

Running Head: Fifty Years of Research

**Fifty Years of Research on Leader Communication:
What We Know and Where We Are Going**

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Abstract

One of the most important things leaders do is communicate. Though research on leaders' communication has been active for half a century, to date there has been little effort to review it comprehensively and systematically. In this paper we review 260 articles that use leaders' actual communication (textual, aural, and video) as data. We group these studies into four broad categories as a function of whether they focus on the (1) content and style, (2) antecedents, or (3) outcomes of leader communication, or (4) use leaders' communication data to infer leader attributes that are unrelated to communication. We document how empirical methodologies to analyze verbal and nonverbal communication have advanced over time, with early labor-intensive coding methods joined by more automatic and computer-based approaches, including Machine Learning. We conclude by discussing how this research has extended and enriched dominant leadership theories and suggest future opportunities for studies that use leader communication as a focal construct or input.

Keywords: Leadership, Review, Communication, Text Analysis, Nonverbal

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Scholars spanning different fields in the social sciences have long recognized that communication is a key element of leadership. What and how leaders communicate using their words, voice, and bodies provides a window into their individual characteristics as well as predicts consequential outcomes for them. It also influences others, as well as outcomes at higher levels of analysis. Early research on leader communication focused largely on leaders themselves, especially on how communication revealed leader characteristics such as charisma (Shamir, Arthur, & House, 1994) or personality (Kaarbo & Hermann, 1998; Tetlock, Armor, & Peterson, 1994). In later decades, researchers expanded their focus to followers, documenting how leader communication influences followers' moods (Lewis, 2000), moral choices (Moore et al., 2019), and performance (Van Kleef, Homan, Beersma, & van Knippenberg, 2010). More recently, the information-rich digital age has increased opportunities to observe leaders' communication in real time (Heavey, Simsek, Kyprianou, & Risius, 2020) as well as followers' responses to it (Tur, Harstad, & Antonakis, 2021). Leader communication has also been associated with outcomes at higher levels of analysis, from firm strategy (Guo, Yu, & Gimeno, 2017), to country-level performance (Medeiros, Crayne, Griffith, Hardy, & Damadzic, 2022).

Despite the size, range, and importance of this body of work, there has been little effort to review it comprehensively and systematically. In this paper, we review 260 articles from a wide range of disciplines that use leaders' text, voice recordings, and videos as data, and synthesize the evidence they offer about what leaders communicate, how they do so, as well as its effects—on leaders themselves, on followers or other stakeholders, and at higher levels of analysis such as the organization or nation. By focusing on articles that use actual leader communication as a key input, our paper responds to calls for leadership research to use behavioral rather than self-report data (Fischer, Hambrick, Sajons, & Van Quaquebeke, 2020) and to increase the use of archival

communication data to measure leader characteristics (Holmes, Hitt, Perrewé, Palmer, & Molina-Sieiro, 2021; Vera, Bonardi, Hitt, & Withers, 2022). We pay special attention to new methods that enable analysis of larger volumes of data than was possible until recently, which facilitate more inductive and data-driven research at scale, as well as new tools to analyze aural and embodied attributes of communication, which represent another major shift in this historically text-dominant field.

We structure the review as follows. First, we elaborate what leader communication is, and why it is so critical for leadership research. Second, we describe the methodology of our review. Third, we categorize the 260 studies we located that use real leader communication as a key input into a framework that organizes their primary findings. Fourth, we review the research methods available to analyze leader communication and how they have advanced over time. We conclude by discussing how this work has enriched our understanding of leadership, offering future research directions for scholars interested in the potential of grounding their work in what and how leaders communicate.

LEADER COMMUNICATION

At the most basic level, communication is a process that involves “a sender who transmits a message to a receiver, who in turn translates, interprets, and acts on that message” (Ruben & Gigliotti, 2016). Communication facilitates how we direct others’ attention (Cheng et al., 2022), inspire them (Conger, 1991), persuade them (Charteris-Black, 2005), and manage crises (Stam, van Knippenberg, Wisse, & Nederveen Pieterse, 2018). As such, communication forms the building blocks that determine how we understand our world (Combe & Carrington, 2015), motivate others to achieve common goals (Oc & Bashshur, 2013), and form the cultures we inhabit (Latané, 1996). Leaders need to do all of these things. They provide sensemaking

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(Pye, 2005), engage in social influence processes (Carli & Eagly, 1999; Ruben & Gigliotti, 2016), and play outsized roles in creating our cultures (Schein, 2010). The foundational role of communication in delivering these outcomes means that leaders “cannot not communicate” (Watzlawick, Bavelas, & Jackson, 1967).

If one looks “under the hood”, most theories of leadership assume the centrality of communication to leaders’ effectiveness. Indeed, many theories of leadership inhere in communication. Charisma requires “values-based, symbolic, and emotion-laden leader signaling” (Antonakis, Bastardo, Jacquart, & Shamir, 2016, p. 304), which necessitates articulating one’s visions and values, using symbolic language and demonstrating passion through emotional expressions. Ethical leadership theory stresses how “ethical leaders...draw attention to ethics and make it salient in the social environment by *explicitly talking* to followers about it” (Brown, Treviño, & Harrison, 2005, p. 120). Theories that address how leaders manage crises stress the importance of their communication in framing and shaping how stakeholders understand a crisis, which in turn determines how they react to it (Bundy, Pfarrer, Short, & Coombs, 2017).

Surprisingly, despite the importance of leader communication to many core leadership theories, the literature has not offered a clear definition of what leader communication *is*. The field has articulated definitions of more specific and narrow communication concepts, such as leader communication style (Luo, Song, Gebert, Zhang, & Feng, 2016), attentive leader communication (Decuyper & Pircher Verdorfer, 2022), and leader communication competence (Flauto, 1999). Yet, as the bedrock underlying these concepts, leader communication itself seems either to defy definition or considered so fundamental that individuals will simply know what it is when discussed. Nevertheless, it remains important to define what leader communication is, at

least insofar as it circumscribes our approach to this review. We define leader communication as *the textual, verbal, and embodied signals that leaders deliver to others, both purposefully and unintentionally, with the power to reveal aspects of leaders themselves, predict leadership outcomes, and affect others*. We restrict our understanding of communication to signals that are within an individual's control—such as writing, speaking, moving, or expressing—as communication requires some form of individual action (even if that action is unconscious) that a leader can ultimately influence or change.

METHOD

Given the absence of an agreed-upon definition of leader communication, and to ensure we began with a comprehensive set of papers that reflects the breadth of the construct, we started our search broadly. Using several databases (JSTOR, PsycARTICLES, SAGE Journals, ScienceDirect, and Wiley Online Library), as well as Google Scholar, we used full text searching to locate papers that included any paired combinations of the keywords “leader”, “CEO”, “manager”, “executive”, “president”, and “political” AND “communication”, “language”, “rhetoric”, “linguistic”, “letter”, “message”, “speech”, “tweet”, “text”, “discourse”, “nonverbal”, “video”, “tone of voice”, and “facial expression”.

We limited the review to articles which use “real” communication as data, by which we mean actual verbal or nonverbal communication, including textual (spoken and written text) and non-textual (images, voice and video recordings) data. Thus, we excluded articles that do not use real communication data, such as theory papers (e.g., Dewan & Myatt, 2008; Joulilié, Gould, Spillane, & Luc, 2021), review articles (e.g., Matthews, Matthews, Wang, & Kelemen, 2022), or articles that use other sources of data to draw conclusions, such as leaders' biographies (e.g., Eubanks et al., 2010), or media articles about leaders' communication (e.g., Liu, Cutcher, &

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Grant, 2016; Resick, Whitman, Weingarden, & Hiller, 2009). We also excluded studies that measure the extent of leaders' activities on communication platforms rather than what they say on them (e.g., Capriotti & Ruesja, 2018), or studies where leaders' communication is operationalized using followers' perceptions in questionnaires (e.g., Kacmar, Witt, Zivnuska, & Gully, 2003; Vogelgesang, Leroy, & Avolio, 2013).

We focused on articles published in mainstream peer-reviewed journals in the disciplines of management, psychology, political science, and communication. We searched the following set of journals more comprehensively: *Academy of Management Journal*, *Administrative Science Quarterly*, *Journal of Applied Psychology*, *Journal of Management*, *Journal of Organizational Behavior*, *Leadership Quarterly*, *Organization Science*, and *Personnel Psychology*. We also searched the records of key authors more thoroughly. We defined key authors as those in our sample who had accrued more than 10,000 citations according to Google Scholar, or, if s/he did not have a Google Scholar page, when his/her article on leader communication had received more than 500 citations (as of February 2022).

Since we restrict our understanding of communication to signals within individuals' control, we included studies on aspects of communication such as facial expressions (e.g., the use of eye-gaze and smiles, cf. Lewis, 2000; Trichas & Schyns, 2012), or clothing choice (Maran, Liegl, Moder, Kraus, & Furtner, 2021), but excluded studies about aspects of leaders' physical appearance that they cannot change or influence, such as their attractiveness (Fruhen, Watkins, & Jones, 2015; Li, Triana, Byun, & Chapa, 2020), height (cf. Reh, Van Quaquebeke, & Giessner, 2017), or facial width (Wong, Ormiston, & Haselhuhn, 2011).

Though the majority of the studies we review ($N=172$) use data from field settings (e.g., CEO letters to shareholders, presidential speeches), we also include studies that manipulate

leaders' communication in lab settings ($N=79$). An additional 9 studies use communication data from both types of settings. These laboratory studies provide important tests of causal effects of leader communication on followers and stakeholders. They either require participants to communicate in the role of leaders (e.g., Carton & Lucas, 2018; Towler, 2003), or ask participants in the role of followers respond to passages or clips of leader communication, either lifted directly from the field (e.g., McHugo, Lanzetta, Sullivan, Masters, & Englis, 1985; Stewart & Dowe, 2013), or edited in some way to isolate specific characteristics of the communication (e.g., Brescoll & Uhlmann, 2008; Moore et al., 2019).

Ultimately, 260 papers met our inclusion criteria. [Online Appendix A](#) provides a detailed description of our review procedure. Figure 1 shows the distribution of the papers included in the review as a function of their publication date. Notable is how significantly papers that use real communication data have increased over time: the number of papers published that used real leader communication in 2016-2020 was nearly double the number published in 2011-2015, which itself was double what was published from 2001-2005.

--- Insert Figure 1 about here ---

CATEGORIES OF RESEARCH ON LEADER COMMUNICATION

We then classified how leaders' communication was used in each article, using a decision tree. First (Decision 1), we determined whether leader communication was a focal construct or an ancillary interest to the paper. If it aimed explicitly to contribute to work on leader communication (i.e., leader communication was a focal interest of the paper), we next (Decision 2) distinguished whether leader communication was analyzed descriptively or predictively. Studies in which constructs or variables were not related to each other using statistical tests were classified as descriptive; this group of studies explores what leaders communicate about and how

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they do so (“Category 1: Topics and Rhetoric in Leader Communication”, $N=60$). Studies that included statistical tests about the relationships between communication-based variables and other variables were classified as predictive. Predictive studies were then further classified (Decision 3) as a function of whether leader communication was used as a dependent variable (“Category 2: Antecedents of Leader Communication”, $N=69$) or an independent variable (“Category 3: Outcomes of Leader Communication”, $N=167$).

The final category (“Category 4: Leader Characteristics and Attributes”, $N=31$) includes work for which leader communication is an ancillary rather than focal interest (from Decision 1). This work uses leader communication data to measure leader attributes and characteristics that do not inhere in communication but which are nevertheless relevant to research on leadership. To explain how we assigned studies to Category 4 as opposed to other categories, it is useful to compare charisma and narcissism, two different leadership characteristics that can be measured using communication data. Charisma is an attribute of leaders that *cannot exist apart* from communication (Antonakis et al., 2016). A leader cannot be charismatic without communicating; one cannot be charismatic in a room by oneself, and the way that charisma is manifested and observed is *through* communication. Thus, studies of charisma *necessarily* speak to leaders’ communication strategies, skills and abilities (Emrich, Brower, Feldman, & Garland, 2001; Tur et al., 2021). Thus, studies about leaders’ charisma are all assigned to Categories 1-3.

On the other hand, narcissism is a characteristic of an individual which does not inhere in communication. Narcissism exists and can manifest completely independent of communication. While one might be able to measure narcissism using the prominence of a CEO’s photograph in an annual report and the number of times s/he uses first person pronouns (cf. Chatterjee & Hambrick, 2007), we can learn something about a leader’s narcissism without learning anything

about communication. We only assigned studies to Category 4 when leaders' communication was employed in the paper solely as raw input to measure a construct that is not based in communication but can be measured using communication data, which includes narcissism.

[Online Appendix B](#) contains a more detailed explanation of our classification scheme, including how we managed difficult cases.

[Online Appendix C](#) includes the complete list of studies reviewed, including the primary topic of the study, main independent and dependent variables reported (if relevant), type of communication data employed, and analytical approach used, organized by whether the study was descriptive (Category 1), predicted communication outcomes (Category 2), used communication to predict other outcomes (Category 3), or used communication to measure other variables (Category 4). To ensure that what was included in any category fit that category unambiguously and no other, it was sometimes necessary to reference [parts of] a single paper under more than one category. When a single paper featured multiple studies or multiple findings that were relevant to different categories (56 papers fit this description), we referenced the part of the paper relevant to the appropriate category. Thus, a single paper is sometimes referenced more than once in Appendix C, which means there are more rows in the table ($N=327$) than the number of papers in the review ($N=260$). For an overview of the categories and the key research questions they address, see Table 1.

--- Insert Table 1 about here ---

Category 1: Topics and Rhetoric in Leader Communication

This category of work ($N=60$) is descriptive, and includes studies that examine *what* a leader typically communicates about—the content, topics, and/or positions of the communication (Savoy, 2010; Sims, 1993; Tonidandel, Summerville, Gentry, & Young, 2021), and *how* they

communicate about it—the style or rhetoric of that communication (Heracleous & Klaering, 2017; Liu, 2007).

Charisma. Charisma is a major topic in leadership research (Banks et al., 2017), and communication is central in the charismatic process (Fiol, Harris, & House, 1999). In these descriptive studies, scholars typically analyze the content and style of communication of a leader or leaders who had been identified as highly charismatic by others, either by historical consensus or in other studies that rated leaders' charisma (Den Hartog & Verburg, 1997; Shamir et al., 1994). For example, Shamir and colleagues (1994) described the content of several speeches given by Jesse Jackson, an American civil rights activist. Bligh and Robinson (2010) conducted a similar study using Gandhi's speeches. Looking across leaders, Conger (1991) analyzed samples of communication from famously charismatic corporate and political leaders, including Steve Jobs, Martin Luther King Jr., and Mary Kay Ash, and described how they used metaphors, analogies and stories to transmit organizational values. Mio and colleagues (2005) compared the density of metaphors in the inaugural addresses of 36 U.S. presidents as a function of whether they had been identified previously as charismatic. More recently, scholars have explored the acoustic features of charismatic leaders' speech (Niebuhr, Voße, & Brem, 2016; Signorello et al., 2020). A study of the vocal characteristics of former Apple CEO Steve Jobs during his launch presentations for the iPhone 4 and iPad 2 showed that an animated tone of voice and speaking fluency played an important role in his charisma (Niebuhr et al., 2016).

This work establishes several communicative strategies that charismatic leaders employ at a higher rate than others, including the use of stories, metaphors, and imagery, conveying optimism, emphasizing collective history, and stressing followers' worth (Den Hartog & Verburg, 1997; Mio et al., 2005; Shamir et al., 1994). These features became foundational to

understanding charisma, and together these studies delineate, very concretely, myriad specific and discrete ways that leaders signal charisma (Antonakis et al., 2016).

Morality and Values. Scholars have also analyzed how leaders signal their morality and ethical values (Amernic & Craig, 2013; Weber, 2010). Banks and colleagues (2023) identify eight specific signals that ethical leaders use in their communication, including virtue signaling and rewarding moral behaviors. Owens and Heckman (2012) document that humble leaders use more collective-focused language (e.g., “we”) than self-focused language (e.g., “I”) and deliberately focus on followers’ strengths and contributions to the organization. This work demonstrates how leaders can use language to underscore the importance of behaving morally and telegraph their values to their followers.

Image Repair. Leaders also use communication to manage stakeholders’ impressions, especially when their (or their organizations’) images are threatened or damaged. Typically, these studies describe the rhetorical strategies leaders use surrounding legitimacy-threatening events, such as natural disasters or organizational scandals (Beelitz & Merkl-Davies, 2012; Benoit & Henson, 2009). For instance, former U.S. president George W. Bush emphasized the positive actions taken by his administration and used excuses to explain inadequate governmental responses after his poor leadership during Hurricane Katrina (Benoit & Henson, 2009; Liu, 2007). In more corporate settings, CEOs use apologies during economic crises to express regret and their concern for shareholders (Hargie, Stapleton, & Tourish, 2010). This work details the linguistic strategies of leaders’ image repair, which appear to center on shirking personal responsibility and shifting the public’s attention away from blame, rather than reflect openness to increasing transparency and accountability (Beelitz & Merkl-Davies, 2012).

Other Topics. A range of other descriptive studies have explored everything from how Human Resource managers talk about diversity (Zanoni & Janssens, 2004), to how U.S. presidents discuss LGBTQ+ topics in their public speeches (Coe, Bruce, & Ratcliff, 2017), to how U.K. politicians mobilize hostility towards immigrants (Portice & Reicher, 2018), to how corporate leaders use social media to develop their personal brands (Nolan, 2015), to how complexly they speak (Conway, Conway, & Houck, 2020) to listing the common challenges leaders face (Tonidandel et al., 2021). These studies are often idiosyncratic, describing how leaders communicate about very specific topics. Nevertheless, simply detailing what leaders talk about and their linguistic strategies when doing so across a wide range of domains fleshes out our understanding of how leadership is enacted.

Category 2: Antecedents of Leader Communication

The second category of studies ($N=69$) addresses antecedents of leaders' communication; they explore what *changes* how leaders communicate and what they communicate about. These antecedents can be leader-specific (such as a leader's role, gender, or political affiliation), or situational (including circumstances outside the leader's control, such as a crisis, or an external influence on leaders' communication, such as training).

Roles. The social roles we occupy create expectations that we meet, in part, through communication. The leadership role is no exception (Johnson, 1994; Watson, 1982). Individuals who occupy leadership roles exhibit more dominance and power in conversations (e.g., change topics abruptly, provide directions, and talk more), while participants in subordinate roles exhibit more submissiveness (e.g., show support and talk less) (Johnson, 1994; Watson, 1982). In addition, when leaders take control of the conversation (e.g., express disagreement), subordinates are likely to defer (e.g., show agreement), whereas when subordinates try to dominate a

conversation, leaders resist and try to take back control (Watson, 1982). Even devoid of formal responsibility or control over real-life resources, simply assuming the role of a leader alters how individuals communicate and how others respond to them.

Gender. Research has also shown reliable differences in how female and male leaders communicate. Typically, male and female leaders communicate in ways consistent with gender-stereotyped expectations (Davis & Gilbert, 1989; Johnson, 1994; Sergent & Stajkovic, 2020). Consistent with social role expectations for women (Eagly & Wood, 2012), female governors during the COVID-19 pandemic expressed greater awareness of their constituents' feelings (e.g., "I know that people are worried about getting a job so that they can pay their bills... I have those same fears") and communicated more hope and faith than did male governors (Sergent & Stajkovic, 2020, p. 775). Compared to male leaders, female leaders also smile and laugh more, tend to defer to male coworkers' opinions, make fewer attempts to influence joint decision-making, and exhibit lower levels of forcefulness and dominance (Davis & Gilbert, 1989; Johnson, 1994). These findings reaffirm that meeting gendered expectations of behavior remains a strong motivating force, even for real leaders in positions of substantial power.

Political Affiliation. Scholars in political science have paid particular attention to how party affiliation affects leaders' communication. Studies in this vein have explored liberal-oriented versus conservative-oriented communication (Coe & Domke, 2006), populist versus mainstream communication (Widmann, 2021) and right- versus left-wing communication (Rauh, Bes, & Schoonvelde, 2020; Wang & Inbar, 2021). They find, for example, that Democrats use more language that reflects the moral values of fairness and minimizing harm than do Republicans (Wang & Inbar, 2021), and European populist politicians tweet with significantly more negative and significantly less positive emotional sentiment than other MPs in the same

countries (Widmann, 2021). This research highlights how leaders' political affiliations are observable in their language.

Policy Stances. A separate series of papers focuses on how leaders' political positions are associated with different levels of cognitive/linguistic sophistication (Pancer, Hunsberger, Pratt, Boisvert, & Roth, 1992; Tetlock, 1981a). Distinctive policy stances seem to require different levels of complexity. For example, isolationist (uncollaborative with other nations) positions tend to be communicated with less complexity than non-isolationist politicians (Tetlock, 1981a). During the Civil War period in the U.S., ardent supporters of slavery and straightforward abolitionists (e.g., "I deny that there can be Constitutional slavery in any of the States in the American Union") communicated less complexly than politicians who were trying to find a compromise between those two positions (e.g., "We will not destroy slavery overnight and with it enormous investments, nor will we impose slavery against the will of the majority. There is a viable middle course that does not require subverting the Constitution and making it into an instrument for extending slave power or ignoring the Constitution and appealing to a mysterious higher power or principle") (Tetlock et al., 1994, p. 119). It seems that when leaders try to appeal to or appease multiple conflicting views, their communication requires greater sophistication (Tetlock et al., 1994, p. 120). Thus, the complexity with which we communicate is not associated in a simple way with right- or left-wing ideology, but rather determined by the range of the positions one is trying to integrate. All in or all against positions are simpler than those that seek compromise.

Time. Time represents another important antecedent of leader communication, particularly over the course of a leader's tenure (Dille & Young, 2000; Thoemmes & Conway, 2007). Shifting objectives during the course of a leader's term in office influence how they

communicate. Communication tends to be more simplistic before leaders are elected, as simplicity seems to drive public support (Suedfeld, 1994; Tetlock, 1981b), or prior to overthrowing an extant regime, as revolutionaries have to articulate simple and clear reasons why their rebellion is justified (Suedfeld & Rank, 1976). After assuming power, however, the complexity of leaders' language tends to increase (Suedfeld, 1994; Tetlock, 1981b), though this boost wanes over the course of holding office (Thoemmes & Conway, 2007). There is also evidence that the complexity of presidential rhetoric has been decreasing more generally over time (Conway & Zubrod, 2022).

Charismatic leaders also shift their rhetorical strategies across different phases of their tenure, often when introducing a change in national direction or during the implementation of new policies (Fiol et al., 1999; Seyranian & Bligh, 2008). Charismatic leaders use more inclusive language (e.g., “we”, “our”) in the middle phases of their tenure than in early or later phases, indicating active engagement with followers while enacting social transformation (Fiol et al., 1999). During later phases in office, charismatic leaders use increasingly tangible language (such as emphasizing their accomplishments) to inspire followers to participate in enacting their visions (Seyranian & Bligh, 2008).

Crises. Crises also require leaders to adapt their communication (Freedman, 2019; Patelli & Pedrini, 2014). For example, leaders speak more pessimistically and with less certainty during recessions (Bligh & Hess, 2007), and increase references to patriotism, the collective, morality, and tangible actions in the aftermath of a terrorist attack (Bligh, Kohles, & Meindl, 2004a, 2004b; Davis & Gardner, 2012; De Castella, McGarty, & Musgrove, 2009). Before international military conflicts, leaders tend to communicate more simply (Suedfeld & Bluck, 1988; Suedfeld, Tetlock, & Ramirez, 1977), as the decision to go to war is eased when one's opponent is viewed

unequivocally as an enemy. Diplomacy (actively working to avoid war), on the other hand, requires more nuance and greater complexity. These shifts reflect how leaders try to meet constituents' needs, as constituents value reassurance and the moral high ground during crises (Spence et al., 2005).

Interventions. Recent work has endeavored to provide more evidence-based interventions that educators can use to improve leader communication effectiveness. Several of these focus specifically on training individuals to communicate (more) charismatically. The specific skills these interventions employ draw substantially from the descriptive studies discussed under Category 1, which isolated discrete verbal and nonverbal charismatic “signals” (Antonakis, Fenley, & Liechti, 2011; Frese, Beimeel, & Schoenborn, 2003; Towler, 2003). Training individuals to use the rhetorical strategies (clear and inspiring visions, emotional appeals, metaphors) and nonverbal signals (eye-contact, animated tone, expressive body gestures) of charisma *does* increase the extent to which they are viewed as charismatic, even controlling for base levels of charisma (Antonakis et al., 2011). Even interventions as simple as asking individuals to construct a mental picture of what a moment in the distant future could look like boosts their use of image-laden words (Carton & Lucas, 2018).

Leadership research continues to struggle with the question of whether people can be trained to be better leaders. Given leadership training is a \$350 billion annual industry, and that most training programs fail to document effectiveness (Beer, Finnström, & Schrader, 2016), developing evidence-based interventions that can improve leadership in demonstrable ways could have substantial effects for organizations. These studies offer valuable evidence in favor of “nurture” in the age-old question of whether leaders are born or made (cf. Arvey, Rotundo, Johnson, Zhang, & McGue, 2006).

Other Antecedents. The economic environment affects how corporate leaders speak in several ways. Executives use more vague language when faced with threats of competitive entry, ostensibly to make their business strategies less discernible to their competitors (Guo et al., 2017). When their firms underperform, CEOs tend to use complex and obfuscating language to avoid negative performance ratings from stakeholders (Fabrizio & Kim, 2019). And as a leader with accountability for the economy, Federal Reserve Board Chair Alan Greenspan modulated his language in pace with changing economic cycles, speaking with greater certainty when the economy was performing well and less certainty when it was performing poorly; he also used more present-tense language when the economy was struggling, to stress the seriousness with which he was taking the situation (Bligh & Hess, 2007).

Leaders also change their communication as a function of their audiences. Recently, Dupree & Fiske (2019) provided evidence that presidential candidates engage in a “competence downshift” and use fewer words relating to competence when they address audiences of mostly minority group members, compared to when they address largely White audiences. The form communication takes (prepared statements vs. spontaneous remarks, interviews vs. political debates) (Dille & Young, 2000; Slatcher, Chung, Pennebaker, & Stone, 2007), its contexts (virtual vs. face-to-face) (Purvanova & Bono, 2009), and its mediums (traditional vs. social media) (Peres, Talwar, Alter, Elhanan, & Friedmann, 2020) all also influence leaders’ communication.

Category 3: Outcomes of Leader Communication

Ultimately, leaders communicate to make things happen, for themselves, for others, and for the institutions they serve. Almost half of our review articles ($N=167$) focus on outcomes of

leader communication, which we address beginning with outcomes for the leader, then for followers or stakeholders, and finally for the organizations they manage or nations they lead.

Leader-Level Outcomes

We distinguish between leader emergence, effectiveness, and attributions (about the leader), even though we acknowledge that there are not always clear demarcations between them. Emergence, obviously, is a precondition for effectiveness, and thus substantially correlated with it (Foti & Hauenstein, 2007). Nevertheless, predictors of leader emergence differ from predictors of leader effectiveness (Judge, Bono, Ilies, & Gerhardt, 2002). We consider being appointed, nominated, or elected to hold a leadership position (in advance of delivering in that role) as emergence, and studies that predict what a leader does after having the opportunity to deliver in that role as effectiveness.

We also concede that subjective measures of leadership effectiveness *are* attributions, and therefore there is also a fuzzy boundary between measures of leader effectiveness and attributions about leaders. Certainly, followers' subjective evaluations of a leader's effectiveness are highly correlated with other positive attributions about that leader (cf. Awamleh & Gardner, 1999), but we preserve separate categories for studies that use subjective measures of "effectiveness" and studies that predict other attributions about a leader because key outcomes (such as promotions and salary decisions) are rarely made on the basis of positive *attributions* about a leader (such as their trustworthiness or charisma, for example), but certainly are made on the basis of subjective ratings of their "*effectiveness*". Nevertheless, we recognize that these boundaries remain contested, even while we maintain that meaningful differences justify retaining these (concededly porous) boundaries.

Leader Emergence. Determining who emerges as a leader is a longstanding interest in leadership research (Badura, Galvin, & Lee, 2022). Emergence is typically studied (in psychology) by seeing who is nominated or identified as a leader in newly formed groups, (in management research) in terms of a leader's selection or appointment (Jacquart & Antonakis, 2015), and (in political science) in terms of electoral victory (Gregory & Gallagher, 2002; Jacquart & Antonakis, 2015).

Several individual verbal and nonverbal signals are associated with leadership emergence (Davis & Gilbert, 1989; Gerpott, Lehmann-Willenbrock, Silvis, & Van Vugt, 2018; Truninger, Ruderman, Clerkin, Fernandez, & Cancro, 2020). Unsurprisingly, individuals who use more charismatic signals are more likely to be elected President or appointed to CEO positions (Jacquart & Antonakis, 2015). In addition, individuals who show more expressive body language, make more eye contact (Gerpott et al., 2018), and use more captivating vocal tones (Truninger et al., 2020) are also more likely to emerge as leaders. One study even found that aspects of vocal tone that are not consciously distinguishable but reflect interpersonal dominance were a consistent predictor of U.S. presidential election victory over 40 years (Gregory & Gallagher, 2002).

What potential leaders communicate about, and when they do, is also important to their emergence. Using video recordings of meetings from 42 project teams over eight weeks, Gerpott and colleagues (2018) found task-related speech to be a consistent predictor of whether a team member emerged as a leader at the end of the project, but relationship-oriented speech increased in importance over the course of the project, becoming critical in its final weeks.

Leader Effectiveness. Once a leader has emerged, effectiveness becomes a primary interest. Yet there is little consensus about how to best measure leader effectiveness, and as a

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result it has been operationalized using a wide-ranging set of variables (Avolio, Sosik, Jung, & Berson, 2003; Fiedler, 1964; Foti & Hauenstein, 2007; Hogan, Curphy, & Hogan, 1994; Shamir & Howell, 1999; van Knippenberg & Hogg, 2003; Yukl, 2012).

A common way to distinguish different understandings of leadership effectiveness separates concrete or more objective measures from more subjective ones. Several efforts link aspects of leader communication to objective measures of effectiveness. When CEOs use language signaling that they prioritize shareholders over stakeholders, their compensation is higher (Shin & You, 2017) and their risk of dismissal lower (Shin & You, 2020). For orchestra conductors, expressiveness—a key nonverbal behavior with obvious relevance for their work, has been associated with the number of awards they have won and venues in which they have conducted (Tskhay, Xu, & Rule, 2014).

Effectiveness for political leaders is often measured in terms of official approval ratings. For example, presidential candidates poll higher when they match the linguistic style of their opponents during debates (Romero, Swaab, Uzzi, & Galinsky, 2015). The extent to which political leaders focus their public speaking on a given policy agenda has been associated with the extent to which the public endorses those agendas (Cohen, 1995): a focus on the “War on Drugs”, for example, was associated with an increase in how the Drug Enforcement Agency and District Attorneys handled and prosecuted drug crimes (Whitford & Yates, 2003). More recently, approval or endorsement of both political and informal leaders can be measured using social media. Politicians receive more retweets when they attack their opponents (Lee & Xu, 2018), but their social media reach is also wider to the extent they use moralized language (Brady, Wills, Burkart, Jost, & Van Bavel, 2019). Unsurprisingly, the use of charismatic signals also predicts social media influence (in the form of Ted talk views and retweets) (Tur et al., 2021).

More subjective measures of leadership effectiveness have been associated with both verbal and emotional aspects of leader communication. For example, leaders are perceived as more effective when they communicate transparently with followers (“It’s important that we talk openly and freely...”) (Norman, Avolio, & Luthans, 2010, p. 354). Leaders’ emotional expressions also play an important role in subjective evaluations of their effectiveness, though which emotion depends heavily on context and the way those expressions are perceived. For example, Schoofs and Claeys (2021) found that CEOs benefit from expressing sadness during a crisis, as it elicits observers’ empathy, but runs the risk of decreasing perceptions of their competence, while Shao and colleagues (2018) found that leaders’ anger expressions were associated with perceptions of effectiveness, but only when the anger was understood to be communicating urgency about the immediate task at hand, rather than as a trait of the leader.

Attributions About the Leader. The attributions others make about leaders are also relevant outcomes, and positive attributions about leaders are often associated with concrete consequences for them, including their emergence and effectiveness. Much of the early work on charisma explored the behaviors that elicited attributions of charisma from others. These behaviors include articulating visions, using metaphor and imagery, and engaging in expressive nonverbal behaviors (Awamleh & Gardner, 1999; Holladay & Coombs, 1993, 1994; Kirkpatrick & Locke, 1996; Mio et al., 2005; Naidoo & Lord, 2008). In the last decade, research has highlighted specific nonverbal signals that elicit attributions of charisma, including eye-gazing patterns (Maran, Furtner, Liegl, Kraus, & Sachse, 2019), and clothing styles (Maran et al., 2021).

Other important attributions individuals make about leaders as a function of how they communicate involve power and status (Brescoll & Uhlmann, 2008; Tiedens, 2001). Attributions of status are associated with leaders’ expressions of anger (e.g., direct gaze, strong hand

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gestures) rather than sadness (e.g., averted gaze with the head hung) (Tiedens, 2001). However, this is more true for male than female leaders (Brescoll & Uhlmann, 2008). Consistent with Shao and colleagues (2018), how perceivers understand the source of anger expressions is important: female anger can elicit attributions of status, but only when the perceiver understands the anger as having been externally provoked (Brescoll & Uhlmann, 2008).

A stream of research that draws on Implicit Leadership Theory (ILT) investigates (largely nonverbal) communicative behavior that elicits attributions that an individual is “leader-like”. According to ILT, certain aspects of leader communication meet preexisting expectations of how leaders should behave, and are thus prototypical of leaders (Lord, Foti, & De Vader, 1984). This work focuses on how verbal and nonverbal communication can be used strategically to increase the likelihood that an individual is perceived as a leader (Trichas & Schyns, 2012; Trichas, Schyns, Lord, & Hall, 2017; Witkower, Tracy, Cheng, & Henrich, 2020). Melwani and colleagues (2012) found that expressing compassion (i.e., tilting one’s head with a relaxed face) as well as contempt (i.e., looking down with a corner of one’s lips raised) were both associated independently with attributions of individuals as more leader-like, because both of these nonverbal behaviors signal intelligence (Melwani, Mueller, & Overbeck, 2012). Individuals displaying happy emotions (e.g., smiles), as opposed to nervous expressions (e.g., eyebrows raised and pulled together), are also more likely to be perceived as leaders (Trichas et al., 2017). These studies highlight the critical role nonverbal communication signals play in forming powerful first impressions that lead to critical perceptions that they meet the heuristic expectations we have of leaders.

Follower-Level Outcomes

Ultimately, to accomplish their objectives, leaders need to influence others to act. Some studies have explored direct links between leaders' communication and follower performance (which some studies, defensibly, conceptualize as leader effectiveness) (DeGroot, Aime, Johnson, & Kluemper, 2011; Grant & Hofmann, 2011; Meinecke, Lehmann-Willenbrock, & Kauffeld, 2017). More commonly, leader communication has been associated with more intermediary follower outcomes, including their attitudes and intentions (De Hoogh & Den Hartog, 2008; Hardacre & Subasic, 2018; Towler, 2003), or moods and emotional responses (Lewis, 2000; Lyons & Schneider, 2009; McHugo et al., 1985). Typically, these studies are undertaken in the lab, providing participants (as followers) with varied examples of leaders' communication, and then asking them about their responses to it.

Attitudes and Intentions. What and how leaders communicate influences followers' attitudes and intentions, such as their motivation to complete assigned tasks (Kirkpatrick & Locke, 1996; Shea & Howell, 1999), their levels of optimism (De Hoogh & Den Hartog, 2008), and the extent to which they support the organization (Cowen & Montgomery, 2020). For example, communication that includes charismatic signals elicits higher levels of motivation, self-efficacy, and task satisfaction among followers (Kirkpatrick & Locke, 1996; Shea & Howell, 1999).

Mood. A solid body of work situated in the literature on emotional contagion (van Knippenberg & van Kleef, 2016) argues that leaders' emotions can transfer to their followers, as if the emotion itself was contagious. These studies explore the role of leaders' emotional expressions on followers' mood and affective reactions (Bucy, 2000; Lewis, 2000; McHugo et al., 1985; Sullivan & Masters, 1988). For example, Lewis (2000) showed that when leaders

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communicate with positive emotions, use reassuring language, and behave enthusiastically, followers experience more positive moods. Followers also smile more in the presence of leaders who smile, speak fluently, and make eye contact (Cherulnik, Donley, Wiewel, & Miller, 2001). Ultimately, these moods then affect followers' behavior (Bono & Ilies, 2006; Hatfield, Cacioppo, & Rapson, 1993).

Performance. Follower performance is a key outcome that reflects how well followers understand leaders' messages and act according to their instructions, guidance, and role modeling (Antonakis, d'Adda, Weber, & Zehnder, 2021; Grant & Taylor, 2014; Stam, van Knippenberg, & Wisse, 2010a, 2010b; Van Kleef et al., 2010; Van Kleef et al., 2009). Charismatic forms of communication have long been identified as an efficient route through which to elicit followers' task performance (Antonakis et al., 2021; Shea & Howell, 1999; Towler, 2003). For example, visionary communication has been associated with higher creative performance (in idea-generation tasks), especially when leaders address followers personally (e.g., "you can develop yourself as an innovative and successful manager...") (Stam et al., 2010a, p. 460). One study even found that the use of typical charismatic signals such as metaphor, stories, contrasts and rhetorical questions can increase follower's task output by 17% (Antonakis et al., 2021).

Leaders' emotional expressions have more mixed effects on follower performance. While positive affective displays (leader happiness and optimism) often increase general levels of performance (Gaddis, Connelly, & Mumford, 2004), negative emotions can enhance specific types of follower performance as well. For example, leaders' expression of sadness has been associated with higher levels of follower performance on analytical thinking tasks (Visser, van Knippenberg, van Kleef, & Wisse, 2013), and leaders' anger displays (e.g., using stern looks, an

irritable tone of voice, and clenched fists) can motivate followers, particularly those with low agreeableness (Van Kleef et al., 2010).

Ethical Behaviors. Leader communication has also been associated with followers' ethical and moral behaviors. Leaders can communicate with followers in ways that elicit less morally problematic behavior, such as free-riding and self-serving behavior (Boulu-Reshef, Holt, Rodgers, & Thomas-Hunt, 2020), ethical violations (Gubler, Kalmoe, & Wood, 2015), and misconduct (Moore et al., 2019). Leaders' communicating about moral concerns plays an important role in eliciting these follower behaviors (Dang, Umphress, & Mitchell, 2017; Moore et al., 2019). For example, when leaders stress the importance of asking oneself "what is the right thing to do?" and remind followers to "make decisions that are fair and balanced", followers are less likely to make unethical choices (Moore et al., 2019, p. 132). In contrast, when leaders use violent rhetoric (e.g., "I am declaring war on the competition"), followers become more willing to engage in ethical violations (Gubler et al., 2015, p. 709). As moral leadership theories become increasingly important (Banks, Fischer, Gooty, & Stock, 2021), this stream of research shows how leaders' ethical communication plays a critical role in motivating followers to enact their moral agency responsibly.

Stakeholder Responses to Leader Communication. A small number of papers analyzes how stakeholders *respond* to politicians' communication. Some of these responses involve mimicry. For example, the language individuals use when tweeting about presidential candidate debates mimicked how authentic and analytical the candidates' language was during the debates themselves (Jordan, Pennebaker, & Ehrig, 2018). Similarly, during the September 11 attacks in 2001 and the Iraq war in 2003, the more President Bush used binaries in his speeches (e.g., good vs. evil, security vs. peril), the more newspaper editorials followed suit with the language they

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used (Coe, Domke, Graham, John, & Pickard, 2004). However, stakeholders do not always respond to leaders with tone that is consistent with the leader to whom they are responding. During the 2016 U.S. presidential election, stakeholders on Twitter responded negatively to Hillary Clinton's positive tone, and positively to Donald Trump's negative tone (Jordan et al., 2018).

Macro-Level Outcomes

Organizational Strategy and Performance. Several scholars have endeavored to connect top leaders' communication to consequential organizational outcomes (Crilly, Hansen, & Zollo, 2016; Sanchez-Ruiz, Wood, & Long-Ruboyanes, 2021; Segars & Kohut, 2001). This research often uses signaling theory (Connelly, Certo, Ireland, & Reutzel, 2010; Spence, 1973) and impression management theory (Bolino, Kacmar, Turnley, & Gilstrap, 2008; Bozeman & Kacmar, 1997) as theoretical lenses to investigate leader communication as a strategic tool that can improve firm reputations and earn positive stakeholder evaluations (Guo, Sengul, & Yu, 2020; Li, Shi, & Dasborough, 2021). A major research theme in this body of work focuses on how leaders' strategic use of obfuscating and opaque language affects investor reactions (Pan, McNamara, Lee, Haleblian, & Devers, 2018), environmental ratings (Fabrizio & Kim, 2019), and competitors' market entry (Guo et al., 2017). Scholars argue that by communicating vaguely or using less readable language, a firm's strategies become more difficult for competitors and stakeholders to discern, ultimately leading to positive outcomes for the focal firm, in terms of fewer competitive entrants (Guo et al., 2017) and higher environmental performance ratings (Fabrizio & Kim, 2019).

Nation- and State-Level Performance. A small set of recent studies have also investigated how politicians' linguistic signals affect state or national level outcomes

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(Afanasyev, Fedorova, & Ledyeva, 2021; Medeiros et al., 2022). An analysis of former U.S. president Donald Trump’s Twitter posts showed that the negative sentiment of his tweets about Russia (e.g., using words like “fake” and “collusion”) was correlated with the ruble’s depreciation in the three days following the tweets, providing evidence that a politician’s communication on social media had the power to affect a rival country’s economic performance (Afanasyev et al., 2021). On a more positive note, another study found that the extent to which national leaders’ communication during the COVID-19 pandemic demonstrated reliance on experts to generate evidence-based solutions to it was reflected in lower infection rates at the country level (Medeiros et al., 2022). One recent study even demonstrated that charismatic signaling in U.S. governors’ speeches about preventative behaviors necessary to protect public health during the COVID-19 pandemic increased levels of sheltering-in-place behavior in their state—with an effect size that implies that as many as 5,350 lives were saved for every one standard deviation a governor was higher in charismatic signaling (Jensen et al., 2023). These papers substantiate that the way political leaders speak can change behavior in the aggregate, enough to have meaningful implications for states and nations.

Category 4: Leader Characteristics and Attributes

In the final category of studies ($N=31$), leader communication is employed as raw data used to measure (non-communication-based) leader attributes and characteristics in valid, reliable, and robust ways. Leader communication is an ancillary interest in these studies: they are not trying to extend our understanding of leader communication, but rather show the wide range of leader-level constructs that can be measured unobtrusively using communication data.

It has long been recognized that communication data can be used in this way, revealing certain leader traits and characteristics (Hambrick & Mason, 1984; Hermann, 1980) that can be

difficult to measure directly. Scholars working in the upper echelons tradition have been at the forefront of developing these measures, due to the challenge of gaining access to a large number of top executives, especially to complete time-consuming psychometric tests (Hambrick, 2007). Similarly, one cannot ask heads of governments to participate in personality testing or clinical interviewing so that scholars can explore their traits and characteristics (Hermann, 1980; Zullow, Oettingen, Peterson, & Seligman, 1988). However, leaders' verbal and nonverbal behaviors, publicly available from written texts, speeches and videos, provide researchers with a window into their inner psychological and social processes.

Motives and Beliefs. Political leaders' public statements and press conferences have been analyzed to deduce their pessimism (Zullow et al., 1988), beliefs (Renshon, 2008), as well as their motives, decision styles and interpersonal styles (Kaarbo & Hermann, 1998; Semenova & Winter, 2020; Winter, 1987). For instance, while references to others in friendly ways signal affiliation motives (e.g., "we should be compassionate towards refugees"), emphasizing having influence over others (e.g., "our country is the dominant power in Europe") illustrates power motives (Semenova & Winter, 2020, p. 816). Researchers have looked at action verbs (e.g., "attack", "condemn") to understand a leader's beliefs about the methods s/he should use to achieve political objectives (Renshon, 2008), and action words to understand how leaders perceive the control they have over external events (Hermann, 1980).

Narcissism. Leaders' communication data have also played an important role in research on leader narcissism (Buyl, Boone, & Wade, 2019; Chatterjee & Hambrick, 2007; Petrenko, Aime, Ridge, & Hill, 2016), a trait indicating an individual's inflated self-views and exaggerated self-confidence (Campbell, Goodie, & Foster, 2004). For example, Chatterjee and Hambrick (2007) used the prominence of the CEO's photograph in their firm's annual report (a nonverbal

communication signal of the CEO's vanity), along with the relative use of first-person singular pronouns, as indicators of the CEO's level of narcissism. Other scholars have measured top leaders' narcissism using video footage of CEOs, coded by trained raters (Petrenko et al., 2016).

Big Five Personality. CEOs' and top executives' corporate communications and social media posts have been used to measure their Big Five personality traits (Harrison, Thurgood, Boivie, & Pfarrer, 2019; Malhotra, Reus, Zhu, & Roelofsen, 2018; Ormiston, Wong, & Ha, 2021; Wang & Chen, 2020), including openness, conscientiousness, extraversion, agreeableness, and neuroticism/emotional stability (Costa & McCrae, 1985). Using a machine-learning approach, Harrison and colleagues (2019) deduced the linguistic features associated with Big Five personality traits using CEO's language in earnings calls, associating the textual features of a given CEO with their personality scores measured previously for that sample using a psychometrically-validated instrument, offering the field a new, valid way to measure leaders' personality without requiring any intervention with them at all.

Attention and Cognitive Focus. Many management scholars use the words and phrases of top executives' corporate communications, including transcripts of quarterly earnings calls and letters to shareholders, to investigate leaders' foci of attention (Abrahamson & Hambrick, 1997; Cho & Hambrick, 2006; D'Aveni & MacMillan, 1990; DesJardine & Shi, 2021; Kashmiri, Gala, & Nicol, 2019). By analyzing the presence and frequency of certain categories of words, scholars infer what organizational leaders are attending to, and how they are making sense of their competitive environment. For example, D'Aveni and MacMillan (1990) content analyzed firms' letters to shareholders to deduce managers' differential attention to their external (using more words like "competitors" or "customers") and internal (using more words like "employee"

or “operation”) environments, and found externally-directed attention a key contributing factor in leaders’ willingness to recognize external threats.

Regulatory Focus. Scholars have also used leaders’ language to infer their regulatory focus (Gamache, McNamara, Mannor, & Johnson, 2015; Gamache, Neville, Bundy, & Short, 2020; Kashmiri et al., 2019; Scoresby, Withers, & Ireland, 2021), the way which individuals view their goals and their strategic tendencies to achieve them (Higgins, 1997, 1998). These authors argue that leaders’ use of promotion-focused words (e.g., “gain”, “growth”) indicates their eagerness to pursue new opportunities, while their use of prevention-focused words (e.g., “loss”, “stability”) suggests their inclination to avoid loss and failure (Gamache et al., 2015). These studies help us understand how leaders’ attention and cognitive focus form the basis of their strategic choices, ultimately shaping organizational level strategies and outcomes.

Other Individual Characteristics. Communication data have been used to measure several other leader characteristics, including over-confidence (Lee, Hwang, & Chen, 2017), provocativeness and submissiveness (Hill, Recendes, & Ridge, 2019), and authenticity (Randolph-Seng & Gardner, 2012). Again, the foci of these studies are not related to the leader communication *per se*; instead, communication is of ancillary interest used to infer key leader characteristics and attributes, which can then be used to make contributions to the literature that the measured characteristic taps.

EMPIRICAL APPROACHES FOR LEADER COMMUNICATION DATA

In this section we overview the broad range of methodological approaches available to researchers who use leader communication data. We organize these approaches according to (1) their level of reliance on human assessment, (2) their primary research design (laboratory or field), and (3) the communication type used (text, voice recordings, photos, or videos). We

identify six broad methodological approaches, which we discuss in turn. We summarize these methodologies in Table 2.

--- Insert Table 2 about here ---

Human Assessment Approaches

Early methods to study leader communication used predominantly text-based data and coded words, phrases, and sentences manually to explore theoretical constructs of interest (Fiol et al., 1999; Tetlock, 1985). Human assessment approaches require researchers' subjective estimation and judgment, unaided by computers. Typically, these approaches are qualitative rather than quantitative, and include narrative analyses of sentences, paragraphs, or phrases, identifying specific features of verbal and nonverbal communication using pre-determined or emergent coding schemes. Human assessment approaches allow researchers to analyze leader communication at multiple levels, including the word-, phrase-, and sentence-level, to understand the meaning and function of different aspects of language. These methods account for over one third of our review articles ($N=102$) and were the dominant approach for research on leader communication until the 1990s.

Researchers using these methods use archival communication data from leaders to explore pre-existing theoretical constructs, such as charismatic rhetoric (Den Hartog & Verburg, 1997; Fanelli & Grasselli, 2006; Mio et al., 2005), integrative complexity (Suedfeld, 1994; Tetlock, 1985), and vision communication (Carton & Lucas, 2018). These methodologies have also been used to explore leaders' pessimistic and optimistic linguistic styles (Zullo et al., 1988), communication toward minority groups (Portice & Reicher, 2018), and facial expressions of submissiveness and provocativeness (Hill et al., 2019). Many early studies that used these methods relied on researchers' own evaluations of the linguistic elements they believed reflected

their constructs of interest, such as what made leaders more charismatic (Conger, 1991; Shamir et al., 1994).

The main advantage of human assessment approaches is that human coders are often better than computers at analyzing complex semantic and syntactic structures (Jacquart & Antonakis, 2015). It remains difficult to train a computer to recognize conceptually sophisticated elements of language such as metaphors, sarcasm, or humor consistently and accurately, or to explain why a given metaphor is effective and another not. The use of metaphors may be a key marker of charisma, but using them inappropriately do not make a leader appear more charismatic (Antonakis et al., 2011). For these reasons, human assessment approaches remain better than computer methods to understand some of the more complex forms of leader communication and to determine how leaders use language effectively. A clear drawback to qualitative analysis and manual coding, however, is that it is time-intensive, and a limited volume of communication data can be feasibly coded manually.

Experimental Studies

Almost a quarter of the studies in our review manipulate communication content in laboratory settings ($N=61$). This method continues to be a dominant approach in research on leader communication, though it has declined slightly in the last 20 years as computer-aided measures have expanded the availability of communication data from the field. Typically, these studies ask respondents to react to or evaluate short passages of text or video clips that have been carefully constructed to manipulate specific aspects of language, tone, or body gestures. While the communication these studies use is not “real” in the sense that it has not occurred naturally between leaders and observers, it *is* real in that it is often based on actual communication from

the field, and participants are responding to actual text, tone, or nonverbal cues present in actual forms of communication.

Lab studies have been central to research on leader communication because they provide causal evidence rarely available using field data. Scholars have used manipulated communication material to understand the causal effect of leaders' charismatic rhetoric on follower performance and perceptions of leader charisma (Naidoo & Lord, 2008; Shea & Howell, 1999), impression management language on followers' evaluations of leader reputation (Coombs & Holladay, 2008), and ethical language on followers' own ethical behaviors (Dang et al., 2017; Moore et al., 2019). They have also manipulated non-text communication, testing effects using actors trained to express different emotions (Van Kleef et al., 2010), pre-selected photos and video clips of real-world leaders with different facial expressions (Bucy, 2000), or photographs or clips of corporate leaders wearing different clothing and displaying different body gestures (Maran et al., 2021).

The strength of laboratory studies is that they allow researchers to test causal hypotheses rigorously. However, laboratory studies are obtrusive. Participants are aware that they are being monitored, which can lead to demand effects and inauthentic answers (Lonati, Quiroga, Zehnder, & Antonakis, 2018). Moreover, simulated leaders and followers do not have actual leader-follower relationships, which limits the ability of laboratory studies to explore naturally occurring dynamics and more realistic affective relationships between leaders and followers.

Word Count and Dictionary-Based Computer-Aided Text Analyses

Starting in the late 1990s, computer-aided word count and dictionary-based approaches surged, accounting for almost one-third of articles in the review ($N=67$). Linguistic Inquiry and Word Count software (LIWC) has been the dominant tool for this type of analysis (Tausczik &

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Pennebaker, 2010), and has been used to study leaders' emotional states (Jordan et al., 2018; Pennebaker & Lay, 2002), attentional focus (Back, Rosing, Dickler, Kraft, & Bausch, 2020), and social interaction patterns (Romero et al., 2015; Shi, Zhang, & Hoskisson, 2019). Another commonly used computer aided text analysis program is DICTION (Hart, 2001), which has been used to measure hubristic linguistic cues (Craig & Amernic, 2018), as well as multiple dimensions of charismatic rhetoric (Baur et al., 2016; Bligh et al., 2004a; Davis & Gardner, 2012). In an early example of a study using computer-aided word count measures, Pennebaker and Lay (2002) used the LIWC software to explore the linguistic styles of former New York mayor Rudolph Giuliani before and after critical events in his tenure, including the 9/11 crisis, his cancer diagnosis, and the disclosure of an extramarital affair. At the time this method for analyzing text was novel, and this was one of the first studies to demonstrate how “non-content” words (such as pronouns and negations) can reflect individual differences and mental states (Pennebaker & Lay, 2002).

Computer-aided linguistic tools help researchers process a larger volume of data more easily and draw more nuanced theoretical implications from the combinational use of different dimensions of language (Bligh & Kohles, 2014). These methods process communication data automatically and permit more consistent analyses. They also facilitate unobtrusive measurement of leaders' underlying psychological mechanisms and individual differences (Pennebaker & King, 1999; Tausczik & Pennebaker, 2010). In some cases, these methods offer automated ways to measure constructs that historically required extremely time-consuming hand-coding, such as integrative complexity (Conway et al., 2020). However, computer-aided word count measures are sometimes criticized for focusing on word frequencies without considering their context (Boyd & Schwartz, 2021). For example, the word “passion” is typically included in dictionaries

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with a positive valence (such as positive emotion). But if someone talks about “hating something with a passion”, allocating it to a positive word category is inaccurate and creates noise in the measure. In addition, some of these methods have been criticized for failing to disclose the specific content and validation processes underlying their proprietary linguistic categories (Eichstaedt et al., 2021; Yeomans, 2021).

Voice Recognition Tools and Technologies

Since 2010, a small number of articles ($N=6$) have employed voice recognition technologies and automatic computer measures of vocal features. Multiple tools exist for this type of analysis. “Fast Fourier Transform analyzer” measures fundamental frequency (or pitch) of leaders’ vocal delivery (Gregory & Gallagher, 2002), and “Kay Elemetrics Multi-Speech signal analysis workstation,” measures pitch levels, number of pauses, pitch variability, loudness, and speech rate (DeGroot et al., 2011). PRAAT (Boersma, 2001), a computer software for speech analysis in phonetics, can automatically measure various acoustic features of speech.

These tools have helped confirm that sounding masculine (“deep and low”, an aural signal of physical strength) is correlated with perceptions of leadership quality (Nair, Haque, & Sauerwald, 2021). Voice recognition tools have been particularly popular in studies of charisma, with researchers using voice recordings to measure aspects of leaders’ vocal delivery and investigate gender differences in charismatic speech (Niebuhr et al., 2016; Signorello et al., 2020). Niebuhr and colleagues (2016) used PRAAT to combine various melodic features of charisma in a single analysis, showing how using multiple acoustic techniques simultaneously better attracts audience attention (Niebuhr et al., 2016).

Facial Recognition Tools and Technologies

A limited number of studies have explored facial expressions as an aspect of leader communication ($N=4$). Historically, studying facial expressions has been extremely labor intensive. The Facial Action Coding System (FACS) uses highly trained human coders to identify various minute facial movements such as lip curling, mouth opening, and the movement of specific muscles around the eyes. Researchers have used FACS to categorize tiny differences in President Obama's facial expressions, facilitating understanding how observers respond to very nuanced changes in how a leader's emotions are displayed on their faces (Stewart & Dowe, 2013).

New technologies are emerging to measure facial expressions and eye-gazing patterns without relying on human coders. Eye-tracking technologies chart subjects' gaze patterns—where they first look when assessing an image, as well as the length and consistency of their gaze. Scholars have used these methods to count how often charismatic leaders make eye-contact with their followers (Maran et al., 2019), and to understand how followers' patterns of visual attention shift based on a leader's communication style (Gerpott et al., 2018). In Gerpott and colleagues' (2018) study, participants watched videotaped group interactions and their eye-gazing patterns toward each group member were tracked using Eyelink 1000 (Desktop Mount model, infra-red video-based, SR Research Ltd., Canada). They found that participants gazed at emergent leaders more often than others in the group (Gerpott et al., 2018). In another experiment, Maran and colleagues (2019) used the eye-tracking technology Tobii TX300 (Tobii Technology, Stockholm, Sweden) and found that attributions of leader charisma increase when leaders' eye contact with their followers is more frequent and of longer duration. This study explicitly linked eye-gaze to perceptions of leaders, revealing the power of eye-contact in

attributions of leader charisma (Maran et al., 2019). A third facial recognition tool, OKAO Vision, a digital image detecting software, has been used to evaluate political candidates' smiles (Horiuchi, Komatsu, & Nakaya, 2012). Like voice recognition tools, facial detection technologies provide objective, unobtrusive measures of nonverbal communication, facilitating more fine-grained analyses of various nonverbal cues on leadership outcomes.

Machine Learning Methods

Machine Learning (ML) tools have become increasingly common to analyze leaders' communication, particularly in the last five years, and account for 4% of reviewed articles ($N=11$). There are two broad types of ML models: supervised and unsupervised. Supervised ML models require more human involvement, as they use pre-labeled datasets (e.g., pre-coded independent and dependent variables) to train the computer. Unsupervised ML models uncover underlying regularities in data without pre-labeled data, and thus require less human involvement. Instead of relying on predefined vocabulary or coding criteria (a necessary component of dictionary-based text analysis), ML algorithms automatically search for the frequency, uniqueness, and associations between different words. The algorithms show the extent to which sets of words or a topic is dominant within a single document, revealing the overall focus of a leader's communication, or whether certain topics often appear together. They provide more reliable and scalable methods for assessing communication data than computer-aided word count tools, using open-vocabulary approaches that ensure more transparency about the content of linguistic categories (Eichstaedt et al., 2021; Yeomans, 2021).

These approaches help uncover patterns of behavior that are not theorized *a priori*, representing a new way to conduct inductive analyses that are data-driven, uncovering novel relationships that might be overlooked using deductive approaches (Evans & Aceves, 2016;

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Leavitt, Schabram, Hariharan, & Barnes, 2021). In many ways, ML approaches surface insights similarly to the earliest studies on leader communication that coded data manually, except that ML can do so for infinitely large corpora of text, videos, and photos. As a result, many studies that use these technologies are descriptive, in that researchers let the tools “do their work” and classify communicative elements relevant to researchers’ interests.

Relevant applications using text data have identified linguistic characteristics that reflect leader hubris (Akstinaite, Garrard, & Sadler-Smith, 2021), ethical leadership (Banks et al., 2023), Big Five personality traits (Harrison et al., 2019; Malhotra et al., 2018), and crisis response strategies (Montiel, Uyheng, & Dela Paz, 2021). ML also has applications to non-textual (vocal and visual) data (Choudhury, Wang, Carlson, & Khanna, 2019; Truninger et al., 2020). For example, Choudhury and colleagues associate leader communication styles (as a function of their facial expressions) with firm performance (Choudhury et al., 2019).

In short, the last fifty years has seen a revolution in the methodological repertoire for studying leader communication, systematically shifting away from tools that require high levels of human involvement towards automated computer-aided methods. Nevertheless, each method offers unique opportunities for leadership scholars, which together offer a rich set of options. We represent the distribution of these analytical approaches across time in Figure 2. As it makes clear, although studies that use methods that require more human intervention (manual coding, qualitative analyses, and lab studies) have remained dominant, the proportion of papers using these methods are shrinking. The proportion that use dictionary-based word count measures have been increasing steadily over the last three decades, and the entry of vocal and facial recognition tools and ML-based analyses in the last decade further diversify the set of methods researchers use to explore these topics. Mixed-methods studies (papers using a combination of two or more

methods we introduced above, $N=9$) are becoming more popular as well, showing scholars' openness to incorporating a variety of approaches, as appropriate, to best address their research questions.

--- Insert Figure 2 about here ---

THEORETICAL IMPLICATIONS AND FUTURE RESEARCH DIRECTIONS

It is clear that communication is at the heart of leadership. Communication signals a leader's values, vision, character, and conscience. It is the vehicle through which they transmit who they are and what they want to their followers and other stakeholders. In turn, it influences those stakeholders' moods, beliefs, motivations, actions, behavior, and performance. In aggregate, this can affect outcomes for organizations, or even countries. There is no theory of leadership for which communication is not foundational, yet it often functions as a quiet undercurrent in the background of the theory rather than play a feature role. Our hope is that this review can help bring the meanings and importance of communication to leadership into the light.

Defining Leader Communication

During the course of our review, it became clear that a sound definition of leader communication has been notably absent from the literature. A solid definition of key terms in any discipline has the power to circumscribe the appropriate domain of study and support appropriate theorizing and measurement (e.g., Boulu-Reshef et al., 2020; Stam et al., 2018). Thus, one of our contributions was to offer such a definition to the field, reflecting our observations after reviewing this large body of work. We define leader communication as *the textual, verbal, and embodied signals that leaders deliver to others, both purposefully and*

unintentionally, with the power to reveal aspects of leaders themselves, predict leadership outcomes, and affect others.

Our review highlights aspects of leader communication that have been underexplored. For example, research on leader communication has tended to focus on the most obvious elements of communication, such as its explicit content, but our definition makes clear that communication is multidimensional, and involves subtle textual signals, from choices in pronoun usage to forms of imagery, to physical (embodied) signals, from body language to clothing choice to micro-facial expressions, to aural signals (volume, pitch, tonal variation). Several streams of leadership research may benefit from examining these less obvious elements of leader communication. For example, work in ethical leadership focuses primarily on textual and verbal communication (e.g., Banks et al., 2023; Dang et al., 2017). What about embodied signals of ethical leadership? Social movement leaders have long used physical cues of their ethical values, from Ghandi's clothing, which represented non-violent resistance to England's colonial rule (Gonsalves, 2010) to N.F.L. player Colin Kaepernick taking a knee when the U.S. national anthem was played before football games, as a silent but visible protest against police brutality and racism (Mirando, 2018). However, the effects of these embodied signals of moral values and agency have not been studied from the perspective of ethical leadership theory, and may help explain how leaders' ethical values transfer to their followers or the strength of this transfer. Examining both types of signals simultaneously may also reveal further insights into the perceived congruence between leaders' internal values and their outward expression.

Our definition also implies that scholars might better distinguish between purposeful and unintentional communication. Purposeful or strategic communication is more controllable, but unintentional communication can reveal leaders' inner psychological processes and personality

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traits, such as their hubris (Akstinaite, Robinson, & Sadler-Smith, 2020), submissiveness (Hill et al., 2019), or desire for power (Semenova & Winter, 2020), which may be playing an outsized role in their behavior and influence. In particular, research on emotions and leadership may benefit from this distinction. Leader' emotional displays have been considered part of leaders' predispositions (e.g., "angry woman", cf. Brescoll & Uhlmann, 2008) that function as an unconscious aspect of their leadership, or as a conscious and purposeful strategy of their leadership (Connelly & Gooty, 2015). Future scholars can explore how leaders can signal their emotional intelligence or emotion regulation ability, which may affect several positive outcomes for followers, including harmony and psychological safety within their teams (Ormiston et al., 2021).

Gaps in Understanding

Our categorization scheme organizing the five decades of work we reviewed illuminates several new perspectives, and shows which areas of research have been more thoroughly exhausted and which remain open, and suggest promising areas of future research. Studies on outcomes significantly outnumber those on antecedents of leader communication, potentially implying unbalanced attention between leadership implications (how leader communication affects others) and leadership development (how leaders can communicate more effectively).

In addition to the number of studies being smaller, the range of antecedents of leader communication that have been studied is limited. Future research should explore additional antecedents of leaders' communicative behaviors, such as gender and ethnicity. Existing scholarship uses predominantly White male leaders' archival communication materials, and thus our understanding of how female and minority leaders might communicate differently, or be differently effective, remains underdeveloped. We know that women tend to communicate in

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ways that meet their social role expectations (Davis & Gilbert, 1989; Johnson, 1994; Sergent & Stajkovic, 2020). But how can we train male leaders to communicate more empathetically, as their female counterparts do (Patient & Skarlicki, 2008; Sergent & Stajkovic, 2020)? How can leaders from modern business environments communicate genuinely and show long-term concerns for their community, as aboriginal leaders do (Julien, Wright, & Zinni, 2010)? The increasing but overdue attention the field is paying to gender equality, diversity and inclusion heightens the importance of more representative research (Hinchliffe, 2021; Wahba, 2020).

In addition, although leadership is a mutual influence process (DeRue & Ashford, 2010; Oc & Bashshur, 2013; Oc, Chintakananda, Bashshur, & Day, 2023), research has largely treated leader communication as a one-time, unidirectional transmission of information from leaders to their followers. Studies on leader-follower two-way conversations remain especially rare, yet we know that follower characteristics can shape leaders' outcomes (Van Kleef et al., 2010; Van Kleef et al., 2009). Viewing followers as more active and empowered agents attunes leaders to their followers' needs and become more open to their prospective disagreements and voices, facilitating more inclusive and democratic team and organizational cultures.

What's more, the increasing availability of behavioral data from social media now allows researchers to measure how followers respond to leaders' communication easily, or learn from followers who initiate conversations with leaders without the leaders communicating first (Jordan et al., 2018). The digital age, with commonly-held portable devices and readily access to open-source online platforms, has both expanded the possibilities for free expression in democratic cultures (Balkin, 2004), and expanded ways to study the inherently reciprocal nature of communications, in a field long dominated by one-way, leader-to-receiver models. We

encourage scholars to monitor how leaders and followers communicate with each other in field settings, embracing the dyadic, iterative, and reciprocal aspects of leader communication.

Methodological Repertoire

Our review focuses exclusively on articles that use actual leader communication as a key input, responding to calls for more non-questionnaire research (Fischer et al., 2020). We summarize how studies that use communication data have advanced, and the range of available ways to extract and evaluate dimensions of leaders' verbal and nonverbal communication with nuance and complexity. By documenting these diverse analytical tools, detailing the strengths and weaknesses of each, and elaborating the richness and availability of new sources of communication data, we provide a go-to guide for scholars to study leaders' *objective and observable* communicative behaviors (Banks, Woznyj, & Mansfield, 2021).

We encourage future scholars to make use of these emerging technologies, especially on charisma and strategic leadership. In addition to identifying the nonverbal aspects of charismatic leadership, such as vocal delivery (Niebuhr et al., 2016) and eye-gaze (Maran et al., 2019), scholars can now apply voice and facial recognition technologies to investigate how nonverbal charismatic cues predict actual business performance. In a similar vein, strategy research, particularly upper echelons studies, largely uses top executives' transcribed communications to associate textual signals with firm outcomes (Gamache et al., 2015; Ormiston et al., 2021). More ML-based facial recognition tools could be applied to code leaders' nonverbal signals automatically and objectively. For instance, we might be able to use ML algorithms to measure leaders' facial cues of emotional stability, provocativeness, or even trustworthiness. How might

these cues predict leadership effectiveness or organizational performance? We believe these novel explorations will enrich work on the micro-foundations of firm strategies.

CONCLUSION

We detail how 260 articles from the last 50 years that use real leader communication as data have contributed to and extended various theories relevant to leadership research, using research from a broad range of disciplines including management, psychology, political science, and communication. We offer a comprehensive picture of how leader communication (1) works—what leaders communicate about and the rhetorical tools they use when doing so, (2) is affected by leaders' roles, affiliations, and contexts, (3) affects others in various ways at multiple levels of analysis, and (4) provides an excellent source of data that can be gathered unobtrusively and allows several key leadership constructs to be measured reliably and objectively, even those conceptually unrelated to communication.

We conclude with thoughts about what we view as the most generative paths forward. First, our definition of leader communication can help scholars identify under-addressed areas in their own research, such as leaders' embodied signals of key leadership constructs, or the different implications of intentional or unintentional communication signals. Second, by developing a classification scheme for research on leader communication, we identify promising avenues for future research, including research on female and minority leadership, as well as research on empowered followership. Finally, we advise scholars to take advantage of novel analytical technologies that allow them to explore large corpuses of text, unpack verbal cues, and measure subtle nonverbal cues in new ways. We hope this review offers original insights into leader communication and will stimulate cross-disciplinary conversations on this key leader behavior.

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FIGURE 1
NUMBER OF ARTICLES THAT USE LEADER COMMUNICATION OVER TIME

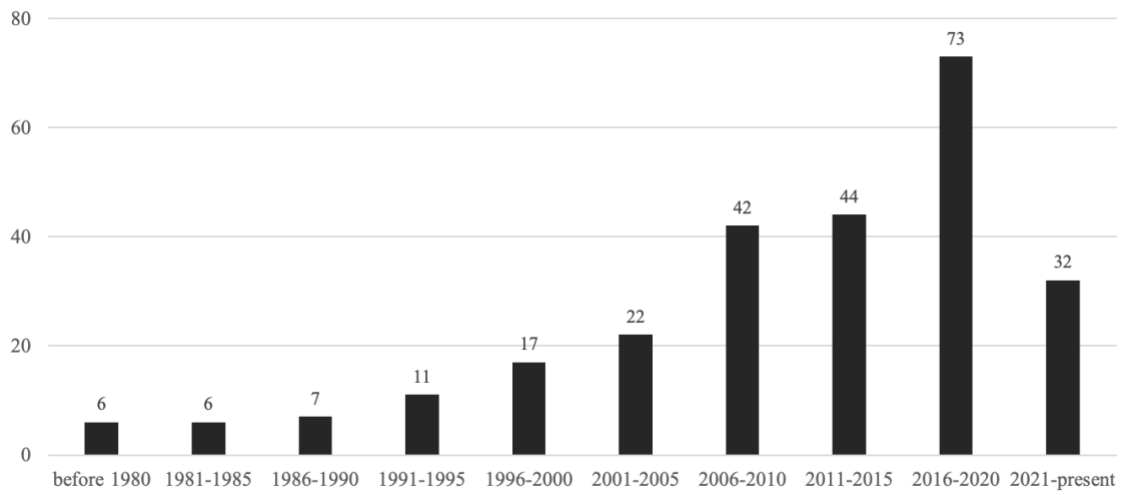


FIGURE 2
DISTRIBUTION OF ARTICLES BY EMPIRICAL APPROACH, OVERALL AND BY DECADE

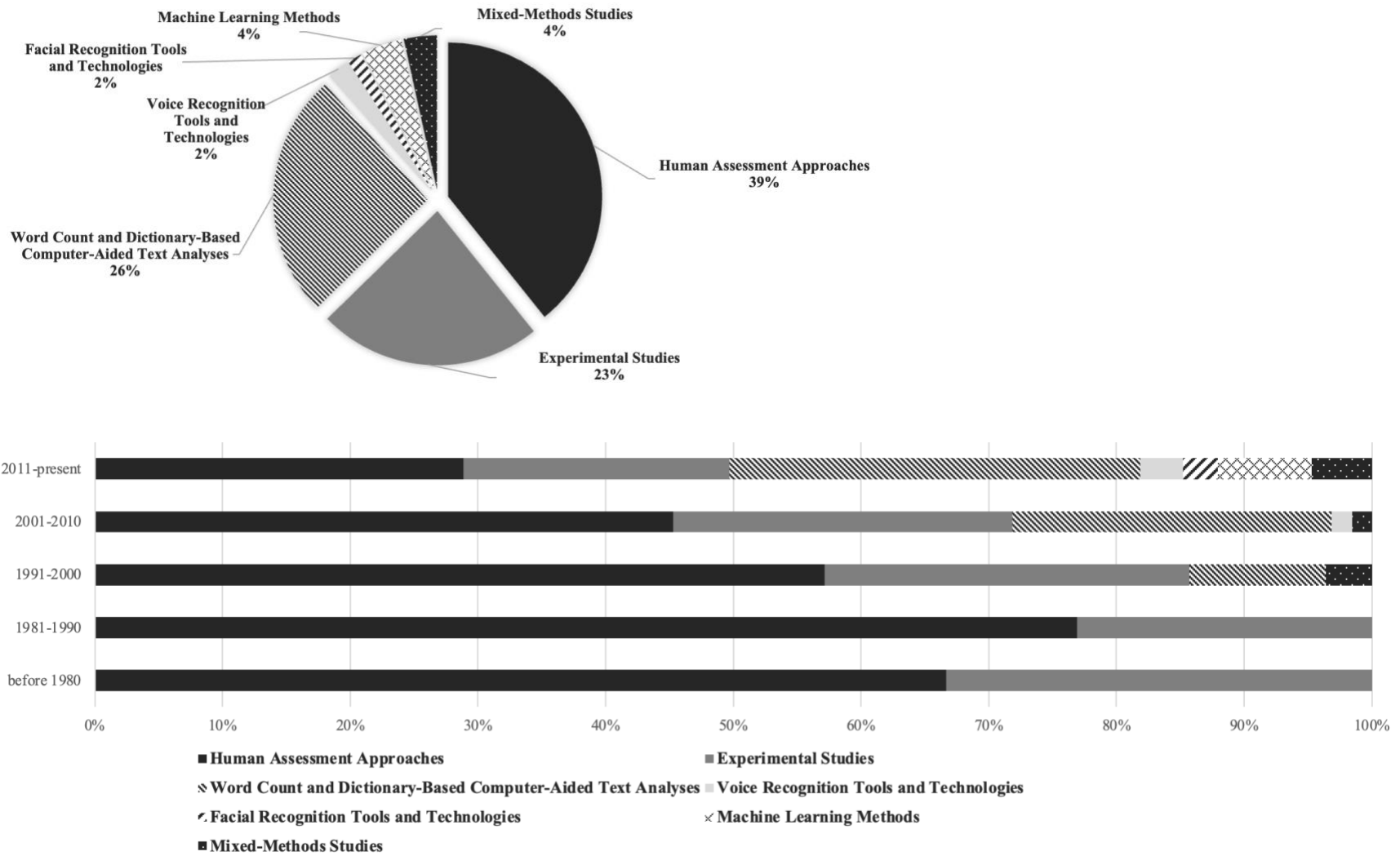


TABLE 1
CATEGORIES OF RESEARCH ON LEADER COMMUNICATION

<i>Major category</i>	<i>Subcategory</i>	<i>Example research questions</i>	<i>Exemplar studies</i>
Communication as a focal interest of the paper			
Topics and rhetoric in leader communication	Charisma	<ul style="list-style-type: none"> • What are the content categories of charismatic rhetoric? • What are charismatic leaders’ acoustic features (e.g., fluency, pitch level, loudness)? 	Shamir, Arthur, & House, 1994 Niebuhr, Voße, & Brem, 2016
	Morality and values	<ul style="list-style-type: none"> • What are humble leadership behaviors (including their communication)? • How can we identify leaders’ ethical verbal signals using CEOs’ letters to shareholders? 	Owens & Hekman, 2012 Banks et al., 2022
	Image repair	<ul style="list-style-type: none"> • How did former U.S. president George W. Bush communicate to restore his administration’s image after Hurricane Katrina? 	Benoit & Henson, 2009
	Other topics	<ul style="list-style-type: none"> • How do political leaders mobilize hostility towards immigrants through their rhetoric? • How do presidents discuss LGBTQ+ related topics in their speeches? 	Portice & Reicher, 2018 Coe, Bruce, & Ratcliff, 2017
Antecedents of leader communication	Leader-specific antecedents		
	Roles	<ul style="list-style-type: none"> • How do leaders and subordinates differ in their conversational patterns? 	Watson, 1982
	Gender	<ul style="list-style-type: none"> • How did female and male governors communicate differently with their constituents during the COVID-19 pandemic? 	Sergent & Stajkovic, 2020
	Political affiliation	<ul style="list-style-type: none"> • How do European populist politicians communicate differently from non-populist politicians 	Widmann, 2021
	Policy stances	<ul style="list-style-type: none"> • How did the policy stance of politicians in pre-Civil War America (abolitionists versus supporters of slavery) affect the complexity of their language? 	Tetlock, Armor, & Peterson, 1994
	Situational antecedents		
	Time	<ul style="list-style-type: none"> • How do charismatic presidents communicate with their constituents in different phases of their tenure? 	Fiol, Harris, & House, 1999
	Crises	<ul style="list-style-type: none"> • How does crisis affect the complexity of leaders’ language? 	Suedfeld & Tetlock, 1977
	Interventions	<ul style="list-style-type: none"> • Can charismatic communication be taught? 	Towler, 2003
	Other antecedents	<ul style="list-style-type: none"> • How does leaders’ audience (the presence of minority group) affect “their competence downshift” language? 	Dupree & Fiske, 2019

TABLE 1 (continued)
CATEGORIES OF RESEARCH ON LEADER COMMUNICATION

<i>Major category</i>	<i>Subcategory</i>	<i>Example research questions</i>	<i>Exemplar studies</i>
Outcomes of leader communication	Leader-level outcomes		
	Leader emergence	<ul style="list-style-type: none"> Does leaders' charismatic communication predict election outcomes? 	Jacquart & Antonakis, 2015
	Leader effectiveness	<ul style="list-style-type: none"> Can orchestra conductors' nonverbal signals predict their success? How does presidential communication influence public opinions and approval? 	Tskhay, Xu, & Rule, 2014 Cohen, 1995
	Attributions about the leader	<ul style="list-style-type: none"> What aspects of leaders' verbal and nonverbal signals contribute to attributions of charisma? How do leaders' nonverbal signals of compassion and contempt affect leadership perceptions? 	Awamleh & Gardner, 1999 Melwani, Mueller, & Overbeck, 2012
	Follower-level outcomes		
	Attitudes and intentions	<ul style="list-style-type: none"> How does leader charismatic communication affect followers' self-efficacy? 	Shea & Howell, 1999
	Mood	<ul style="list-style-type: none"> How do leaders' emotional expressions affect follower mood? 	Lewis, 2000
	Performance	<ul style="list-style-type: none"> How do leaders' follower-focused vision communication affect followers' creative performance? 	Stam, van Knippenberg, & Wisse, 2010
	Ethical behaviors	<ul style="list-style-type: none"> How does leaders' communication about moral values affect employees' propensity to engage in unethical behaviors? 	Moore et al., 2019
	Stakeholder responses to leader communication	<ul style="list-style-type: none"> How do editorials' linguistic patterns echo those of leaders' during times of national crises? 	Coe, Domke, Graham, John, & Pickard, 2004
	Macro-level outcomes		
	Organizational strategy and performance	<ul style="list-style-type: none"> How do leaders' use of obfuscating language affect firm's environmental ratings? 	Fabrizio & Kim, 2019
	Nation- and state-level performance	<ul style="list-style-type: none"> How do politicians' rhetorical strategies affect the country's COVID-19 infection rate? 	Medeiros, Crayne, Griffith, Hardy, & Damadzic, 2022

TABLE 1 (continued)
CATEGORIES OF RESEARCH ON LEADER COMMUNICATION

<i>Major category</i>	<i>Subcategory</i>	<i>Example research questions</i>	<i>Exemplar studies</i>
Communication as an ancillary interest of the paper to measure non-communication-based constructs			
Leader characteristics and attributes	Motives and beliefs	<ul style="list-style-type: none"> • How do the motives and interpersonal beliefs of heads of governments (reflected in their communication) affect their foreign policy behaviors? 	Hermann, 1980
	Narcissism	<ul style="list-style-type: none"> • How does CEO narcissism (reflected in their communication) affect firm performance? 	Chatterjee & Hambrick, 2007
	Big Five personality	<ul style="list-style-type: none"> • Can CEOs' Big Five personality traits be measured via their spoken texts using machine learning approaches? 	Harrison, Thurgood, Boivie, & Pfarrer, 2019
	Attention and cognitive focus	<ul style="list-style-type: none"> • What are managers' attentional patterns (reflected in their communication) when facing external threats? 	D'Aveni & MacMillan, 1990
	Regulatory focus	<ul style="list-style-type: none"> • How does CEO attentional focus (reflected in their communication) affect firm strategy? 	Gamache, McNamara, Mannor, & Johnson, 2015
Other individual characteristics	<ul style="list-style-type: none"> • Are founder CEOs more overconfident (reflected in their communication) than professional CEOs? 	Lee, Hwang, & Chen, 2017	

TABLE 2
EMPIRICAL APPROACHES FOR LEADER COMMUNICATION DATA

<i>Methods</i>	<i>Communication type</i>	<i>Primary data source</i>	<i>Strengths</i>	<i>Weaknesses</i>	<i>Exemplar studies</i>
Human assessment approaches	Text, voice recordings, photos, videos	Lab and field	<ul style="list-style-type: none"> • Better than computers at analyzing complex semantic and syntactic structures such as metaphors 	<ul style="list-style-type: none"> • Not able to process large amounts of data • Time-intensive and more subjective 	Conger, 1991; Mio, Riggio, Levin, & Reese, 2005
Experimental studies	Text, voice recordings, photos, videos	Lab	<ul style="list-style-type: none"> • Well-controlled environment • Able to make causal claims (few endogeneity issues) 	<ul style="list-style-type: none"> • Most obtrusive, thus less realistic and less natural compared to real-world settings 	Antonakis, Fenley, & Liechti, 2011; Lewis, 2000
Word count and dictionary-based computer-aided text analyses	Text	Field	<ul style="list-style-type: none"> • Automatic • Unobtrusive and objective 	<ul style="list-style-type: none"> • Does not take contexts into account • May create measure validity issues 	Baur et al., 2016 (DICTION); Pennebaker & Lay, 2002 (LIWC)
Voice recognition tools and technologies	Voice recordings	Lab and field	<ul style="list-style-type: none"> • Automatic • Unobtrusive and objective 	<ul style="list-style-type: none"> • May require higher entry level technical skills 	Niebuhr, Voße, & Brem, 2016
Facial recognition tools and technologies	Photos, videos	Lab and field	<ul style="list-style-type: none"> • Automatic • Unobtrusive and objective 	<ul style="list-style-type: none"> • May require higher entry level technical skills 	Gerpott, Lehmann-Willenbrock, Silvis, & Van Vugt, 2018; Maran, Furtner, Liegl, Kraus, & Sachse, 2019
Machine Learning methods	Text, voice recordings, photos, videos	Field	<ul style="list-style-type: none"> • More reliable and scalable • Allows data-driven analysis • Able to detect unexpected aspects of communication 	<ul style="list-style-type: none"> • May require higher entry level technical skills 	Choudhury, Wang, Carlson, & Khanna, 2019; Tonidandel, Summerville, Gentry, & Young, 2021