meanwhile, various theoretical streams have evolved during this time, and theoretical pluralism has characterized the field (Dinh et al., 2014; Glynn & Raffaelli, 2010). In fact, a recent review by Meuser et al. (2016) identified 49 leadership theories in the published works of ten influential management and organizational psychology journals. The massive amount of literature and the diversity of theoretical approaches raise a compelling need for stocktaking reviews that enable leadership scholars to

navigate this field (Dansereau, Seitz, Chiu, Shaughnessy, & Yammarino, 2013; Day & Antonakis, 2012; Glynn & Raffaelli, 2010).

There have been several key reviews that take stock of leadership research (e.g., Avolio, Walumbwa, & Weber, 2009; Day & Antonakis, 2012; Dinh et al., 2014; Gardner, Lowe, Moss, Mahoney, & Cogliser, 2010; Lowe & Gardner, 2000). For example, Lowe and Gardner (2000) reviewed articles published in the *Leadership Quarterly* during its first decade (1990–1999), followed by Gardner et al.'s (2010) subsequent review of articles published in the *Leadership Quarterly* during its second decade (2000–2009). Dinh et al. (2014) conducted an extensive review of leadership theory published in ten top-tier journals from the year 2000 to 2012. Lord, Day, Zaccaro, Avolio, and Eagly (2017) reviewed leadership research in the *Journal of Applied Psychology* from 1917 to 2015.

Although these existing reviews have been invaluable for scholars to understand the development of the leadership field, they have primarily relied on qualitative approaches for reviewing the content and topics of the extant literature. However, further knowledge may be gleaned from quantitative approaches that take stock and track the evolution of this fast-moving literature. Recently, scholars in the broader social science

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area have advanced a new method to take stock of research in scientific fields. Specifically, these scholars have applied bibliometric analysis to quantitatively visualize the landscape and the evolution of various scientific research fields (e.g., Antonakis, Bastardo, Jacquart, & Shamir, 2016; Chatterjee & Sahasranamam, 2018; Chen & Guan, 2011; Liu & Gui, 2016). Our understanding of leadership research may similarly benefit from quantitatively visualizing the landscape and evolution of this literature.

A quantitative visualization of the evolution of the leadership field is quite useful because it can both complement and validate what scholars have inferred based on qualitative reviews, and it can also quantitatively demonstrate the ways in which the leadership field is evolving (Kozlowski, Chen, & Salas, 2017; Nerur, Rasheed, & Natarajan, 2008). Compared with a qualitative review, in this quantitative review, we can detect the landscape and development of the leadership field and provide a general overview objectively and visually. Moreover, recent advancements in visualization tools such as *CiteSpace* (Chen, 2006) provide a quantitatively rigorous tool to visualize the landscape and evolutionary patterns of leadership research using big data. As such, a quantitative review that visualizes the landscape and evolution of leadership research is both important and timely.

In this review, we seek to quantitatively portray the landscape and developmental trajectory of leadership research and detect new research frontiers and emerging trends in the leadership literature. We review 28 years of published research (from January 1990 to June 2017) from the Web of Science database. Using the visualization tool *CiteSpace*, we detect, quantify, and visualize the landscape and evolution of leadership research. Furthermore, based on the results of our quantitative review, we provide a roadmap for future leadership research.

Our bibliometric review contributes to the leadership literature in several ways. First, our study offers a new way of looking at leadership areas and their associations by examining co-citations and co-occurrence data. To achieve this, we utilize a bibliometric approach to take stock of leadership research and visualize the landscape of leadership research. Second, we quantitatively trace the evolution of leadership and underlying theories from 1990 to 2017. For example, our review can show how frontiers of leadership research change over time. Third, we link our analyses of evolution with comprehensive future research agendas, which may help spawn new streams of leadership research. Thus, this review can help readers to understand research frontiers and emerging trends of leadership research. In sum, our review catalyzes future leadership research by providing scholars with a clear and systematic understanding of the current intellectual landscape, research frontiers and emerging trends, as well as a roadmap to push leadership research forward.

## Bibliometric method

The method applied in this review is bibliometric mapping (Chen, 2006; Cobo, López-Herrera, Herrera-Viedma, & Herrera, 2011), which is a visual technique that can quantitatively display the landscape and dynamic aspects of a knowledge domain (Börner, Chen, & Boyack, 2003; Liu & Gui, 2016). In line with prior research (e.g., Batistič et al., 2017), we collected data from the Web of Science core citation database. The analysis tool used in this study is *CiteSpace*, which is a Java-based scientific visualization software developed by Chaomei Chen at Drexel University (Chen, 2006).

## Sample

In this article, we review leadership research from 1990 to 2017 from the Web of Science database, and we collect leadership research in four research areas (i.e., management, business, organizational psychology, and social psychology). The choice of these four research areas is based on the analysis of the research areas of 10 influential leadership

journals (i.e., *Academy of Management Journal*, *Academy of Management Review*, *Administrative Science Quarterly*, *American Psychologist*, *Journal of Applied Psychology*, *Journal of Management*, *Leadership Quarterly*, *Organizational Behavior and Human Decision Processes*, *Organization Science*, and *Personnel Psychology*) that were identified in prior leadership reviews (e.g., Dinh et al., 2014; Meuser et al., 2016).

We took three steps to build the datasets. First, in line with prior reviews used bibliometric analysis (e.g., Batistič et al., 2017), we searched for the term “leadership” in the title, abstract, or keywords. Second, we added additional records that contained other leadership-related terms (e.g., “leader-member exchange”, “abusive supervision”, and “followership”) in the title, abstract, or keywords. We extracted these records in a text file. Third, we looked through the title, abstract, and keywords of each record and eliminated those records (e.g., book reviews, research on price leadership) that do not report theoretical or empirical research on leadership in organizations (Meuser et al., 2016). These three steps produced a total of 6528 records of original leadership research that were published between January 1990 and June 2017.

Our primary sample is comprised of 6528 records. From these 6528 records, we generated 180,630 secondary documents, which are the references cited by the 6528 primary documents (Batistič et al., 2017; Chen, 2006). Table 1 presents the definitions and functions of technical terms (e.g., primary sample, secondary document, co-citation, and co-occurrence) we use in this review.

## Analytical method

We use *co-citation analysis* (Chen, 2006; Nerur et al., 2008; Tsai & Wu, 2010) provided by *CiteSpace* to identify and visualize the landscape and evolutionary patterns of leadership research. Co-citation happens when two earlier documents are cited in a new work simultaneously (i.e., two earlier documents appear in the reference list of the new work) (Small, 1973; Vanraan, 1990). While a citation indicates that there is a relationship (e.g., giving credit for related work) between the cited and citing documents (Egghe & Rousseau, 1990), co-citation indicates that there is a relationship between two cited documents (Small, 1973). Small (1973) states that cited documents are linked together through the process of co-citation. The total cited documents reflect the overall knowledge base of the literature on a speciality (Small, 1973). A co-citation network reflects the relationships among the cited documents (i.e., knowledge base). While a document can be cited across multiple disciplines, co-citation analysis focuses on the extent to which the document is co-cited with other documents by citing documents in a research field (i.e., primary documents). Thus, documents with high co-citation frequencies with other documents (i.e., highly co-cited documents) are at the heart of the knowledge base of a research field and can be regarded as the landmark documents of the field (Chen, 2006; Small, 1973).

More specifically, we use co-citation analysis to provide a *document co-citation network*, an *author co-citation network* and a *journal co-citation network*. A *document co-citation network*, which can also be called a *reference co-citation network*, reflects the frequency with which two works are both cited in the same primary document and shows the salient network of co-cited references (Small, 1973). For example, Graen and Uhl-Bien (1995) cited both Bass (1990) and Burns (1978). Thus a document co-citation network is established with the nodes of Bass (1990) and Burns (1978). Then we use the document co-citation network to trace major co-citation work as landmarks and the evolution of frontiers of research over time. Complementing the *document co-citation network*, the *author co-citation network* reflects authors whose works are cited in the same primary document (Nerur et al., 2008). Similarly, we depict the *journal co-citation network*.

In addition, we use *co-occurrence analysis* to calculate the frequency of pairs of keywords appearing in the same document (He, 1999; Liu, Yin, Liu, & Dunford, 2015). The analysis of co-occurrence is typically depicted as a network of concepts (Chen, 2013). The *time-zone visualization graph*

**Table 1**  
Main technical terms in this review.

Technical terms	Definition	Explanation or function
Primary document	The selected documents (citing document)	Explanation: 6528 original leadership research documents as citing works in this research.
Secondary document	The cited references by selected documents (cited documents)	Explanation: 180,630 secondary documents as cited works in the primary documents.
Citation	“If paper R contains a bibliographic note using and describing paper C, then C has a citation from R” (Egghe & Rousseau, 1990: 204).	Function: Represent the key concepts, methods, or experiments in a field with frequently cited papers (Small, 1973).
Co-citation	“Documents are co-cited if they appear in the same document reference list, thus co-citation shows a similarity relationship between two cited publications (secondary document) that appear in the same citing document (primary document)” (Batistič et al., 2017: 89). “A new form of document coupling, co-citation is defined as the frequency with which two documents are cited together” (Small, 1973: 265).	Functions: 1) Identify landmark works that reflect literature structure with high total co-citation (Tsai & Wu, 2010); 2) Map out the relationships between key ideas in a field (Small, 1973); 3) Model the intellectual structure of scientific specialities objectively (Small, 1973); 4) Provide clues to understand mechanisms of speciality development (Small, 1973).
Co-occurrence	“Co-occurrence analysis is based on the assumption that when two items appear in the same context, they are related to some degree. It tends to be employed to explore changes in research themes in a research field by measuring the frequency of pairs of items (i.e., words or noun phrases) occurring in the entire body of literature in a selected field” (Liu et al., 2015: 139).	Functions: 1) “Measure the frequency of co-occurrence of pairs of keywords or noun phrases and other terms in the same document” (Liu et al., 2015: 139); 2) “Study disciplines are involved in constructing the intellectual base of a specific research field” (Liu et al., 2015: 139); 3) Monitor evolving research frontiers of specific themes over time (Liu et al., 2015); 4) Detect major topics and intellectual base of a specific research field (Liu et al., 2015).
Burst	Burst is defined by Kleinberg’s burst detection algorithm (Kleinberg, 2003), which can be adapted for the sharp increase of keywords or reference in a specific area. In <i>Citespace</i> software, current research frontiers are identified based on such burst terms (Chen, 2006).	Functions: 1) Find emerging trends and radical changes (Chen, 2006); 2) Detect sharp increases of interest in a speciality (Chen, 2006); 3) Identify emergent terms (e.g., authors/keywords) (Chen, 2006).

*Note.* Interested readers can refer to Li & Chen (2016) for the generation process of the co-citation network (p. 144) and the generation process of the co-occurrence network (p. 201). The English version of the generation processes from the original chapters (in Chinese) are available upon request from our corresponding author.

delineates the focal topics in each time slice and how those major topics evolved. The difference between co-citation and co-occurrence is that the former performs the calculation of the reference part of the primary paper, while the latter focuses on the front end, specifically, the keywords section of the primary paper. For example, keyword co-occurrence is defined as two keywords occur in the same document. The dataset used in this analysis is the 6528 records of original leadership research. A co-citation is the relationship between two cited references (which are cited by the same citing document), the dataset used in the co-citation analysis are 180,630 secondary documents (cited-reference) co-cited by the 6528 records of original leadership research.

## Bibliometric analyses and results

### Author co-citation analyses

The *author co-citation network* is the network of co-cited authors (White & Griffith, 1981). When author A and author B are cited in the same primary document, author A and author B have a co-citation link. The co-citation frequency of author A and author B is calculated based on the frequency with which the two authors are cited together in the primary documents (Liu & Chen, 2012; Small, 1973; Tsay, Xu, & Wu, 2003). Shown in Fig. 1 is the *author co-citation network* of leadership research based on seven four-year slices (1990–2017). The *author co-citation network* shows only the most co-cited authors in Fig. 1. In the network, each node represents one author and edges represent the co-citation relationship of two authors. The sizes of these authors' nodes are in proportion to their author co-citation frequency (Antonakis et al., 2016). The results in Fig. 1 indicate that Bernard Bass, Gary Yukl, Bruce Avolio, Robert J. House, and Timothy Judge emerge as the top 5 most influential authors in the *author co-citation network*.

### Document co-citation analyses

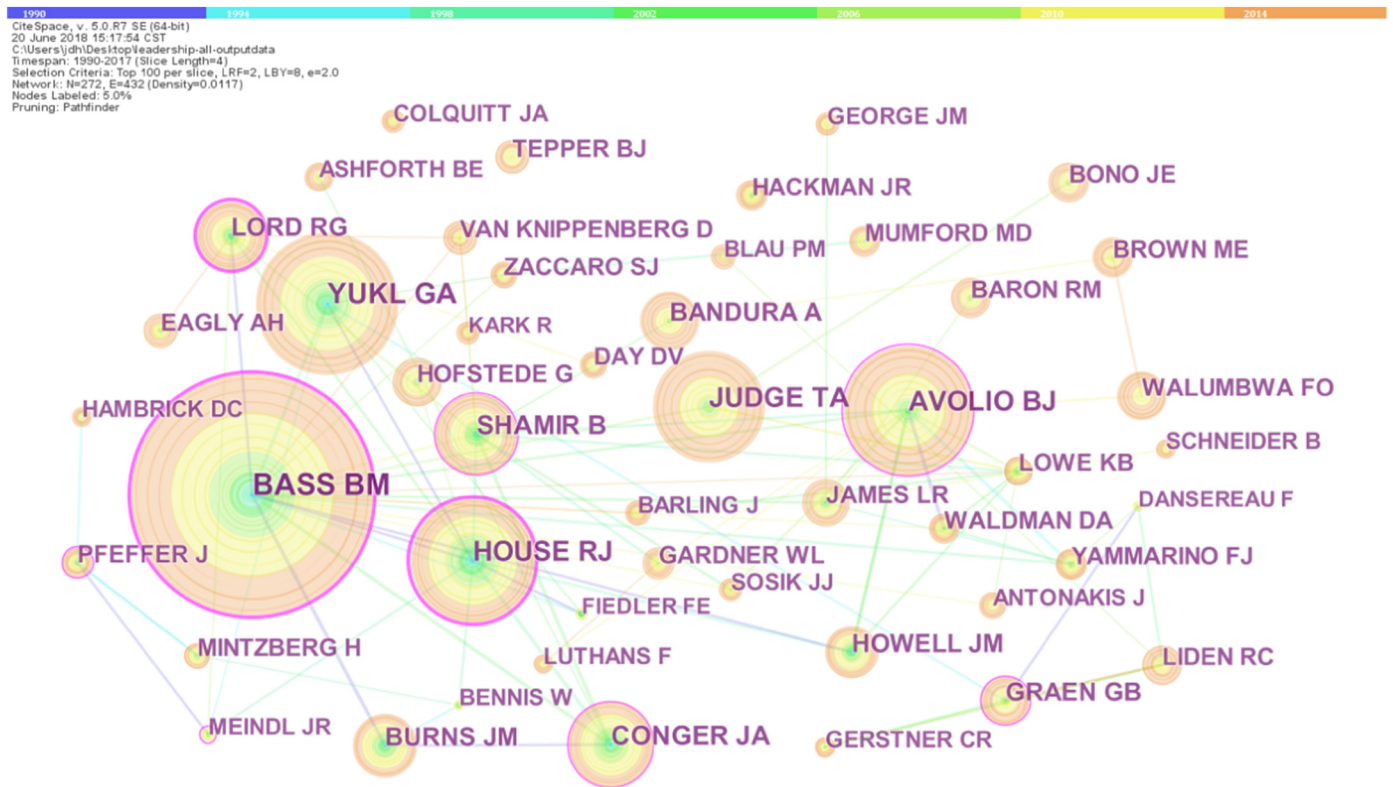
The *document co-citation network* is the network of co-cited references (Liu et al., 2015; Small, 1973). When reference A and reference B are cited in the same primary document, reference A and reference B have a co-citation link. The co-citation frequency of reference A and reference B is calculated based on the frequency with which the two references are cited together in the primary documents (Chen, 2006; Liu et al., 2015; Small, 1973).

We conduct a *document co-citation* analysis to detect the landscape and paradigm development of the leadership research field (Chen, 2006; Ramos-Rodríguez & Ruíz-Navarro, 2004). The *document co-citation network* of leadership research based on seven four-year slices (1990–2017) is shown in Fig. 2. For each four-year slice, the *CiteSpace* software selected top 100 most cited references. If a reference was one of the top 100 most-cited references in at least one of the seven four-year slices, the reference was included in the reference co-citation network as a node (Chen, 2006; Li & Chen, 2016). The document co-citation network in Fig. 2 shows only the most co-cited works. In the network, each node represents one reference, and edges represent the co-citations of two references. The sizes of these nodes are in proportion to their document co-citation frequency (Antonakis et al., 2016). For example, Judge and Piccolo’s (2004) meta-analysis of transformational, transactional, and laissez-faire leadership has the largest size of the node, which is identified as the most co-cited reference. The links among the nodes mean that the papers are co-cited in the literature.

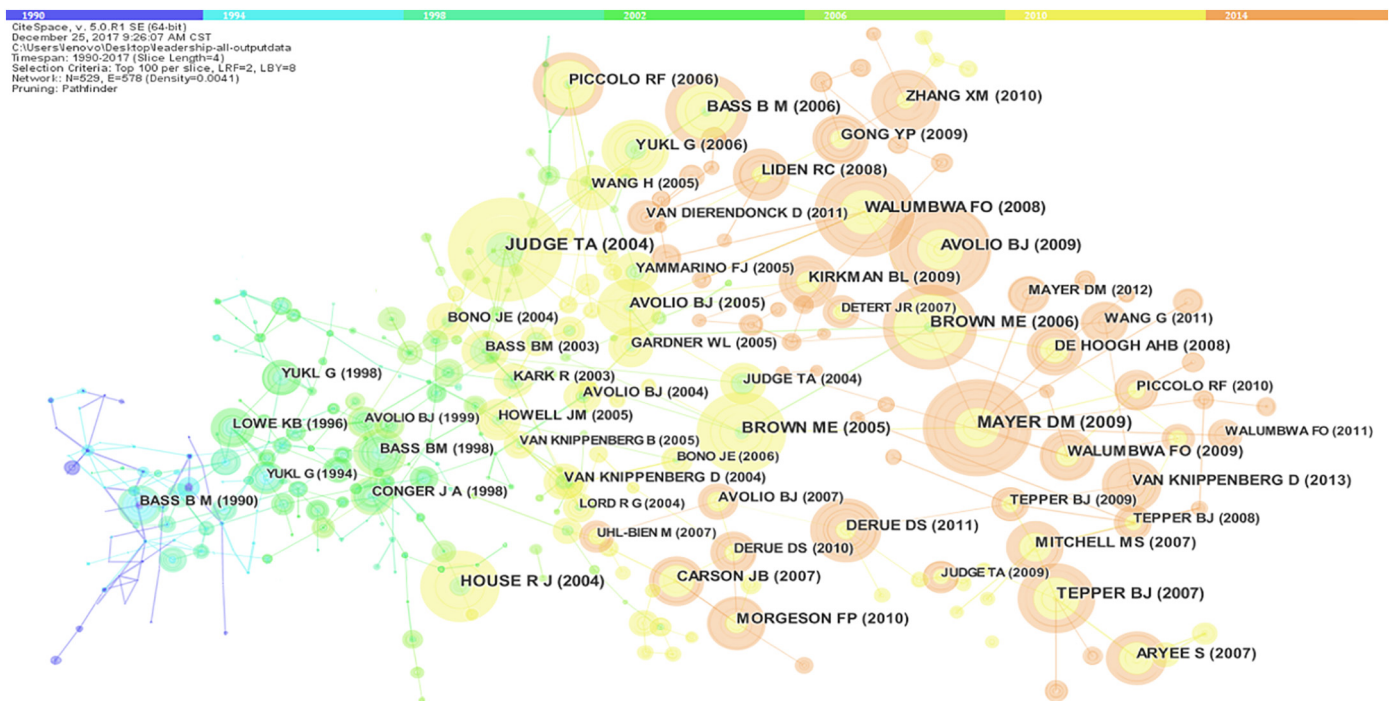
### Analysis of 200 landmark leadership works

Articles or books with high total co-citation frequency are landmark works in the literature (Tsai & Wu, 2010). Based on the index of co-





**Fig. 1.** Author co-citation network of leadership research during 1990–2017.  
 Note. The author co-citation network shows only the most co-cited authors. Each node represents one author and edges represent the co-citation relationship of two authors. Difference in node size indicates relative difference in author co-citation frequency. We deleted Steve W.J. Kozlowski, Philip M. Podsakoff, Kristopher J. Preacher, Andrew F. Hayes, Paul E. Spector, and Paul D. Bliese, whose works cited in the leadership literature are mainly methodological papers.



**Fig. 2.** Document co-citation network of leadership research during 1990–2017.  
 Note. The document co-citation network shows only the most co-cited works. Each node represents one reference (only first authors are named), and edges represent the co-citations of two references. Difference in node size indicates relative difference in document co-citation frequency. Similar as in Fig. 1, we deleted methodological articles that are not leadership research papers.

**Table 2**  
Analysis of 200 influential leadership works during 1990–2017.

Leadership themes	Number of articles	Sample references	Frequency index	Burst index	Major overarching theories
Leadership in general	16	Avolio et al. (2009)	169	22.4	
		Avolio (2007)	70	17.2	
		*Dinh et al. (2014)	51	22.1	
		House and Aditya (1997)	45	24.0	
		Mumford, Scott, Gaddis, and Strange (2002)	40	19.2	
		Yammarino et al. (2005)	77	21.7	
		Yukl (2010)	42	25.5	
		Bass and Bass (2008)	139	25.3	
		Bass and Riggio (2006)	137	31.9	
		Bass, Avolio, Jung, and Berson (2003)	80	30.8	
Transformational and charismatic leadership	82	Bono and Ilies (2006)	49	23.5	Social cognitive theory; social exchange theory; social identity theory; job characteristics theory; goal setting theory; trait activation theory; upper echelons theory.
		Bono and Judge (2004)	71	24.0	
		*Braun, Peus, Weisweiler, and Frey (2013)	25	10.0	
		Conger and Kanungo (1998)	74	37.6	
		Gardner and Avolio (1998)	50	26.0	
		Gong et al. (2009)	96	15.5	
		Howell and Shamir (2005)	81	23.1	
		Judge and Piccolo (2004)	189	67.0	
		Kark, Shamir, and Chen (2003)	66	25.4	
		Kirkman et al. (2009)	100	18.8	
		Lowe et al. (1996)	75	40.9	
		Piccolo and Colquitt (2006)	119	27.7	
		*Pieterse, van Knippenberg, Schippers, and Stam (2010)	35	14.0	
		Shamir, House, and Arthur (1993)	48	27.1	
		*Tims et al. (2011)	34	13.6	
		*van Knippenberg and Sitkin (2013)	97	39.1	
		*Wang and Howell (2010)	34	13.6	
		Wang et al. (2005)	87	26.6	
		*Wang, Oh, Courtright, and Colbert (2011)	77	31.0	
		*Wu et al. (2010)	44	17.7	
Transactional leadership	22	Avolio, Bass, and Jung (1999)	61	33.0	Social learning theory; social cognitive theory; upper echelons theory.
		Bass et al. (2003)	80	30.8	
		Howell and Avolio (1993)	55	30.8	
		Judge and Piccolo (2004)	189	67.0	
		Lowe et al. (1996)	75	40.9	
Leader-member exchange	10	*Dulebohn et al. (2012)	68	27.4	Social exchange theory; network theory; open system theory; social cognitive theory.
		Gerstner and Day (1997)	31	16.0	
		Graen and Uhl-Bien (1995)	42	21.8	
		Liao, Liu, and Loi (2010)	26	10.4	
		Uhl-Bien (2006)	53	21.3	
Ethical/Moral leadership	16	Wang et al. (2005)	87	26.6	Social exchange theory; social learning theory; cognitive moral development theory; social information processing theory; conservation of resources theory; affective events theory; social cognitive theory; social identity theory; upper echelons theory; self-regulation theory; theory of moral reasoning; moral development theory; theory of moral judgment; behavioral plasticity theory.
		*Avey, Palanski, and Walumbwa (2011)	26	10.4	
		*Brown and Mitchell (2010)	38	15.2	
		Brown and Treviño (2006)	157	37.3	
		Brown et al. (2005)	151	45.3	
		*Kacmar, Bachrach, Harris, and Zivnuska (2011)	26	10.6	
		*Kalshoven et al. (2011)	38	15.2	
		*Mayer et al. (2012)	70	28.2	
		Mayer et al. (2009)	180	25.6	
		*Piccolo, Greenbaum, Hartog, and Folger (2010)	80	15.1	
Authentic leadership	9	*Schaubroeck et al. (2012)	50	20.1	Self-determination theory; social exchange theory; role incongruity theory; social exchange theory; self-determination theory; social identity theory; self-discrepancy theory; social learning theory; affective events theory.
		Avolio and Gardner (2005)	110	33.3	
		Avolio, Gardner, et al. (2004)	65	20.2	
		Gardner et al. (2005)	77	23.0	
		*Gardner et al. (2011)	50	20.1	
		Walumbwa, Avolio, Gardner, et al. (2008)	167	28.3	
Servant leadership	6	Liden et al. (2008)	97	19.3	Social exchange theory; social learning theory; regulatory focus theory; social cognitive theory; self-determination theory; goal setting theory.
		*van Dierendonck (2011)	65	26.1	
		*Walumbwa et al. (2010)	46	18.5	

(continued on next page)

Table 2 (continued)

Leadership themes	Number of articles	Sample references	Frequency index	Burst index	Major overarching theories
Abusive supervision (include destructive leadership)	20	Aryee et al. (2007)	101	22.7	Social exchange theory; reactance theory; power/dependence theory; moral exclusion theory; social learning theory; social information processing theory; attribution theory; role theory; conservation of resources theory; self-gain view; self-regulation impairment view; demand-control theory of stress.
		*Lian, Ferris, and Brown (2012)	30	12.0	
		*Liu, Liao, and Loi (2012)	38	–	
		*Martinko et al. (2013)	32	14.2	
		*Mawritz, Mayer, Hoobler, Wayne, and Marinova (2012)	38	15.2	
		Mitchell and Ambrose (2007)	96	21.6	
		*Restubog, Scott, and Zagenczyk (2011)	29	11.6	
		*Schyns and Schilling (2013)	37	14.8	
		Tepper (2007)	127	28.6	
		Tepper et al. (2006)	49	19.7	
		Tepper, Henle, Lambert, Giacalone, and Duffy (2008)	66	12.1	
		*Tepper et al. (2011)	42	16.9	
		*Thau and Mitchell (2010)	27	10.8	
		Team leadership and shared leadership	15	Burke et al. (2006)	
Carson et al. (2007)	93			20.9	
Day et al. (2004)	28			13.6	
Ensley et al. (2006)	35			14.1	
*Morgeson et al. (2010)	102			14.4	
Pearce and Conger (2003)	50			21.7	
Zaccaro, Rittman, and Marks (2001)	21			11.5	
Trait theory	11			Bono and Judge (2004)	71
		*DeRue et al. (2011)	119	26.2	
		Judge, Bono, Ilies, and Gerhardt (2002)	49	23.5	
		Judge et al. (2009)	64	8.7	
		*Koenig et al. (2011)	52	20.9	
		Zaccaro (2007)	30	12.0	
Strategic leadership	6	Finkelstein and Hambrick (1996)	24	12.6	Upper echelons theory.
		Jansen et al. (2009)	39	15.6	
		Resick et al. (2009)	31	12.4	
		Waldman et al. (2001)	44	19.9	
Empowering leadership	4	Ahearne, Mathieu, and Rapp (2005)	28	11.2	Role identity theory.
		Srivastava et al. (2006)	32	12.9	
		*Zhang and Bartol (2010)	115	–	
Self-sacrificing leadership	1	van Knippenberg and van Knippenberg (2005)	58	15.6	Social categorization theory.
Leadership emergence & development	6	Avolio and Gardner (2005)	110	33.3	Social exchange theory; self-determination theory; social identity theory.
		Day and Harrison (2007)	25	10.1	
		Day (2001)	35	15.8	
		*DeRue and Ashford (2010)	80	12.2	
		Gardner et al. (2005)	77	23.0	
		Kark and Van Dijk (2007)	29	11.6	
Implicit leadership	7	Den Hartog et al. (1999)	30	16.7	Social identity theory.
		*van Knippenberg (2011)	65	26.1	
		van Knippenberg and van Knippenberg (2005)	58	15.6	
		Collinson (2006)	27	10.8	
Followership	5	Gardner et al. (2005)	77	23.0	Self-identity theory; social exchange theory; self-determination theory.
		Howell and Shamir (2005)	81	23.1	
		*DeRue and Ashford (2010)	80	12.2	
Identity-based leadership theory	5	*Haslam, Reicher, and Platow (2011)	27	10.8	Social identity theory.
		Hogg (2001)	45	20.9	
Emotions and leadership	5	Bono and Ilies (2006)	58	16.3	Affective events theory; social identity theory.
		Dasborough and Ashkanasy (2002)	23	12.6	
		Sy et al. (2005)	56	14.9	
Diversity and cross-cultural leadership	5	Eagly and Karau (2002)	36	17.3	Role theory (role congruity theory); value/belief theory of culture; implicit motivation theory; the integrated theory; structural contingency theory.
		House et al. (2004)	132	45.0	
		Javidan and House (2006)	26	10.4	
		Uhl-Bien et al. (2007)	61	13.7	
Paternalistic leadership	1	Pellegrini and Scandura (2008)	60	11.3	
Paradoxical/ambidextrous leadership	1	*Rosing et al. (2011)	37	15.9	Path-goal theory.

Note. Some papers employ multiple leadership frameworks and thus they could be included in more than one leadership theme. We referred to Dinh et al. (2014) and Meuser et al. (2016) to name the leadership theories. We did not summarize the overarching theories for the “Leadership in General” category, because these studies did not focus on a specific leadership theme. The sample references were selected subjectively, where we jointly considered the frequency index, and burst index, as well as the content of the reference. Papers published since 2010 are noted with a marker \*.

citation frequency (Liu & Chen, 2012; Small, 1973; Tsay et al., 2003), we identify 200 influential leadership works from 1990 to 2017. Analyzing the content and major contributions of these landmark works provides us with an understanding of the landscape of leadership research.

Next, we provide a summary of the 200 landmark leadership works in Table 2. We organize our summary based on the major themes of leadership research as follows.

#### *An integrative review of leadership research*

Among the 200 landmark leadership works, 16 papers or books provide integrative reviews of leadership research in general. For example, Avolio et al.'s (2009) review paper entitled “Leadership: Current theories, research, and future directions” is one of the landmark works. This review paper describes the development of 13 major leadership theories and provides some directions to move these leadership theories forward. Dinh et al.'s (2014) review paper entitled “Leadership theory and research in the new millennium: Current theoretical trends and changing perspectives” is another landmark leadership article. This article takes stock of established and developing theories since 2000 and provides a process-oriented framework to integrate diverse leadership theories. Yammarino, Dionne, Chun, and Dansereau's (2005) paper entitled “Leadership and levels of analysis: A state-of-the-science review” presents a comprehensive review of the leadership literature with a focus on levels of analysis issues. It is noteworthy that, the book entitled “Leadership in organizations” by Yukl (2010) also offers a synthesis of leadership research and has had a significant impact on leadership research.

#### *Transformational and charismatic leadership theories*

Consistent with the findings of Lord et al. (2017), our results suggest that transformational and charismatic leadership topics represent a major stream of leadership research over the past three decades. Our review indicates that 82 out of the 200 landmark leadership works are about transformational or charismatic leadership. Among these research works, the focus is either on transformational leadership or charismatic leadership, and in some instances, transformational leadership and charismatic leadership are mentioned together. Relatedly, some works are on transactional leadership and self-sacrificing leadership. Below, we summarize how these studies advance neocharismatic leadership theories (Dinh et al., 2014) in five key aspects.

First, several books or papers provide qualitative reviews. For example, Bass and Riggio (2006), and Bass and Bass (2008) provide a synthesis of the transformational leadership theory. Conger and Kanungo (1998) present a systematic introduction to charismatic leadership theory. Second, several studies take stock of knowledge using meta-analysis. For example, Judge and Piccolo (2004) provides a meta-analytic test of the relative validity of the full range of transformational, transactional, and laissez-faire leadership. Bono and Judge (2004) provide a meta-analysis of personality and transformational and transactional leadership. Lowe, Kroeck, and Sivasubramaniam (1996) provide a meta-analytic review of the Multifactor Leadership Questionnaire literature. Third, several studies advance transformational leadership research by identifying new mediating mechanisms such as leader-member exchange (Wang, Law, Hackett, Wang, & Chen, 2005), employee creative self-efficacy (Gong, Huang, & Farh, 2009), perceptions of job characteristics (Piccolo & Colquitt, 2006), self-concordant goals (Bono & Judge, 2003), trust (Schaubroeck, Lam, & Peng, 2011), identification (Walumbwa, Avolio, & Zhu, 2008), psychological empowerment (Avolio, Zhu, Koh, & Bhatia, 2004). Along similar lines, other studies highlight new moderators that constrain the effects of leadership, such as power distance orientation (Kirkman, Chen, Farh, Chen, & Lowe, 2009) and support for innovation (Howell & Avolio, 1993). Fourth, some studies advance transformational leadership from a multi-level or cross-level perspective (e.g., Kirkman et al., 2009), or a within-person perspective (Tims, Bakker, & Xanthopoulos, 2011). Last, some studies provide a critical assessment of charismatic–transformational leadership research (van Knippenberg &

Sitkin, 2013) and evaluate the conceptual weaknesses in transformational and charismatic leadership theories (Yukl, 1999).

#### *Leader-member exchange and relational leadership theories*

Ten out of the 200 landmark leadership works are about leader-member exchange (LMX) theory, which focuses on the dyadic relationship between a leader and a follower (Gerstner & Day, 1997). LMX was another important leadership theme during the 1990s and beyond. In the 1990s, Graen and Uhl-Bien (1995), one of the most influential LMX studies, discuss LMX as a relationship-based approach to leadership and apply a multi-level perspective to review the development of LMX theory over 25 years. Gerstner and Day (1997) provide a meta-analytic review of LMX theory, with a focus on correlates and construct issues. Schriesheim, Castro, and Cogliser (1999) provide another comprehensive review on LMX research, with a focus on theory, measurement, and data-analytic practices.

In the last two decades, scholars have enriched LMX research regarding its antecedents and outcomes. Ilies, Nahrgang, and Morgeson (2007) conducted a meta-analysis of the relationship between LMX and organizational citizenship behavior. Dulebohn, Bommer, Liden, Brouer, and Ferris (2012) provided an updated meta-analysis of antecedents and consequences of LMX as well as directions for future research. Moreover, scholars have examined LMX as a mediator or moderator. For example, LMX has been found to mediate the relationship between transformational leadership with organizational citizenship behavior (Wang et al., 2005). Finally, another landmark leadership article is Uhl-Bien's (2006) treatise on relational leadership theory, exploring the emerging and changing social processes of leadership during interpersonal interactions.

#### *Value-based forms of leadership*

During the 1990s and beyond, we witness a growth of research on value-based leadership including ethical leadership, authentic leadership, and servant leadership (Hernandez, Eberly, Avolio, & Johnson, 2011). In line with this observation, 31 out of the 200 landmark leadership articles fall into the value-based stream of leadership. Among these works, some scholars provide a review of ethical leadership (Brown & Treviño, 2006), authentic leadership (Gardner, Cogliser, Davis, & Dickens, 2011), or servant leadership (van Dierendonck, 2011). Some studies develop and validate new measures for ethical leadership (Kalshoven, Den Hartog, & De Hoogh, 2011), authentic leadership (Walumbwa, Avolio, Gardner, Wernsing, & Peterson, 2008) or servant leadership (Liden, Wayne, Zhao, & Henderson, 2008). Some studies advance our understanding of the influence mechanisms of ethical leadership (Walumbwa et al., 2011), authentic leadership (Avolio, Gardner, Walumbwa, Luthans, & May, 2004), or servant leadership (Walumbwa, Hartnell, & Oke, 2010). Also, some studies test trickle-down models of ethical leadership (e.g., Mayer, Kuenzi, Greenbaum, Bardes, & Salvador, 2009).

#### *Abusive supervision*

Abusive supervision has received substantial attention since the 2000s. Twenty out of the 200 landmark leadership articles are about abusive supervision. An impactful work is Tepper's (2007) review of abusive supervision in work organizations, which articulates the conceptualization of abusive supervision, develops an emergent model that integrates extant empirical work, and suggests directions for future research. Aryee, Chen, Sun, and Debrah (2007) investigate the main and interactive effects of supervisor perceptions of interactional justice and an authoritarian leadership style on abusive supervision and examine the relative importance of procedural and interactional justice as mediators of the relationship between abusive supervision and the outcomes of citizenship behavior and organizational commitment. Mitchell and Ambrose (2007) examine the moderating effects of negative reciprocity beliefs in the relationship of abusive supervision with subordinates' organization deviance. Drawing on power-dependence



theory, [Tepper et al. \(2009\)](#) investigate the moderating effect of intention to quit in the relationship of abusive supervision with subordinates' workplace deviance. [Tepper, Moss, and Duffy \(2011\)](#) find that relationship conflict and poor subordinate performance mediates the relationship of perceived deep-level dissimilarity with abusive supervision. Drawing on social learning theory and social information processing theory, [Mawritz and colleagues \(2013\)](#) test a trickle-down model of abusive supervision across three hierarchical levels (i.e., managers, supervisors, and employees). [Martinko, Harvey, Brees, and Mackey \(2013\)](#) distinguish abusive supervisory behavior with abusive supervisory perceptions.

#### *Team leadership*

Fifteen out of the 200 landmark leadership articles investigate leadership in the team context. Some of these studies investigate individual leadership theories such as transformational leadership (e.g., [Eisenbeiss, van Knippenberg, & Boerner, 2008](#); [Wang & Howell, 2010](#); [Wu, Tsui, & Kinicki, 2010](#)) and ethical leadership ([Mayer, Aquino, Greenbaum, & Kuenzi, 2012](#)) in teams. Other studies investigate collective forms of leadership, such as shared leadership. In particular, [Pearce and Conger \(2003\)](#) depict the historical underpinnings of shared leadership and provide a classic conceptualization of shared leadership. [Carson, Tesluk, and Marrone \(2007\)](#) investigate the antecedents of shared leadership and its consequences on team performance as well as provide a social network approach to measure shared leadership. Also noteworthy, [Morgeson, DeRue, and Karam \(2010\)](#) advance a functional approach to understanding leadership structures and processes in teams. [Burke et al. \(2006\)](#) provide a meta-analysis of what types of leadership behaviors are functional in teams. [Day, Gronn, and Salas \(2004\)](#) set up an emerging IMO (inputs, mediators, outcomes, inputs) framework for understanding the development of team leadership capacity.

#### *Trait theories*

Historically, trait approaches to leadership is a classic leadership paradigm. During the 1990s and beyond, some landmark articles conducted meta-analyses on the relationship of leadership behaviors or styles with various traits or dispositions, such as the five-factor model of personality ([Bono & Judge, 2004](#); [Judge & Bono, 2000](#)), intelligence ([Judge, Colbert, & Ilies, 2004](#)), and masculinity ([Koenig, Eagly, Mitchell, & Ristikari, 2011](#)). [DeRue, Nahrgang, Wellman, and Humphrey \(2011\)](#) provide a meta-analytic test of the relative validity of leader traits and behaviors, finding that behaviors are more proximal (and thus more influential) to outcomes (e.g., group performance, satisfaction with leader) than traits.

#### *Strategic leadership*

Strategic leadership analyzes the leadership of the CEO or other top leaders or top management teams at the highest level of an organization. [Finkelstein and Hambrick \(1996\)](#) provide a systematic introduction to strategic leadership. [Jansen, Vera, and Crossan \(2009\)](#) investigate the effects of strategic leadership on organizational innovation. [Waldman, Ramírez, House, and Puranam \(2001\)](#) investigate the relationship between CEO leadership attributes and organizational profitability. [Resick, Whitman, Weingarden, and Hiller \(2009\)](#) discuss the bright side and the dark side of CEO personality.

#### *Empowering and participative leadership*

In the 1990s, empowering or participative leadership theories began to receive increasing attention. One landmark leadership article is [Zhang and Bartol's \(2010\)](#) paper on empowering leadership. In this paper, Zhang and Bartol link empowering leadership to employee creativity and examine the influence process through psychological empowerment, intrinsic motivation, and creative process engagement. Another landmark paper is by [Srivastava, Bartol, and Locke \(2006\)](#), which links empowering leadership to team performance and examines the mediating process through knowledge sharing and efficacy.

#### *Leadership emergence and development*

The development of effective leaders and leadership behavior has received considerable attention from practitioners and also from researchers ([Avolio & Gardner, 2005](#); [Day, 2001](#); [Day, Fleenor, Atwater, Sturm, & Mckee, 2014](#)). [Day \(2001\)](#) reviews how leadership development is being conducted in the practice context and summarizes research on leadership development in the research context. [Gardner, Avolio, Luthans, May, and Walumbwa \(2005\)](#) develop a self-based model of authentic leader and follower development. The model emphasizes the developmental processes of leader and follower self-awareness and self-regulation. [DeRue and Ashford \(2010\)](#) develop a social process model of leadership identity construction.

#### *Followership*

In contrast with a leader-centric perspective on leadership, some scholars have begun to examine the perspective of followers ([Uhl-Bien, Riggio, Lowe, & Carsten, 2014](#)). Noteworthy, [Howell and Shamir \(2005\)](#) discuss the role of followers in the charismatic leadership process. They distinguish between two types of charismatic relationships—personalized and socialized—and present general propositions about how followers' self-concepts might determine the type of charismatic relationships that they form with a leader.

#### *Identity-based leadership theories*

This leadership theme includes self-concept and social identity approaches to leadership (e.g., [Jackson & Johnson, 2012](#); [Lord, Brown, & Freiberg, 1999](#); [van Knippenberg, van Knippenberg, De Cremer, & Hogg, 2004](#)). In a seminal work, [Hogg \(2001\)](#) describes a social identity theory of leadership whereby a leader's social influence derives from him/her closely aligning with the group prototype. [DeRue and Ashford \(2010\)](#) further advance this line of research by articulating a social process of leadership identity construction in organizations.

#### *Emotions and leadership*

As a nascent approach to leadership research ([Dinh et al., 2014](#)), leaders' and followers' emotions are receiving increased attention ([Bono & Ilies, 2006](#); [Connelly & Gooty, 2015](#); [Liu, Song, Li, & Liao, 2017](#); [van Kleef et al., 2009](#)). One landmark work by [Sy, Côté, and Saavedra \(2005\)](#), investigates the impact of the leader's mood on the mood of group members, group affective tone, and group processes.

#### *Diversity and cross-cultural leadership*

Diversity and cross-cultural leadership is an emerging theme which is attracting wide attention. An important milestone in cross-cultural leadership research is the GLOBE (Global Leadership and Organizational Behavior Effectiveness) project ([House et al., 1999](#); [House, Hanges, Javidan, Dorfman, & Gupta, 2004](#); [Javidan & House, 2006](#)). In the book entitled "Culture, leadership, and organizations: The GLOBE study of 62 societies," [House et al. \(2004\)](#) detail their systematic investigation of leadership across different cultures. An important finding of the GLOBE project is that leadership attributes and behaviors differ across cultures, yet certain implicit leadership theories (e.g., charismatic-transformational leadership) appear to be universally endorsed.

#### *Other nascent leadership themes*

As shown in [Table 2](#), studies on complexity leadership, paternalistic leadership, and paradoxical leadership also have high co-citation frequency. Among the landmark works, [Pellegriani and Scandura \(2008\)](#) provide a review of research on paternalistic leadership. [Uhl-Bien, Marion, and McKelvey \(2007\)](#) offer a systematic introduction to complexity leadership theory. [Rosing, Frese, and Bausch \(2011\)](#) use ambidextrous leadership to explain the heterogeneity of the leadership-innovation relationship.



General findings from document co-citation analysis

In general, we observe the following trajectories and trends for landmark leadership research. First, in the 1990s, most of the landmark documents concerned transformational and charismatic leadership. In the 2000s, more landmark articles involved social exchange theory and leadership in teams. From 2010 to 2017, leadership scholars' interest spread to value-based leadership (e.g., servant leadership, ethical leadership, and authentic leadership), shared leadership, and the emergence of abusive supervision and followership research. Second, we find that the major contributions of these landmark documents include refining the understanding of important leadership theories, such as transformational leadership (e.g., Judge et al., 2004), abusive supervision (Zellars, Tepper, & Duffy, 2002), and authentic leadership (Gardner et al., 2011), linking leadership to novel outcomes such as creativity (Zhang & Bartol, 2010), introducing new theories or perspectives to understand how leadership influences work outcomes (e.g., Bono & Judge, 2003; Graen & Uhl-Bien, 1995), and extending leadership research from the individual level of analysis to higher levels of analysis (e.g., dyads, teams; Yammarino & Dubinsky, 1992). Finally, we find that nearly half of the landmark documents are published in the *Journal of Applied Psychology*, *The Leadership Quarterly*, and *Academy of Management Journal*, suggesting that these three journals have played a critical role in the development of leadership research. In the following, we include Fig. 3 and Fig. 4 to demonstrate inter-relationship of leadership theories and to indicate the journal co-citation network of leadership research during 1990 to 2017.

The inter-relationship among leadership theories

Considering the relationships between leadership theories is very important. Thus we code the 200 landmark leadership articles as focal leadership phenomena. As shown in Fig. 3, we can see that transformational leadership is at the heart of the network map. The lines are thicker between the constructs of transformational leadership, transactional leadership, charismatic leadership, and trait theories, which means that these leadership theories have a high level of co-occurrence, as seen in the leadership network map. Several leadership styles (i.e., transformational leadership, transactional leadership, charismatic leadership, strategic leadership, and ethical leadership) are linked with each other and have close ties to trait theories at the same time. Most of these trait theory-related articles are meta-analyses or review works (e.g., Bono & Judge, 2004; Judge, Piccolo, & Kosalka, 2009). It is also interesting to find that followership co-occurs with team leadership and authentic leadership, charismatic leadership and leadership

development. This reveals that scholars have drawn increased attention to the role of the follower in constructing leader and leadership concepts. Abusive supervision is unique and relatively independent of other leadership concepts except as it co-occurs with ethical leadership, reflecting the fact that a negative type of leadership is gaining more attention in the literature independently.

Using this figure as a guide, there may be novel ways of examining relationships among “distal knots” in the leadership map, such as between abusive supervision and ethical or servant leadership (cf. Lin, Ma, & Johnson, 2016) or between shared leadership and leadership development and identity (cf. Day & Harrison, 2007).

Journal co-citation analysis

Journal co-citation means that two journals are cited in one document, which often reflects the relations among journals and the distribution of knowledge bases. Displayed in Fig. 4 is the co-citation network of the most-cited journals that publish leadership research. Each node represents a journal and edges represent the co-citations relationship of two journals. As indicated in Fig. 4, the top ten influential journals in leadership research include *Journal of Applied Psychology*, *Leadership Quarterly*, *Academy of Management Journal*, *Academy of Management Review*, *Journal of Management*, *Administrative Science Quarterly*, *Organizational Behavior and Human Decision Processes*, *Journal of Personality and Social Psychology*, *Journal of Organizational Behavior*, and *Human Relations*.

Keyword co-occurrence analysis

We use keyword co-occurrence analysis (He, 1999; Liu et al., 2015) provided by CiteSpace to monitor evolving research frontiers of leadership themes over time.

As shown in Fig. 5, the time-zone visualization graph is a time-zone view of keyword co-occurrence on leadership (1990–2017). The time-zone view represents each time-slice by arraying vertical strips from left to right to show the evolution of keywords (Chen, 2006). We list leadership-related nodes with high co-occurrence frequency in Fig. 5. These nodes with high co-occurrence frequencies represent major topics in leadership research during the period. Some high-frequency keywords emerging recently are meaningful for detecting potential new research frontiers in the field (e.g., abusive supervision, servant leadership, authentic leadership, and followership). In Fig. 5, both the size of the nodes and the font size of the terms of the nodes are proportional to the co-occurrence frequencies.

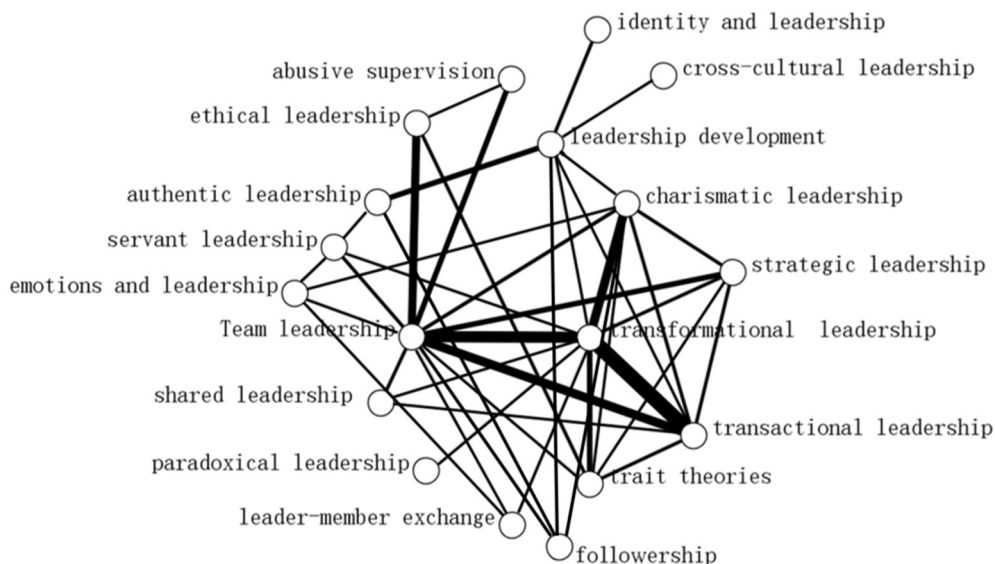


Fig. 3. The network of major leadership constructs used in 200 landmark leadership documents.

As presented in Fig. 5, we have *Citespace* visualization in four time periods. In the first time period (1990–1996), the topic of power, influence, and politics is the most salient leadership category which reflects the fact that power is the basis of leadership. In the same time period, transformational leadership and charismatic leadership emerge as important leadership theories.

In the second time period (1997–2003), the traditional power perspective of leadership becomes less salient, while transformational leadership and charismatic leadership become more salient. LMX becomes a significant leadership theory. Leadership in teams also emerges as a theme in this period.

Starting from the third time period (2004 to 2010), topics of ethical leadership and authentic leadership start to emerge to emphasize values. At the same time, leaders' emotions and abusive supervision also gain attention. Finally, shared leadership and leadership development become new frontiers.

In the most recent time period (2011–2017), the value-based theme of leadership continues to bloom as authentic leadership and servant leadership emerge. Most recent studies on followership shift the focus from leader to follower. The rising role of emotion in leadership reflects a new trend in leadership research.

**Roadmap for future research**

As elucidated in the opening quote of this paper, there is a need to understand the trajectory of leadership research and how the field of leadership is evolving. In our bibliometric review, we visualize the landscape and evolution of leadership research. To help spark leadership research and move this literature forward, we discuss the insights gleaned from our bibliometric review, with a focus on open questions, future research directions, and implications.

We link our summary of future directions with our findings in Figs. 1–5. Based on our main findings discussed in the *Bibliometric analyses and results* section, we identify five major trends in leadership research: 1) transformational leadership revisited; 2) a value-based stream of leadership and the dark side of leadership; 3) a shift from a focus on unilateral social influence to mutual influence; 4) leadership in teams; and 5) exploration of new dependent variables.

Also, for each of the main research trends, we identify several important topics based on influential leadership works listed in Table 2. These papers have high-frequency indices in the co-citation network or

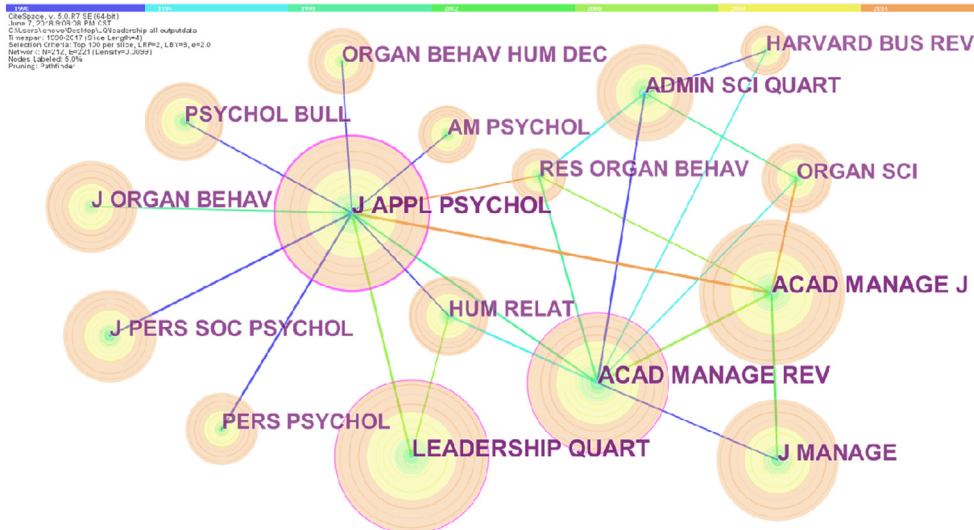
high citation *bursts* in the co-citation network, representing emerging new directions for future research (Chen, 2006). A citation burst indicates an abrupt increase in citations, and it provides a useful tool for tracing the development of leadership research trends over time (Cobo et al., 2011; Liu & Gui, 2016). As such, based on newly published (i.e., since 2010) articles with high citation bursts, we identify some specific directions of leadership research.

*Trend 1: transformational leadership revisited*

Although we discuss the recent developments of major leadership research topics, as indicated in the four time periods of Fig. 5, our findings suggest that transformational leadership remains at the center of leadership research. This finding is in line with other recent leadership reviews such as Lord et al. (2017) and Meuser et al. (2016).

Scholars have continually revisited transformational leadership theory for several reasons, which also indicate future research directions. First, recent studies embrace leadership theories that can account for the multi-level influences of leadership. Transformational leadership is appropriate for examination at the firm (Waldman, Siegel, & Javidan, 2006), the team (Schaubroeck, Lam, & Cha, 2007) and the individual levels (Walumbwa, Avolio, & Zhu, 2008). Leadership researchers also have refined transformational leadership theory regarding dual-level (individual-focused and group-focused) transformational leadership (Wang & Howell, 2010). Future research could advance multi-level leadership research by using transformational leadership as a focal leadership theory.

Second, at the within-person level, daily studies of transformational leadership behaviors adopting experience sampling methodology (ESM) provide a new lens for research (Breevaart et al., 2014; Lanaj, Johnson, & Lee, 2016; Tepper et al., 2018; Tims et al., 2011). For example, according to affective events theory (Weiss & Cropanzano, 1996) and self-determination theory (Gagné & Deci, 2005), transformational leaders could benefit from their own transformational leadership behaviors by enhancing their daily need satisfaction and positive affect (Lanaj et al., 2016). Investigating the antecedents and consequences of the within-person dynamics of daily transformational leadership might be a fruitful avenue for future research. The extent to which leadership behavior varies within-person from one day to the next, which differs across leaders, may also provide additional insights (see Johnson, Venus, Lanaj, Mao, & Chang, 2012; Matta, Scott, Colquitt, Koopman, & Passantino, 2017).



**Fig. 4.** Journal co-citation network of leadership research during 1990–2017. *Note.* The journal co-citation network shows only the most co-cited journals. Each node represents one journal and edges represent the co-citations relationship of two journals.

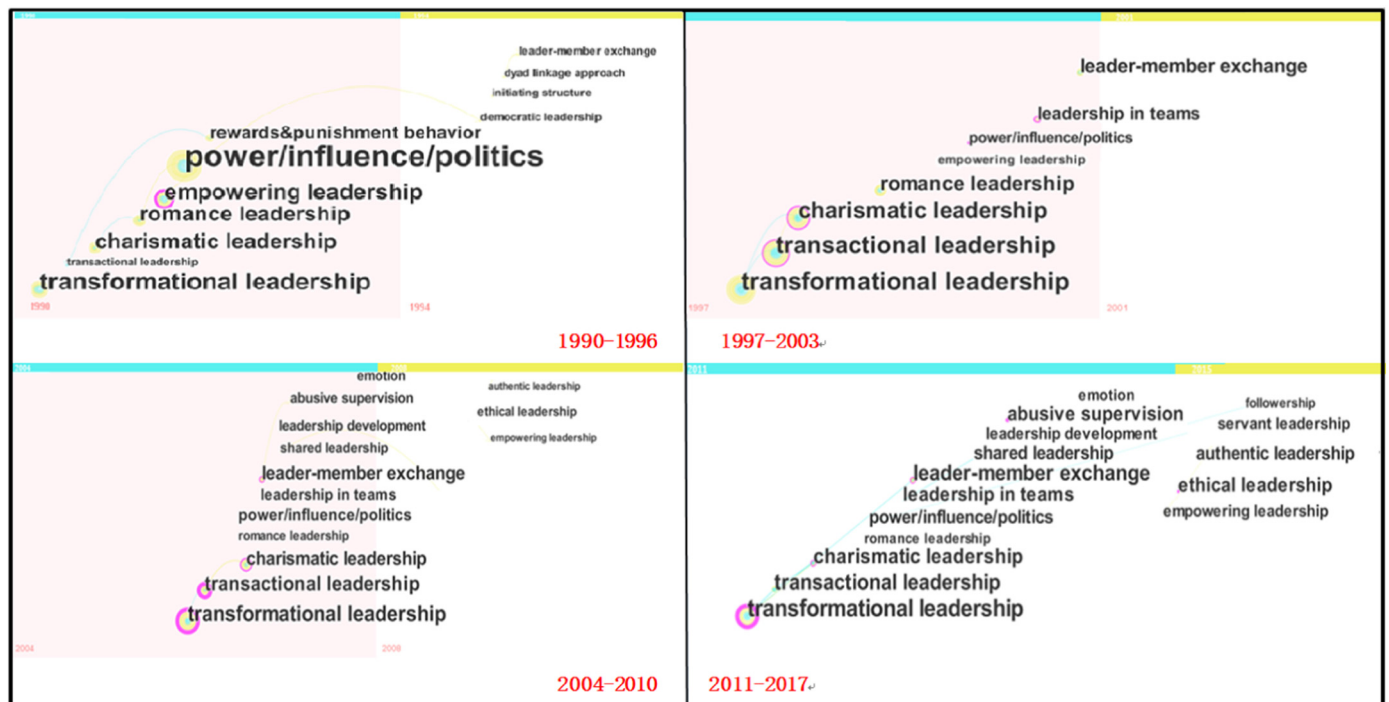


Fig. 5. The time-zone visualization of leadership-related keywords in leadership research during 1990–2017. Note. The time-zone visualization shows only the keywords with highest co-occurrence frequency. The keywords were shown in the time-zone when they became one of the most popular leadership constructs. The node size is proportional to the total and accumulated co-occurrence frequencies of keywords.

Third, transformational leadership is change-oriented leadership (Gil, Rico, Alcover, & Barrasa, 2005). Recent studies on leadership influences have considered outcome variables such as voice behavior, creativity, and proactive behaviors. All these variables are change-oriented (Fuller, Marler, & Hester, 2006; Kim, Y, & Lee, 2010; Parker & Collins, 2010), implying the proactive and discretionary nature of the behaviors. Such outcome variables are consistent with the changing role of transformational leadership. Thus, this changing nature of transformational leadership echoes the recent call for organizational behavior via a change perspective (Tims et al., 2011), and future research could further advance understanding of when and how transformational leadership influences change-oriented outcomes such as voice behavior, creativity, and proactive behaviors.

Lastly but most fundamentally, a significant trend of transformational leadership is associated with the call for tackling the underlying theoretical foundation of transformational leadership. For example, van Knippenberg and Sitkin (2013) point out the lack of a concrete theoretical framework or the low construct validity of transformational leadership due to its high correlation with the contingent reward dimension in transactional leadership (Judge & Piccolo, 2004). Some scholars have begun to focus on specific and observable dimensions of transformational leadership, such as visionary leadership, and adopted identification theory to understand vision communication, followers' possible selves, and identification with collective vision and goal accomplishments (e.g., Stam, Lord, van Knippenberg, & Wisse, 2014; Venus, Johnson, Zhang, Wang, & Lanaj, 2018; Venus, Stam, & van Knippenberg, 2013). These studies inspire and call for new intellectual debates and novel viewpoints about transformational leadership.

*Trend 2: value-based leadership and the dark side of leadership*

Consistent with a growing focus on social responsibility in corporations, more research is emerging regarding value-based leadership (Antonakis & Day, 2017). Our bibliometric analyses clearly

demonstrate that different lines of research tend to achieve consensus regarding direct examination of ethical leadership, servant leadership, authentic leadership and abusive supervision.

*A value-based stream of leadership*

In Table 2 and Fig. 5, results show that recent studies focus more on new types of leadership behaviors, especially those with value elements. Such new types of leadership behaviors include ethical leadership (Brown, Treviño, & Harrison, 2005; Mayer et al., 2009), authentic leadership (Gardner et al., 2011), and servant leadership (Liden et al., 2008). We introduce the future directions of these three types of leadership behaviors as follows, via integrating our analysis of Fig. 3, Fig. 5, and Table 2 accordingly.

It is noteworthy that according to Fig. 5, the area of ethical leadership starts to emerge in the years 2004–2010. However, it becomes quite central in the time span of 2011–2017. In Table 2, Brown et al.'s (2005) paper, which contributes to the literature with a scale of ethical leadership, has a high burst of 45.3. In Fig. 3, ethical leadership has strong connections with team leadership, trait theories and abusive supervision; future research could look into its association with cross-cultural leadership, leadership development, strategic leadership, and emotions and leadership. For example, will different cultures impact followers' assessment of ethical leaders (Chhokar, Brodbeck, & House, 2013)? Alternatively, how can ethical leadership in multiple levels be developed by cultivating ethical cultures (Mayer et al., 2009; Mayer et al., 2012; Schaubroeck et al., 2012)? How do ethical leaders exhibit their emotions when managing ethical issues and how does emotional sensitivity influence leaders' and followers' ethical decision-making? In addition, future research could examine within-person spillover models in which initial ethical leadership behavior affects a leader's subsequent behavior (e.g., abusive supervision; Lin et al., 2016). Lastly, as existing studies more often focus on formal leaders' ethical influences but rarely on co-workers' ethical impact on employees (Mayer et al., 2009), we call for an examination of peers' ethical leadership influences in teams.



Authentic leadership is viewed as the root concept of positive and value-based leadership (Avolio & Gardner, 2005; Gardner et al., 2011). In Fig. 5, authentic leadership emerges in the time span of 2004–2010 and becomes more popular during 2011–2017. In Fig. 3, leadership network indicates that authentic leadership has linkages with leadership development and servant leadership studies. However, one challenge of authentic leadership is the lack of connection with strategic leadership suggested in Fig. 3. It is quite important to explore how CEO authenticity or authentic leaders in the upper echelon influence firm, team and employee outcomes. Another challenge is the construct validity issue. A recent meta-analysis by Hoch, Bommer, Dulebohn, and Wu (2018) detects high correlations between authentic leadership and transformational leadership, calling for studies to prove the high divergent and convergent validity of authentic leadership measure(s). In the future, it is important to continue to explore the unique and important contributions of authentic leadership theory.

Regarding servant leadership, Liden et al. (2008) demonstrate the high discriminant validity of servant leadership vis-à-vis transformational leadership and LMX. Servant leadership facilitates employee performance, creativity and helping behavior (Liden, Wayne, Liao, & Meuser, 2014; Neubert, Kacmar, Carlson, Chonko, & Roberts, 2008), and team performance (Schaubroeck et al., 2011). As shown in Fig. 5, servant leadership starts to emerge in the years 2011–2017. In this latest time period, servant leadership as a new type of leadership gains more attention in the literature. In Fig. 3, servant leadership has connections with areas of authentic leadership, transformational leadership, team leadership, and emotions and leadership. Servant leaders empower and develop others and put subordinates' interests and career development ahead of the leader's own interests (Gregory Stone, Russell, & Patterson, 2004; van Dierendonck, 2011). Leaders and followers have a high-quality dyadic relationship, which is beneficial to develop followers. Future studies can further explore the relationship between servant leadership and themes of followership, leader-member exchange, and leadership development.

On the other side of the coin, servant leaders might encounter those followers who take advantage of the discretion, autonomy and trust provided by servant leaders and fail to regulate themselves or are reluctant to face tough challenges. Future study of servant leadership might look into servant leader “tough love”, as leaders provide both negative and constructive feedback to their followers (Zhong, Stouten, & Liden, 2018).

Voluminous studies demonstrate the positive impacts of ethical, authentic and servant leadership styles on the outcomes of employees and teams. We call for more research to link these value-based leadership behaviors with virtues such as humility (Owens & Hekman, 2012, 2016), gratitude (Fehr, Fulmer, Awtrey, & Miller, 2017), and forgiveness (Fehr & Gelfand, 2012). Indeed, we also notice a growing body of research on trait theories that tests the interaction between leader humility and narcissism (Owens, Wallace, & Waldman, 2015).

#### *The dark side of leadership*

In Fig. 5, abusive supervision emerges in the time span of 2004–2010 and becomes more popular during 2011–2017 (i.e., Mackey, Frieder, Brees, & Martinko, 2017; Tepper, 2007). Looking at Table 2, the papers by Tepper, Duffy, Henle, and Lambert (2006) and Aryee et al. (2007) are quite influential. They have high burst indices. Both of these papers examine the antecedents of abusive supervision, which is organizational justice. In the future, more studies are necessary to explore the factors influencing abusive supervision. Fig. 3 indicates that abusive supervision relates closely to ethical leadership and team leadership, but not with other leadership areas such as emotions and leadership. We call for more research on abusive supervision's impact on employees' negative affectivity and anger (Aryee et al., 2007; Oh & Farh, 2017), as well as retaliation from followers. Future research might

look into the emotional fluctuations of abusive supervisors and followers on a daily basis. Recent research has begun to examine third parties' reactions to the abusive supervision of a co-worker beyond the leader-member dyadic relationship (Mitchell, Vogel, & Folger, 2015; Shao, Li, & Mawritz, 2018). We call for more studies to focus on abusive supervision using an observer or third-party perspective. For example, a new direction could be examining observers' schadenfreude—pleasure at colleagues' suffering from abusive supervision (Li, McAllister, Ilies, & Gloor, in press). Also, future research could further focus on how followers can successfully break the spiral of abusive supervision over time, thus reducing future abuse and reaching a reconciliation with a leader (Wee, Liao, Liu, & Liu, 2017). Complementing these victim and third party perspectives, more research that explores the implications of abusive supervision for actors (i.e., leaders) would be informative (Liao, Yam, Johnson, Liu, & Song, 2018; Lin et al., 2016). The fact that leaders engage in such behaviors despite their negative consequences for subordinates and workgroups suggests such behavior may, in some ways, be reinforcing for leaders, at least in the short term (Qin, Huang, Johnson, Ju, & Hu, 2018).

It is intriguing to adopt a cultural perspective to examine the relationship between abusive supervision and job outcomes. For example, people in different cultural contexts have varied levels of sensitivity towards abusive supervision (Shao, Rupp, Skarlicki, & Jones, 2013). Research reveals that there is a curvilinear, inverted-U relationship between abusive supervision and employees' creativity in a sample composed of South Korean dyads of supervisors and subordinates (Lee, Yun, & Srivastava, 2013). It is not clear whether the finding that creativity is highest in the presence of some moderate level of abusive supervision is unique to an Asian cultural context that emphasizes power distance (Newman & Nollen, 1996; Rank, Pace, & Frese, 2004).

#### *Trend 3: from unilateral social influence to mutual influence*

Leadership theories traditionally focus on the top-down social influence of leaders on followers (Lord et al., 2017). Recently, followership becomes a rapidly emerging area of research (Uhl-Bien et al., 2014). As shown in Fig. 5, the theme of followership starts to emerge as a major topic in the period 2011–2017. This finding sheds light on the mutual influence perspective, that is, followers can be proactive and even able to change their leaders' attitudes and behaviors (Chaleff, 1995; Uhl-Bien et al., 2014).

Surprisingly, in Fig. 3, there is no connection between followership and LMX, although in Table 2, Uhl-Bien's (2006) paper on the relational leadership perspective underlying LMX has a high burst index. Therefore, to understand the development of followership and to link followership with leadership, we call for more research connecting followership together with the relational leadership perspective (Uhl-Bien, 2006) and LMX (Dulebohn et al., 2012). Specifically, more attention is needed to explore how employees enter into and develop in the follower role (Uhl-Bien et al., 2014). Future studies could address this need by examining the trajectories of newcomers' LMX development. Recent studies on newcomers' socialization (e.g., Zhu, Tatachari, & Chattopadhyay, 2017) may also inspire scholars to investigate LMX relationship formation or leader emergence via a dynamic perspective.

Investigating followership and mutual influence from the perspective of social network might also be a fruitful avenue for future research (Zhu, Liao, Yam, & Johnson, 2018). A given follower occupies many relational roles in an organization, which requires social network approaches for disentangling how followers interact with and relate to their immediate supervisors, higher level managers, top executives (e.g., CEOs), peers, and even their own subordinates. It is possible that followership types and network features jointly influence employees' leadership capabilities development and career development. For example, a dynamic network approach might be useful to investigate



shared leadership development at different time stages. In this regard, Porter and Woo (2015) review and introduce a psychological perspective from which individuals initiate, build, and maintain social networks.

Given the intertwined co-existence of followership and leadership (DeRue & Ashford, 2010), it is necessary for scholars to examine the two topics in tandem in the future. Some inquiries could be put forward, such as identifying categories or typologies of followership behaviors (e.g., constructive, proactive, and disruptive followership). Also, future research could identify more or less effective followership behaviors (Uhl-Bien et al., 2014). For example, bottom-up actions taken by followers can break the spiral of abusive supervision to achieve leader-follower reconciliation via the use of coping strategies to change the balance of power in the leader-follower relationship (Wee et al., 2017).

Lastly, as shown in Fig. 3, followership is linked with leadership development. The abovementioned followership-related studies also shed light on the development of leadership. An important direction of leadership development research is adopting a longitudinal design to capture personal trajectories of development (Day et al., 2014). For example, future studies could examine social network evolution and social capital accumulation in the process of leadership development over time (Day et al., 2004).

#### *Trend 4: leadership in teams*

With growing popularity of team-based work in organizations, there are several pioneering works that engage with leadership of teamwork (Batistič et al., 2017; Day et al., 2004; Morgeson et al., 2010). One main stream of team leadership research applies generic leadership models that are not specific to teams and that mostly concentrates on transformational leadership and LMX (Lord et al., 2017; van Knippenberg, 2017). Another main stream of research has been developed with a more specific focus on teams and that revolves largely around shared leadership (Lord et al., 2017; van Knippenberg, 2017).

#### *Team leadership*

Leadership in teams is a dual-level phenomenon. Wang and Howell (2010) argue that leaders need to motivate individual employees and improve team outcomes simultaneously. Considering the difference between individuals and the whole team, future studies should focus on leaders' different behaviors when they are confronted with an individual subordinate or the whole team (Wu et al., 2010). Future studies can further investigate the different roles played by leaders at the two levels.

A more prominent line of research involves new operationalizations of leadership at the team level, which reflects special conceptualizations to fit with multi-level theories and phenomena. For example, LMX differentiation refers to the degree of within-group variation that exists when leaders form relationships of varying quality with different members (e.g., Erdogan & Bauer, 2010; Henderson, Liden, Glibkowski, & Chaudhry, 2009; Liden, Erdogan, Wayne, & Sparrowe, 2006; Yu, Matta, & Cornfield, 2018). LMX differentiation has an impact on individual outcomes (Erdogan & Bauer, 2010; Liden et al., 2006) as well as team outcomes (Le Blanc & González-Romá, 2012). On the basis of the team-level conceptualization, future research could further explore boundary conditions or context variables of the above relationships and the implications of these team-level variables as a context that shapes the relevant associations.

#### *Shared leadership*

According to Fig. 5, we can see that the area of shared leadership starts to emerge as a major leadership theme in the period 2004–2010, and gains momentum during 2011–2017. In Table 2, Carson et al.

(2007) examines shared leadership in teams. It has a relatively high burst of 20.9, so shared leadership has become a popular topic of research in recent years, and still needs attention in future studies. Shared leadership research reflects a new domain of examining mutual influences of leadership (Zhu et al., 2018). It is about leading each other in the team (Carson et al., 2007; Ensley, Hmieleski, & Pearce, 2006; Pearce & Conger, 2003), with either formal or informal leaders. Thus, the unique nature of shared leadership calls for new theories to capture the essence of mutual social influences at the team level.

Recent meta-analyses of shared leadership (D'Innocenzo, Mathieu, & Kukenberger, 2016; Nicolaidis et al., 2014; Wang, Waldman, & Zhang, 2014) document that shared leadership can promote team performance. In addition, team confidence partially mediates the linkage between shared leadership and team performance (Nicolaidis et al., 2014). Future research could go further to investigate alternative psychological mechanisms of shared leadership on various team outcomes such as team sustainability, team creativity, and team organizational citizenship behavior. Also, given that shared leadership is a promising way to enable team effectiveness, it is valuable to investigate the antecedents of shared leadership (Carson et al., 2007).

Temporality and dynamic process analyses are central inquiries for shared leadership in future studies, echoing the call for research by Pearce and Conger (2003) in their shared leadership book. Also, future research needs longitudinal designs to understand how shared leadership develops over time by looking at changes in a leadership network (Carson et al., 2007).

Also noteworthy, the dark side of shared leadership is often neglected by the literature, yet is worthy of exploration. For example, shared leadership might have a negative impact on employees' creativity, which is known as the “iron cage” effect (Barker, 1993). Shared leadership could result in high peer pressure among team members. The autonomy of individual employees might be threatened due to aggregated behaviors normalized via shared leadership.

#### *Trend 5: exploration of new outcome variables*

Leadership research can also be extended by considering new outcome variables. Our analyses reveal that the leadership literature has a stable focus on subordinate and team organizational citizenship behavior and task performance, consistent with the review of Hiller, DeChurch, Murase, and Doty (2011). Nevertheless, there is a remarkable increasing trend of new outcomes such as creativity, voice behaviors (Parker & Collins, 2010), and proactive behaviors (Parker & Collins, 2010; Zhang, Song, Wang, & Liu, 2018). Moreover, moving beyond subordinate outcomes, research is beginning to examine how leadership behaviors impact the cognition, affect, and behavior of the leaders themselves (e.g., Johnson, Lanaj, & Barnes, 2014; Lanaj et al., 2016; Liao et al., 2018; Lin et al., 2016; Qin et al., 2018).

As identified by our bibliometric analyses, out of the 200 papers with a high level of impact, there are four papers directly examining the relationship between leadership and well-being. Well-being has become an important outcome variable over the years (Arnold, Turner, Barling, Kelloway, & Mckee, 2007; Ilies, Morgeson, & Nahrgang, 2005; Skakon, Nielsen, Borg, & Guzman, 2010), which indicates that leadership research is showing interests in subjective well-being. We call for future research to examine followers' subjective well-being and long-term impact of leadership in this regard.

The spectrum of outcome variables is also increased by leadership scholars who consider detrimental (or dark side) work attitudes and behaviors. Such outcome variables include cynicism, detachment, disidentification, incivility, deviance, counterproductive behaviors, and unethical behaviors. There is room for additional studies to explore new outcomes variables to enrich leadership studies, including team- and company-level outcome variables (see Hiller et al., 2011).

Equipped with implicit theories of motivation and associative evaluation perspective, other types of outcome variables could be performance evaluation (Wang, Wong, & Kwong, 2010) and recognition of creativity (Mueller, Melwani, Loewenstein, & Deal, 2018; Zhou, Wang, Song, & Wu, 2017). Recently, scholars are investigating the interaction of individual traits such as promotive regulatory focus and firm context represented by organizational culture on the recognition of employees' creativity (Zhou et al., 2017). These studies shed light on the importance of leadership traits and behaviors for recognizing creativity.

## Discussion

### Limitations

This study has some limitations that should be noted. First, the results should be interpreted in light of our sample, because the analyses were conducted within our sample as opposed to all published leadership studies. Leadership research is increasingly vibrant and diverse, and there is a large volume of leadership studies across dozens of disciplines in the literature. Although our sample is among the largest in the leadership literature, it has boundaries that should be noted. We collected data from four areas (management, business, applied psychology, and social psychology) in the Web of Science core citation database since 1990. Before 1990, some leadership studies are included in other areas of the Web of Science core citation database (e.g., political science, public administration, zoology). For example, both Bernard Bass and James MacGregor Burns are important pioneers of transformational leadership research. Burns' (1978) book has been crucial for the development of leadership research and scholars recognize his contributions. Possibly due to the fact that Burns (1978) is more relevant in the political science domain, the co-citation network of Burns (1978) with organizational studies is not very prominent. Despite this, we still recognize Burns' (1978) extensive contribution to our field.

Our study only reflects the co-citation network of documents, authors, and journals within this bounded sample. However, this concern is alleviated somewhat because the focus of our study is not on the direct count of citations or co-citations but on detecting the underlying structure. Also, the Web of Science database is comprehensive, and it is the most widely used database in this kind of research. Compared with prior leadership reviews, our sample size of 6528 is among the largest. The results are still quite meaningful for us to understand the landscape and evolution of leadership research in the management, business, applied psychology, and social psychology areas.

Second, apart from the above discovery, in this study, we do not emphasize the social ties among the co-authors' and co-cited authors. Future studies could examine the social network of authors regarding their common affiliations, academic supervisor-student relationship, and shared working experiences. The evolution of such social relationship networks is also important to help us to understand the intellectual development of the leadership literature.

Third, we conduct a bibliometric analysis of leadership research from 1990 to 2017. Such an inductive approach provides a wealth of raw data and findings using objective data. In this study, we focus on detecting the landscape and evolution of the whole leadership research field. There is a considerable amount of other information that could be explored, such as the macro contextual factors along with the leadership research involvement, economic and societal environment change and organizational theory updates, over the past three decades.

Fourth, in this review, we focus on the overall comprehensive picture of the development of leadership theories over the years. Our paper aims to map the overall evolution of leadership frontiers over time. Future research could continue to examine each leadership area to examine their underlying dynamics in a more refined way. Due to page limits, we could not provide mapping for each of the areas. Future studies could take a more fine-grained approach by detecting and

analyzing the landscape and evolution of individual leadership theories. We believe it is feasible for future researchers to adopt bibliometric mapping methods and code the most influential papers in a specific area, in order to plot frontiers of each topic of leadership as well as internal connections of various sub-topics over time. It is also possible in the future to look at a specific topic, for example, the relationship between transformational leadership and creativity or between ethical leadership and counterproductive work behavior.

## Conclusion

Despite being a widely studied and popular topic in social science, there has not been a comprehensive bibliometric review that quantitatively visualizes how the leadership research landscape has evolved. To address this research gap, we use the visualization tool *CiteSpace* to detect the research frontiers, major topics, landmark documents, and articles with bursts within the leadership literature. Based on this information, we analyze how the landscape of leadership research evolves over time. In addition, we offer future research agendas based on the current state-of-the-science. In doing so, this review provides scholars with a systematic understanding of the landscape and emerging trends in the literature. It also identifies research frontiers in leadership research and provides scholars with a roadmap to move these research frontiers forward.

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