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Essays in Leadership Communication

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Abstract

This work centers around leadership communication: how our (dis)information-rich and uncertain global environment has posed challenges to and offered opportunities for this key leadership behavior, and how leaders engage in difficult communications with their stakeholders. I focus on leader-stakeholder two-way dynamics to investigate leader communication in critical moments when they *deliver* undesirable information to their stakeholders and *respond to* tough questions from their stakeholders. Essay I reviews research on leader communication and discusses those challenges and opportunities. Essay II uses 107 million Twitter posts to examine stakeholder responses to political leaders' COVID-19 communications and illustrates the evolving leader-stakeholder relationship throughout different phases of the global pandemic. Essay III explores organizational leaders' response strategies when facing difficult questions from stakeholders in high-stakes corporate environments. In conclusion, I aim to highlight leaders' indispensable responsibilities to communicate effectively, benevolently, and responsibly, enhancing the field's current understanding of crisis leadership, followership, and strategic leadership.

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Acknowledgements

I was once told that doing a PhD can be very lonely. Although I did spend a great deal of time alone throughout this journey, from working relentlessly on a revision to finding a way out from a tricky dataset, from Bocconi's Grafton building to Exhibition Road in South Kensington, I was never lonely.

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General Introduction

One of the most important things leaders do is communicate. Verbal and nonverbal signals that leaders deliver either purposefully or unintentionally through the use of words, voice and body, has the power to reveal aspects of leaders themselves (Tetlock, Armor, & Peterson, 1994), predict leadership outcomes (Jacquart & Antonakis, 2015), and affect others (Chatterjee & Hambrick, 2007; Moore et al., 2019). Over the last decade, the rapid and prolific expansion in the number of digital mediums that have become available for leaders to communicate revolutionarily changed the relationship between leaders and their stakeholders: from previously unidirectional, top-down, one-time and scripted information transmission from the leader to the stakeholders, to two-way, non-hierarchical, interactive and iterative conversations between the two parties (Avolio, Sosik, Kahai, & Baker, 2014; Oc & Bashshur, 2013). Moreover, today's volatile, uncertain, complex and ambiguous (VUCA) world, where peoples' lives are constantly disrupted by unpredictable events, from severe weather to healthcare crises, and inflation to wars, has posed new leadership challenges as to how leaders deal with difficult situations by communicating agilely and responsibly. Current research on this key leader behavior, however, has yet to address these novel trends properly.

The objectives of my dissertation are 1) reviewing and identifying the theoretical and methodological opportunities for research on leader communication, and 2) investigating leaders' engagement in difficult communications and how their stakeholders receive and respond to those communications. Let me first define the key terms in the second objective. By leaders, I refer to formal leaders in everyday social contexts (e.g., political leaders, executives); by stakeholders, I refer to those who are generally affected by leaders' actions and decisions (e.g., followers, constituents, shareholders); by difficult communications, I refer to times when leaders

have to either *deliver* undesirable information to their stakeholders or *respond to* tough questions from their stakeholders. Essentially, I aim to explore the leader-stakeholder two-way dynamics in critical moments and learn about how leaders can communicate effectively such that their communications are evaluated positively by their stakeholders.

Essay I, *50 Years of Research on Leader Communication: A Review and Guide for Future Research*, is a cross-disciplinary review of research on leader communication focusing on articles using leaders' spoken and written text, voice recordings, and videos as data. In addition to discussing how prior literature has extended our understanding of dominant leadership theories, I respond to a recent call for more research on archival and non-survey measures (Fischer, Hambrick, Sajons, & Van Quaquebeke, 2020). Specifically, I document the rapidly advancing tools to analyze leader communication, such as voice and facial recognition technologies, natural language processing (NLP), and artificial intelligence (AI)-based methods that help scholars assess more nuanced aspects of leader communication. I conclude by providing future research opportunities, including responsible and ethical leadership in crisis events, reciprocal leader-stakeholder communication dynamics, as well as data-driven analyses thanks to the increased availability of rich behavioral data in the digital era.

Essay II, *Leader Communication and Stakeholder Responses in the COVID-19 Pandemic*, investigates how stakeholders respond to leaders' negative communication during crises. Analyzing 107 million coronavirus-related Twitter posts and political leaders' communication between March and October 2020, I find that that stakeholders react to leaders' positive language more and more negatively over time, and they react to leaders' negative language more and more positively over time. The study provides empirical evidence of the process view of crisis leadership (Bundy, Pfarrer, Short, & Coombs, 2017; Wu, Shao, Newman,

& Schwarz, 2021), where a crisis is consisted of different phases and should be investigated in a more nuanced way. The findings also add new insights into research on leader communication by showing that in a prolonged crisis, positive language (which people typically like) can backfire and that negative language (which people typically dislike) can be rewarded over time.

Essay III, *How Leaders Build Relationships in High-Stakes Conversations*, shifts my focus back to an organizational setting. I use 338,832 question and answer turns to explore how executives respond to analysts' tough questions in a highly scrutinized corporate environment: public firms' quarterly earnings calls. Specifically, I challenge an assumption that strategy scholars typically make: leaders only choose between disclosing and not disclosing information in difficult conversations (e.g., Hollander, Pronk, & Roelofsen, 2010). I argue that leaders can leverage their relational motives by signaling benevolence and honesty (Levine, Roberts, & Cohen, 2020), which will ultimately elicit positive stakeholder evaluations. Preliminary results show that executives' answering strategies of expressing gratitude ("*thank you for the question*"), a form of benevolent expression, is effective in satisfying analysts' needs. Importantly, I demonstrate leaders' strategic exertion of relationship-building verbal signals in answering tough questions to achieve desirable organizational outcomes.

Essay I. 50 Years of Research on Leader Communication: A Review and Guide for Future Research *(with Professor Cassandra Chambers & Professor Celia Moore)*

1.1. Introduction

Scholars spanning different fields within the social sciences have long recognized that communication is a key element of leadership. Leader communication, which we define as the textual, verbal, and embodied signals that leaders deliver to others, both purposefully or unintentionally, has the power to reveal aspects of leaders themselves, predict leadership outcomes, and affect others. Despite the size, range, and importance of this body of work, there has been little effort to review it comprehensively and systematically. As a consequence, multiple streams of research operate in parallel with infrequent cross-pollination, undermining the development of a shared and maximally rich understanding of what constitutes, explains, and is affected by this key component of leadership. In this paper, we review 212 articles across disparate fields that use text, voice recordings, and videos of leaders' communication as data. We document the value of using leaders' communication data to help researchers better understand leader characteristics, show how leader communication is affected by other factors, and describe how it affects leaders, as well as their followers, stakeholders, organizations or nations.

Our review contributes to the field in three ways. First, we integrate and synthesize findings from research on leader communication across different fields. We document how it allows researchers to infer and understand key leader constructs, such as charisma (Shamir, Arthur, & House, 1994), narcissism (Chatterjee & Hambrick, 2007), and humility (Owens & Hekman, 2012). Researchers have also learned about how leaders use rhetoric (Maskor, Steffens, & Haslam, 2021), and how major events such as elections (Tetlock, 1981a) and crises (Bligh, Kohles, & Meindl, 2004a, 2004b) affect what and how they communicate. Ultimately, leaders communicate to achieve specific ends, so work in this area has also shown how leaders' verbal signals can help them win endorsement and approval (Cohen, 1995), motivate and enhance

follower performance (Van Kleef, Homan, Beersma, & van Knippenberg, 2010), and even gain competitive advantages for their firms and nations (Guo, Yu, & Gimeno, 2017; Medeiros, Crayne, Griffith, Hardy, & Damadzic, 2022). More recently, the rapid and prolific expansion of communication platforms and mediums in the digital age, especially social media, has allowed scholars to study leader communication in more diverse realms (Ki & Nekmat, 2014; Lee & Xu, 2018) as well as how stakeholders respond to their leaders in more nuanced ways (Brady, Wills, Burkart, Jost, & Van Bavel, 2019; Jordan, Pennebaker, & Ehrig, 2018). Our purpose is to document how leader communication (1) works—the topics leaders talk about and the rhetorical tools they use to talk about them; (2) can be an input and auxiliary tool to helping scholars understand and measure key leadership constructs underlying their verbal and nonverbal signals; (3) is affected by leaders' roles, affiliations, and contexts; and (4) affects others in various ways at multiple levels of analysis.

Second, and relatedly, by classifying research on leader communication into these major categories, we are able to identify the emerging themes and promising future research areas that are currently under addressed. For example, there has been a gradual shift from leader-focused descriptive research that simply analyzes what leaders say, to more follower-focused and predictive research showing the effect of leader communication on others, as well as how follower characteristics can shape leaders' communication (Oc, Chintakananda, Bashshur, & Day, 2023; Van Kleef et al., 2010; Van Kleef et al., 2009). Studies about leader-follower two-way conversations are especially rare. With the increasing availability of behavioral data on social media, researchers can now readily measure how followers respond to leaders' communication (Ki & Nekmat, 2014), or even initiate conversations without the leaders communicating first (Jordan et al., 2018). Moreover, as scholars predominantly focus on White

male leaders' archival communication materials, research on female and minority leaders' communication remains underdeveloped. With the field's increasing attention to gender equality, and inclusion and diversity, more representative research is needed (Hinchliffe, 2021; Wahba, 2020). We believe this review will help future scholars gain novel insights into leadership, followership, and how they affect each other through communication.

Our third contribution is derived from out exclusive focus on articles that use actual leader communication as a key input. We summarize how studies that use communication data have advanced from human assessment and text analysis based largely on computer-aided word counting, to emerging technologies that can capture and measure vocal and facial communication signals, to Natural Language Processing (NLP), Artificial Intelligence (AI), and Machine Learning (ML), that can help us evaluate dimensions of leaders' verbal and nonverbal communication with greater nuance and complexity. These advances have helped scholars measure leader communication more unobtrusively, objectively, and systematically (Antonakis, Bastardoz, Jacquart, & Shamir, 2016; van Knippenberg & Sitkin, 2013). By documenting these diverse analytical tools, explaining how they can be used to analyze different communication data, and detailing the strengths and weaknesses of each method, we seek to provide a go-to guide for scholars interested in studying leader communication in the future.

We organize the review as follows. First, we elaborate our review process. Second, we provide an organizing framework that structures our discussion of the primary findings from this body of work, and describes how it has enriched our understanding of various theories of relevance. Third, we review the research methods available to analyze leader communication and how they have advanced over time. We conclude by offering future research directions.

1.2. Review Method

Given the absence of a singular definition of leader communication and to ensure we began with a comprehensive set of papers that reflects the breadth of the construct, we started with a broad search. Using several databases (JSTOR, PsycARTICLES, SAGE Journals, ScienceDirect, and Wiley Online Library), as well as Google Scholar, we searched combinations of the keyword "leader" AND "communication", "language", "rhetoric", "linguistic", "letter", "message", "speech", "tweet", "text", "discourse", "nonverbal", "video", "tone of voice", and "facial expression". We then replaced "leader" with "CEO", "manager", "executive", "president", and "political", to extend our search to different research contexts and types of leaders. We used full text searching to gather papers that included these word combinations anywhere in the article.

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 Applied Social Psychology, Journal of Business Ethics, Journal of Business Research, Journal of Communication, Journal of Conflict Resolution, Journal of Management, Journal of Management Studies, Journal of Organizational Behavior, Journal of Personality and Social Psychology, Journal of Research in Personality, Leadership Quarterly, New Media and Society, Organization Science, Personnel Psychology, Political Psychology,* and *Strategic Management Journal*.[1] In addition, we searched the records of key authors more thoroughly. We defined key authors as those in our sample who had accrued

[1] We referred to Scimago Journal & Country Rank (SJR) and searched journals whose H-index in SJR is above 80 as of February 2022.

more than 10,000 citations according to Google Scholar, and, if s/he did not have a Google Scholar page, when his/her article on leader communication had received more than 500 citations. These inclusion criteria resulted in 646 articles which we screened more carefully.

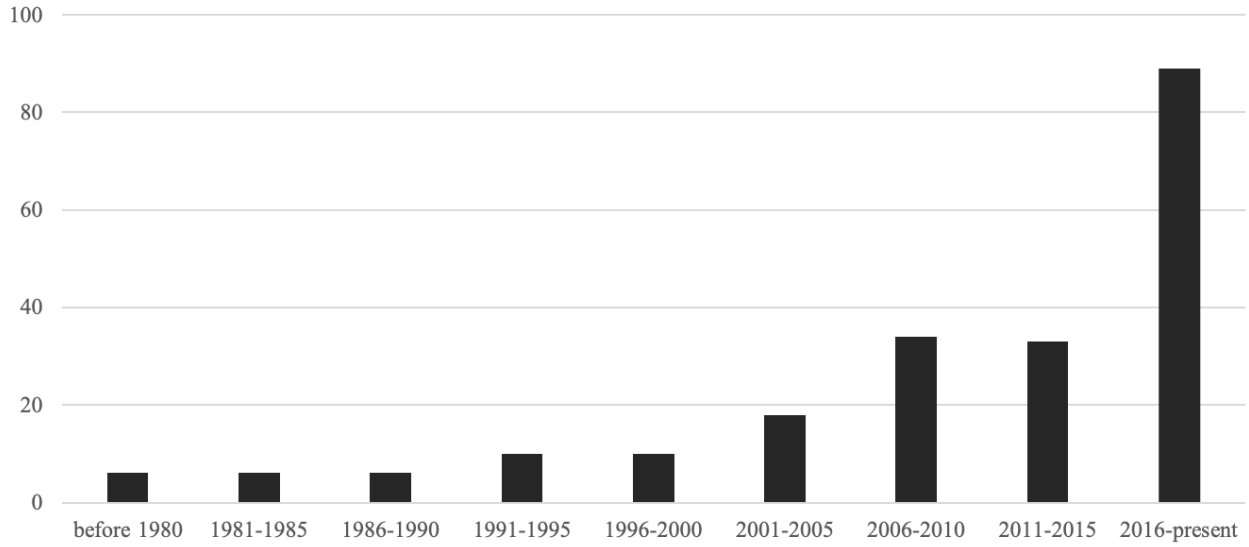
We limited the review to articles which use "real" communication as data, by which we mean actual verbal or nonverbal communication, including textual (spoken and written text) and non-textual (images, voice and video recordings) data. Thus, we excluded articles that do not use real communication data, such as theoretical models and review articles (e.g., Dewan & Myatt, 2008; Joullié, Gould, Spillane, & Luc, 2021), or articles that use other sources of data to draw conclusions, such as leaders' biographies written by others (e.g., Eubanks et al., 2010), or media articles about leaders' communication (e.g., Liu, Cutcher, & 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 (e.g., Kacmar, Witt, Zivnuska, & Gully, 2003; Vogelgesang, Leroy, & Avolio, 2013).

Finally, it is important to note that we restrict our understanding of communication to signals that are within an individual's control. Thus, we included studies that explore 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 such as their attractiveness (e.g., Fruhen, Watkins, & Jones, 2015; Li, Triana, Byun, & Chapa, 2020), height (cf. Reh, Van Quaquebeke, & Giessner, 2017), or facial width (Wong, Ormiston, & Haselhuhn, 2011), as individuals cannot control these factors. Ultimately, 212 studies remained after applying our

exclusion criteria (see Figure 1.1 for the number of articles on leader communication over time, Appendix 1 for a more detailed description of our review procedure, and Appendix 2 for the complete list of studies reviewed).

Though the majority of the studies we review use data from field settings (e.g., CEO letters to shareholders, presidential speeches), we also included studies that manipulate leaders' communication in lab 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 (with these data forming a focal interest of the paper) (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).

Figure 1.1. Number Of Articles on Leader Communication Over Time



1.3. Major Categories of Research on Leader Communication

We classify research into four broad categories based on how leaders' communication data is used in each study. Studies in the first category (*n*=21) focus on leaders' communication alone, detailing what leaders communicate about and how they communicate about them. These studies focus on the communication alone. In the second category (*n*=64), scholars' use communication to understand something about the leader; communication data is used in service of better understanding and inferring leader characteristics, which include charisma, narcissism, morality, and attention and cognitive focus, among others. The third category (*n*=33) includes work on the antecedents of leader communication, and focus on how leaders' verbal and nonverbal behaviors are shaped by either leader-specific (roles and political parties) or situational (organizational and political events) factors. The final category (*n*=94) focuses on the outcomes of leader communication. We classify these outcomes at multiple levels, including at the leader-level (leadership emergence and effectiveness), follower-level (follower attitudes and intentions, mood, performance, and behaviors), and macro-level (organizational strategy and performance, and nation- and state-level performance). For an overview of the categories and subcategories, and the key research questions they address, see Table 1.1.

1.3.1. Topics and Rhetoric in Leader Communication

This category of work is descriptive, seeking neither to predict outcomes nor understand anything beyond the characteristics of the communication itself. These studies (*n*=21) examine what it is that a leader typically "talks about"—their topics (Savoy, 2010; Sims, 1993; Tonidandel, Summerville, Gentry, & Young, 2021), and how they talk about it—their rhetoric (Heracleous & Klaering, 2017; Liu, 2007).

Table 1.1. Categories of Research on Leader Communication

Major category	*Subcategory*	*Key research questions*	*Relevant theories (if applicable)*	*Exemplar studies*[2]
Topics and rhetoric in leader communication		• How do political leaders mobilize hostility towards immigrants through their rhetoric?		Portice & Reicher, 2018
Communication as tool to infer leader attributes	Charisma	• What are the content categories of charismatic rhetoric?	Charismatic signaling theory	Shamir, Arthur, & House, 1994
	Narcissism	• How does CEO narcissism (reflected in their communications) affect firm performance?		Chatterjee & Hambrick, 2007
	Morality	• What are the leadership behaviors (including their communications) that signal their humility?	Moral leadership theories	Owens & Hekman, 2012
	Other individual characteristics	• How does CEO emotional stability (reflected in their communications) affect TMT and firm strategy?		Ormiston, Wong, & Ha, 2021
	Attention and cognitive focus	• How does CEO attentional focus (reflected in their communications) affect firm strategy?		Gamache, McNamara, Mannor, & Johnson, 2015
Antecedents of leader communication	**Leader-specific antecedents**			
	Roles	• How do leaders and subordinates differ in their conversational patterns?		Watson, 1982
	Political affiliation and policy stances	• How do leaders from liberal and conservative parties communicate about the LGBTQ+ community?		Coe, Bruce, & Ratcliff, 2017
	Situational antecedents			
	Contexts	• How do crisis events affect leaders' use of simplistic versus complex language?	Integrative complexity theory	Suedfeld & Tetlock, 1977

Notes. See Appendix 2 for the complete list of included studies, including the 1) major category, 2) subcategory, 3) leader type (e.g., political, corporate, or fabricated in lab), 4) main independent variable(s), 5) main dependent variable(s), 6) communication type (e.g., text, voice, facial cues, body gestures), and 7) analysis approach for communication data, for each study.

[2] We listed all the authors' last names if there are fewer than five authors in the article.

Table 1.1. Categories of Research on Leader Communication (Continued)

Major category	*Subcategory*	*Key research questions*	*Relevant theories (if applicable)*	*Exemplar studies*
Outcomes of leader communication	**Leader-level outcomes**			
	Leader emergence	• How can leaders' charismatic communication predict election outcomes?	Charismatic signaling theory	Jacquart & Antonakis, 2015
	Leader effectiveness	• Can orchestra conductors' nonverbal signals predict their perceived success and actual success?		Tskhay, Xu, & Rule, 2014
	Endorsement and approval	• How do presidential communications influence public opinions and approval?	Agenda setting theory	Cohen, 1995
	Attributions about the leader	• How do leaders' nonverbal signals of compassion and contempt affect leadership perception?	Implicit Leadership Theories (ILTs)	Melwani, Mueller, & Overbeck, 2012
	Follower-level outcomes			
	Attitudes and intentions	• How do leader charismatic communication affect followers' self-efficacy?	Charismatic signaling theory	Shea & Howell, 1999
	Mood	• How do leaders' emotional expressions affect follower mood?	Emotional contagion theory	Lewis, 2000
	Performance	• How does leaders' follower-focused vision communication affect followers' creative performance?	Charismatic signaling theory	Stam, van Knippenberg, & Wisse, 2010
	Ethical behaviors	• How does leaders' communication about moral values affect employees' propensity to engage in unethical behaviors?	Moral leadership theories	Moore et al., 2019
	Stakeholder responses to leader communication	• How do online users respond to managers' crisis communications on Facebook?		Ki & Nekmat, 2014
	Macro-level outcomes			
	Organizational strategy and performance	• How do leaders' use of obfuscating language in affect firm's environmental ratings?	Signaling theory Impression management theory	Fabrizio & Kim, 2019
	Nation- and state-level performance	• How do politicians' rhetorical strategies affect the country's COVID-19 infection rate?		Medeiros, Crayne, Griffith, Hardy, & Damadzic, 2022

These papers reveal a continued interest in documenting the topics that capture leaders' focus, and the rhetorical strategies they use as they lead. Sims (1993), for example, manually content analyzed the primary topics from five leaders' autobiographies in an effort to identify commonalities in terms of how they understood what contributed to their success. Recent advances in topic modeling methods, however, have been able to extract commonalities from much larger corpuses of data. For example, Tonidandel and colleagues (2021) were able to extract common topics leaders discuss when communicating about the challenges they face using data from more than 8000 managers in more than 20 industries using more contemporary topic modeling techniques. Savoy (2010) provides an even more granular analyses of topics that senators John McCain and Barack Obama focused on as they campaigned for president, focusing at the word level (jobs, Iraq, Bush).

The studies of leader rhetoric go beyond simple descriptions of topics to try to understand the linguistic strategies leaders use to accomplish specific goals, such as how former U.S. president George W. Bush worked to repair his image after his poor leadership during Hurricane Katrina (Benoit & Henson, 2009; Liu, 2007), how CEOs shirked responsibility for the banking crisis (Hargie, Stapleton, & Tourish, 2010), and how U.K. politicians used arguments to mobilize hostility towards immigrants (Portice & Reicher, 2018). Some studies analyze leaders' rhetoric even more technically, unpacking individual speeches such as Steve Jobs' commencement speech at Stanford University (Heracleous & Klaering, 2017) at the structural level (documenting premises, scrutinizing metaphors). Work in this category confirms that simply detailing what captures leaders' attention and their linguistic strategies remains interesting in itself.

1.3.2. Leader Characteristics and Attributes

A large body of work (*n*=64) uses leader communication to better understand leaders themselves. These papers are not focused on explaining or understanding what communication *does*, but rather use a leader's communication to help us understand leaders' characteristics and attributes. Their focus is on how communication can be used an auxiliary tool to infer and validate leaders' characteristics from their use of words, vocal tone, facial cues, and body gestures. The findings of these studies are important for leadership research in that they provide tangible content that can be used to extend key leadership theories.

It's important to be clear that the focus of many of these studies is unrelated to communication *per se*. Rather, they use communication data to measure leader traits and attributes unobtrusively. Although these studies do, ultimately, examine outcomes of leader communication, the central function of the communication in these studies is as raw data that can be used to measure leader attributes and characteristics. Once discrete communicative cues of relevant characteristics or attributes are understood, these can be used to create measures of those characteristics or attributes, which can then predict *other* outcomes unrelated to the communication. These papers represent an important step in the evolution of research on leader communication because it was necessary to understand the attributes of leaders' communication before making predictions about how those attributes might influence other outcomes.

Charisma

Charisma is a major topic in leadership research (Banks et al., 2017), and the importance of communication to the charismatic process (Fiol, Harris, & House, 1999) means that a solid body of work explores leaders' charisma using communication data (*n*=23). Much of the work in this sub-category explores the features of communication associated with charismatic

attributions, and then validates that those features indeed lead to greater charisma attributions. Typically, scholars select one or a few leaders who are considered highly charismatic and investigate their communication strategies (Conger, 1991; Den Hartog & Verburg, 1997; Shamir et al., 1994). Employing this approach, Shamir and colleagues (1994) outlined the content categories of several speeches given by Jesse Jackson, an American civil rights activist who was known for his charisma. Bligh and Robinson (2010) conducted a similar study using Gandhi's speeches. Mio and colleagues (2005) explored the inaugural addresses of 36 U.S. presidents, comparing the density of metaphor use of presidents who had been identified as charismatic in previous research to their less charismatic counterparts. General findings from this body of work suggest that charismatic leaders communicate organizational visions using stories and metaphors, convey optimism, emphasize collective history, identify with follower and reference followers' worth (Den Hartog & Verburg, 1997; Emrich, Brower, Feldman, & Garland, 2001; Fiol et al., 1999). Charismatic presidents used nearly twice as many metaphors as non-charismatic presidents, reinforcing the critical role that metaphors play in inspiring followers (Mio et al., 2005).

In the last decade, research has highlighted how nonverbal forms of communication also play a critical role in eliciting charisma attributions, including the acoustic characteristics of leaders' vocal delivery (Niebuhr, Voße, & Brem, 2016; Signorello et al., 2020), eye-gazing patterns (Maran, Furtner, Liegl, Kraus, & Sachse, 2019), and even clothing styles (Maran et al., 2021). For instance, a study on the vocal characteristics of former Apple CEO Steve Jobs during his iPhone 4 and iPad 2 presentations showed that using an animated tone of voice and speaking fluently played an important role in what made him a charismatic speaker (Niebuhr et al., 2016). Leaders who use more animated tones of voice and expressive facial expressions are perceived

as more charismatic than those who are less lively (Awamleh & Gardner, 1999; Holladay & Coombs, 1993, 1994).

These findings helped transform researchers' understanding of charisma from a rather vague and abstract quality to a set of concrete tactics that can be measured and trained (Antonakis, Fenley, & Liechti, 2011), giving flesh to what is now known as "charismatic signaling" (Antonakis et al., 2016, p. 304). They also validated that the communication signals identified in earlier work were indeed charismatic, by providing evidence that when individuals use them, attributions of their charisma increase.

Narcissism

Leaders' communication data has also played an important role in research on leader narcissism and hubris, traits that indicate an individual's inflated self-views and exaggerated self-confidence (Campbell, Goodie, & Foster, 2004). This stream of research is less focused on the leaders' communication *per se*. In this work, leaders' communication data is put to use as convenient and valid raw data which can measure those characteristics (Buyl, Boone, & Wade, 2019; Chatterjee & Hambrick, 2007; Craig & Amernic, 2011, 2018; Petrenko, Aime, Ridge, & Hill, 2016). For example, Chatterjee and Hambrick (2007) used the prominence of the CEO's photograph (a form of nonverbal communication that signals the CEO's vanity) in their firm's annual report along with the relative use of first person singular pronouns versus first person plural pronouns from interviews as indicators of the CEO's level of narcissism. Other scholars have measured top leaders' narcissism using firms' letters to shareholders, identifying linguistic signals of exaggerating power, or indicating their need for admiration (Craig & Amernic, 2011, 2018), or with video footage of CEOs, coded by trained raters (Petrenko et al., 2016). This research highlights the usefulness of leaders' communication data as an unobtrusive source for

scholars to measure leaders' micro-level traits that are usually inaccessible through other research methods.

Morality

Scholars have also analyzed how leaders' language signals aspects of morality. This work has contributed to ethical leadership, defined as the "demonstration of normatively appropriate conduct through personal actions and interpersonal relationships, and the promotion of such conduct to followers through two-way communication, reinforcement, and decision-making" (Brown, Treviño, & Harrison, 2005, p. 120), as well as work on humility, "the recognition and appreciation of knowledge and guidance beyond the self" (Owens & Hekman, 2012, p. 788). As with the work on charisma, researchers have focused both on identifying the communicative signals associated with these traits, as well as used those signals as inputs to measure them. Representative of the first type of study, Owens and Heckman (2012) found that humble leaders used more collective-focused language (e.g., "we") than self-focused language (e.g., "I") and deliberately focused on followers' strengths and contributions to the organization's accomplishments. As an example of the latter, Weber (2010) used the language contained in CEOs letters in their firms' annual corporate social responsibility reports to infer their levels of moral reasoning. This work demonstrates how aspects of a leader's morality can be reflected in their verbal communication and documents how they exercise moral agency in the workplace.

Other Individual Characteristics

Leaders' communication has been used to reveal several other leadership traits and characteristics. Political leaders' public statements and press conferences have been analyzed to deduce their pessimism (Zullow, Oettingen, Peterson, & Seligman, 1988), femininity (Slatcher, Chung, Pennebaker, & Stone, 2007), and their beliefs, motives, decision styles and interpersonal

styles (Hermann, 1980; Kaarbo & Hermann, 1998; Renshon, 2008). CEOs' and top executives' corporate communications are used to measure various constructs, from Big Five personality traits (Harrison, Thurgood, Boivie, & Pfarrer, 2019; Malhotra, Reus, Zhu, & Roelofsen, 2018; Ormiston, Wong, & Ha, 2021), to over-confidence (Lee, Hwang, & Chen, 2017), and leader submissiveness (Hill, Recendes, & Ridge, 2019). Again, the foci of these studies are not the leader communication *per se*; instead, communication is an input used to infer key leader characteristics and attributes, revealing underlying psychological mechanisms that can then be used to explain leaders' strategic choices or foreign policy behaviors (Gupta, Nadkarni, & Mariam, 2019; Kaarbo & Hermann, 1998).

Attention and Cognitive Focus

Many management scholars use top executives' use of words and phrases in their corporate communications, such as transcripts of quarterly earnings calls and letters to shareholders, to investigate leaders' focus 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 how organizational leaders make sense of their competitive environment. D'Aveni and MacMillan (1990) content analyzed firms' letters to shareholders and to deduce how managers attend differentially to their external environment (i.e., use more words like "competitors" or "customers") and their internal environment (i.e., use more words like "employee" or "operation"), and find the direction of this attention a key contributing factor in leaders' willingness to recognize external threats.

Scholars have also used leaders' language to infer their regulatory focus (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 inclinations to avoid loss and failure (Gamache, McNamara, Mannor, & Johnson, 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.

1.3.3. Antecedents of Leader Communication

The third category (*n*=33) focuses on antecedents of leaders' communication. These factors can be split into leader-specific antecedents such as their roles or affiliations, or situational antecedents that represent broader contextual sources of influence on how and what leaders communicate about. In this category, some aspect of communication is an outcome variable. But what aspect? Often, the effects of leader or contextual factors on communication have been studied using the concept of cognitive, conceptual, or integrative complexity, a concept that refers to the extent to which an individual is able and willing to engage in multi-dimensional and flexible informational processing (Driver & Streufert, 1969), and is revealed in language (Baker-Brown et al., 1992). Though conceptual complexity is sometimes measured as an individual attribute (e.g., in Wong, Ormiston, & Tetlock, 2011), researchers have more often been interested in how leader's political positions or social context increases or decreases this cognitive/linguistic sophistication (Dille & Young, 2000; Pancer, Hunsberger, Pratt, Boisvert, & Roth, 1992; Tetlock, 1981b; Thoemmes & Conway, 2007).

Other characteristics of language that scholars have explored as a function of leader or contextual factors include its optimism (Bligh & Hess, 2007; Patelli & Pedrini, 2014),

"femininity" (Lee & Lim, 2016), quality and competence (Dupree & Fiske, 2019), as well as the topics the leaders address (Coe, Bruce, & Ratcliff, 2017; Graham, Jackson, & Broersma, 2016), and rhetoric they use (Freedman, 2019). This body of work demonstrates that what leaders communicate about and how they communicate it is conditional on the position they hold, affiliations they have, positions they maintain, and circumstances they are in.

Roles

The roles we occupy create expectations for our behavior that affect how we communicate. Early work examined how simply occupying a leader role can alter communication patterns (Johnson, 1994; Watson, 1982). These lab studies compared aspects of the communication that participants who occupied a leader engaged in, compared to those who occupied a subordinate role. They showed that participants in a leader's role exhibit more dominance and power in conversation (e.g., changing topics abruptly, providing directions, and talking for longer time), while participants in subordinate roles exhibited more submissiveness (e.g., showing support and talking less) (Johnson, 1994; Watson, 1982). In addition, when leaders try to take control of the conversation (e.g., expressing disagreement), subordinates are likely to defer (e.g., showing agreement), whereas when subordinates try to dominate the 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.

Political Affiliation and Policy Stances

Our affiliations generate social expectations that impact how leaders communicate. Scholars in political science analyze politicians' discourse to document how leaders' communications are shaped by their political party affiliations, such as liberal-oriented versus

conservative-oriented parties (Coe et al., 2017), and populist parties versus mainstream parties (Widmann, 2021). Analyzing U.S. presidents' communication about the LGBTQ+ community, Coe and colleagues (2017) found that presidents varied in terms of rhetorical de-marginalization strategies (e.g., referencing LGBTQ+ in the context of typical family structures, like "husbands" and "wives", referencing the LGBT community as part of the American community). Only two presidents — Bill Clinton and Barack Obama — engaged the LGBTQ+ community to a meaningful degree, suggesting Democrats' greater communicative engagement with marginalized groups. Other work also supports the premise that more conservative or right-wing politicians communicate differently from more liberal or left-wing ones (Rauh, Bes, & Schoonvelde, 2020; Wang & Inbar, 2021; Widmann, 2021). Widmann (2021) found that tweets of politicians who belong to populist parties in Germany, Austria and Switzerland contained significantly more negative and significantly less positive emotional sentiment than tweets of other MPs in those countries. Recently, Wang and Inbar (2021) provided evidence that Democrats use more language reflecting the moral values of fairness and minimizing harm than do Republicans. This research underscores the role that leaders' political affiliation plays in how they communicate.

Tetlock and colleagues wrote several papers exploring how different policy stances influenced the complexity of political leaders' communication (Tetlock, 1981b; Tetlock, Armor, & Peterson, 1994). They found that politicians who preferred isolationist (uncollaborative with other nations) policies exhibited less complexity in their policy statements than did non-isolationist politicians(Tetlock, 1981b). In a second paper that focused politicians speeches as a function of their position on slavery in pre-Civil War America, they found that straightforward abolitionists or ardent supporters of slavery showed lower cognitive complexity (e.g., "I deny

that there can be Constitutional slavery in any of the States in the American Union") than those who sought a compromise between the two (e.g., "We will not destroy slavery overnight and with it enormous investments, nor will we impose slavery against the will of the majority") (Tetlock et al., 1994, pp. 119-120). Thus, the complexity with which we communicate is not associated in a simple way with right- or left-wing ideology; it can be determined by the variance of positions one is trying to integrate. All in or all against positions are simpler than ones that seek compromise.

Contexts

Leader communication also changes as a function of critical organizational and political events (Bligh & Hess, 2007; Bligh et al., 2004b; Suedfeld & Tetlock, 1977). Sometimes these changes are affected by what a leader is trying to achieve at a given time. Sometimes these changes reflect where a leader is in the course of their tenure (Dille & Young, 2000; Tetlock, 1985; Thoemmes & Conway, 2007). These papers provide evidence that leaders' communication tends to be more simplistic when they are trying to win public support, such as in a democracy during the lead up to an election (Suedfeld, 1994; Tetlock, 1981a), or in a revolution in advance of overthrowing the extant regime (Suedfeld & Rank, 1976). After assuming power, however, the complexity of a leader's language tends to increase (Suedfeld, 1994; Tetlock, 1981a), though this boost wanes over the course of holding office (Thoemmes & Conway, 2007). Similar shifts occur in advance of military conflicts (Suedfeld & Bluck, 1988; Suedfeld, Tetlock, & Ramirez, 1977). The decision to go to war is eased when one's opponent is viewed unequivocally as an enemy, an attitude that is facilitated by language that communicates less complex "black-and-white reasoning." Diplomacy (actively working to avoid war), on the other hand, requires more nuance and greater complexity.

Another important context is a political leader's current power. Several papers have confirmed that leaders' communication is affected by whether they are in the political majority. Wang and Inbar (2021) found that, in addition to the main effect they found for political party, being in the minority of a chamber of Congress increases politicians' moral language, equally for Democrats and Republicans. Similarly, an analysis of the Canadian parliament found consistently higher integrative complexity scores for politicians in power compared to those in opposition, indicating it's more challenging to be responsible for governing than it is to have the responsibility to critique those in power (Pancer et al., 1992). Other work has explored how leaders' communication changes as a function of external crises. This work has explored how leaders shift their language in the aftermath of terrorist attacks by increasing references to patriotism, the collective, morality, and tangible action (Bligh et al., 2004a, 2004b; Davis & Gardner, 2012; De Castella, McGarty, & Musgrove, 2009), and speak more pessimistically and with less certainty during a recession (Bligh & Hess, 2007). Leaders' communication is also affected by the audience to whom one is speaking. Recently, Dupree & Fiske (2019) provided evidence that presidential candidates speak using fewer words relating to competence when they are addressing an audience of a particular minority group than when they were addressing largely White audiences, which they term a "competence downshift".

Together, this work provides evidence that leaders' communication is influenced by several factors, some related to the leader, some to his or her context. Communication is not stable, but adapts to the purposes and audiences it serves, as well as the position in which the leader finds him or herself.

1.3.4. Outcomes of Leader Communication

Leader communication generates a wide array of outcomes, for the leaders themselves, to their stakeholders and followers, as well as outcomes for organizations and society more broadly. Almost half of our review articles (*n*=94) belong to this category. We discuss these articles in the order of the outcome's proximity to the leader, starting with leader-level outcomes, progressing to follower- or stakeholder-level outcomes, and finally macro-level outcomes such as firms or nations.[3]

Leader-Level Outcomes

Outcomes that matter for leaders is whether they are selected for leadership roles (emergence), whether they are effective in that role—which can be measured both concretely (i.e., compensation) and perceptually (i.e. evaluations). Leaders also care about whether their communication elicits positive attitudes towards them. We discuss these in turn.

Leader Emergence. The first outcome that (a potential) leader needs to ensure is that they are selected for a leadership role. Thus, what predicts leadership emergence has been a longstanding interest in leadership research (Badura, Galvin, & Lee, 2022). In psychology, emergence is typically operationalized in terms of being chosen as a leader in a newly formed group; in management, emergence is typically measured in terms of being selected for a position or appointed to a new one (Jacquart & Antonakis, 2015); and in political science, emergence is

[3] Many articles address outcomes at multiple levels. For example, leader- and follower-level outcomes (Dumitrescu & Ross, 2020; Stam, van Knippenberg, Wisse, & Nederveen Pieterse, 2018), organizational- and follower-level outcomes (Carton, Murphy, & Clark, 2014), or leader- and organizational-level outcomes (Shi, Zhang, & Hoskisson, 2019). Some investigate different outcomes at the same level, such as using both follower attitudes and performance as outcome of leader communication (Shea & Howell, 1999). Thus, studies may fall into more than one category as we have presented them here because they feature more than one level of outcomes. For the sake of clarity, we discuss exemplar studies in one capacity, discussing one level of outcome, even though some may feature many levels of outcomes. We endeavoured to place each study in the category that best reflects its major contribution.

typically operationalized in terms of electoral victories (Gregory & Gallagher, 2002; Jacquart & Antonakis, 2015).

Research in psychology has shown that several individual verbal and nonverbal signals are associated with emergence as leaders in a group setting (Davis & Gilbert, 1989; Gerpott, Lehmann-Willenbrock, Silvis, & Van Vugt, 2018; Truninger, Ruderman, Clerkin, Fernandez, & Cancro, 2020). In studies using simulated team interactions, 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 more likely to be selected as leaders. Research in political science confirms the importance of non-verbal signals to election victory. Gregory and Gallagher (2002) measure aspects of vocal tone that are not distinguishable consciously but reflect interpersonal dominance, and find a near perfect correlation between them and presidential election victory in the 40 years leading up to their study. More observable aspects of communication matter to emergence as well. Using both field data (U.S. Presidents' speeches) and laboratory materials (fabricated CEO statements), Jacquart and Antonakis (2015) found that the use of charismatic communication signals predict president selection outcomes as well as CEO appointments.

Leader Effectiveness. Once a leader has emerged, whether he or she is effective is important, obviously, but how it should be measured has long been contested (Avolio, Sosik, Jung, & Berson, 2003; Fiedler, 1978; Foti & Hauenstein, 2007; Hogan, Curphy, & Hogan, 1994; Shamir & Howell, 1999; van Knippenberg & Hogg, 2003; Yukl, 2012), and the relationship between leader emergence and effectiveness is not straightforward (Badura et al., 2022; Lanaj & Hollenbeck, 2015). Definitions of effectiveness, such as "influencing and facilitating individual and collective efforts to accomplish shared objectives" (Yukl, 2012, p. 66) remain broad. One

way to distinguish different understandings of leadership effectiveness is separate concrete or more objective measures of effectiveness from more subjective ones.

Several efforts link leader communication to objective measures of effectiveness. For orchestra conductors, expressiveness—a key non-verbal behavior with obvious relevance for conducting (measured using video recorded observations) was associated with the number of awards they had won and venues they had conducted in) (Tskhay, Xu, & Rule, 2014). For CEOs, using language signaling that they prioritize shareholders over stakeholders has been associated positively with their compensation (Shin & You, 2017) and negatively with their likelihood of dismissal (Shin & You, 2020).

Both verbal and emotional aspects of communication have been associated with more subjective measures of leadership effectiveness. Norman and colleagues (2010, p. 354) showed that leaders communicating transparently with their followers ("It's important that we talk openly and freely…") are perceived as more effective leaders. Leaders' emotional expressions also play an important role in whether they are regarded as effective, though which emotion is associated with effectiveness 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 empathy in observers, but runs the risk of decreasing perceptions of their competence. Shao and colleagues (2018) found that leaders' anger expressions were associated with perceptions of effectiveness, but only when the anger was understood as motivation-focused (related to the immediate task, to communicate urgency) rather than as a trait of the leader.

Endorsement and Approval. A diverse body of work tracks how leaders garner support from followers and stakeholders. These outcomes are valuable for leaders, but differ somewhat

from evaluations of whether a leader is effective—they are closer to whether a leader is liked. In political science, several studies examine how politicians communicate with their constituents and stakeholders to earn endorsements and approval (Cohen, 1995; Whitford & Yates, 2003; Winter, 1987). Consistent with agenda setting theory (McCombs & Shaw, 1972), political leaders choose what to say publicly in order to set the political agenda for their constituents and influence how the messages they deliver are interpreted (Coe, Domke, Graham, John, & Pickard, 2004; Young & Perkins, 2005). Ultimately this whether they lead in polls (Romero, Swaab, Uzzi, & Galinsky, 2015). Similar results have been found in research on charisma (Tur, Harstad, & Antonakis, 2021). In the realm of social media, charismatic signaling predicts follower engagement in terms of retweets on Twitter and TED Talk viewership numbers (Tur et al., 2021).

Attributions About the Leader. The attributions others make about leaders are also highly relevant for leaders, and positive ones are associated with more concrete outcomes including emergence and effectiveness. One important attribution individuals make about leaders as a function of how they communicate involves power and status (Brescoll & Uhlmann, 2008; Tiedens, 2001). Leaders' anger expressions (e.g., direct gaze, strong hand gestures), compared to sadness (e.g., averted gaze with the head hung), predicts attributions of leader status (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 to have been externally provoked (Brescoll & Uhlmann, 2008).

A stream of research that draws on Implicit Leadership Theory (ILT) investigates leaders' communicative behavior (largely nonverbal) that elicits attributions that they are

"leader-like". According to ILT, certain aspects of leader communication are considered "prototypical", meaning that they meet preexisting expectations of how leaders should behave (Lord, Foti, & De Vader, 1984). Thus, leaders' verbal and nonverbal communication can be used strategically to increase the likelihood that they are recognized as a leader (Trichas & Schyns, 2012; Trichas, Schyns, Lord, & Hall, 2017; Witkower, Tracy, Cheng, & Henrich, 2020). In a laboratory study, Melwani and colleagues (2012) found that expressing compassion (i.e., tilting one's head with a relaxed face) as well as expressing contempt (i.e., looking down with a corner of one's lips raised) were both associated independently with higher leadership judgement, because both of these nonverbal behaviors signal intelligence (Melwani et al., 2012). Individuals displaying happy emotions (e.g., smiles), as opposed to those with nervous expressions (e.g., eyebrows raises and pulled together), are also more likely to be perceived as leaders (Trichas et al., 2017). These studies highlight the critical role of leaders' nonverbal communication signals in forming powerful first impressions that lead to critical perceptions that they meet heuristic expectations for leaders.

Follower-Level Outcomes

Attitudes and Intentions. What and how leaders communicate can influence followers' attitudes and intentions, such as employees' confidence in their ability and underlying motivation to complete an assigned task (Kirkpatrick & Locke, 1996; Shea & Howell, 1999), levels of optimism (De Hoogh & Den Hartog, 2008), and intention to support the organization (Cowen & Montgomery, 2020). Scholars typically conduct laboratory studies to test these predictions, providing participants (as followers) with varied examples of leaders' communication, and then ask about their attitudes and intentions with surveys. For examples, communication that includes

charismatic signals and articulates vision elicits higher motivation, self-efficacy, and task satisfaction among followers (Kirkpatrick & Locke, 1996; Shea & Howell, 1999).

Mood. A solid body of work explores the role of leaders' emotional expressions on followers' mood and affective reactions (Bucy, 2000; Lewis, 2000; McHugo et al., 1985; Sullivan & Masters, 1988). Its findings are largely consistent with emotional contagion theory, which argues that leaders' emotions can transfer to their followers, as if the emotion itself was contagious, ultimately affecting followers' behavior (Bono & Ilies, 2006; Hatfield, Cacioppo, & Rapson, 1993). For example, Lewis (2000) showed that when leaders communicate with positive emotions, use reassuring language, and behave enthusiastically, followers experience more positive moods. Another laboratory study found that followers smiled more in the presence of leaders who smiled, spoke fluently, and made eye contact (Cherulnik, Donley, Wiewel, & Miller, 2001).

Performance. Follower performance is a key outcome that reflects how well followers receive leaders' messages and are willing to act according to leaders' instructions and guidance (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 communication has long been identified as efficient route through which to elicit followers' task performance (Antonakis et al., 2021; Shea & Howell, 1999; Towler, 2003). Visionary communication, especially when leaders address followers personally (e.g., "you can develop yourself as an innovative and successful manager…"), is also associated with higher follower performance (in idea-generation tasks) (Stam et al., 2010a, p. 460).

Leaders' emotional expressions have more mixed effects on follower performance. While leaders' positive affective displays (e.g., happiness and optimism) often increases general levels

of performance (Gaddis, Connelly, & Mumford, 2004), leaders' negative emotions can enhance specific types of follower performance as well. For example, a leaders' expression of sadness has been associated with higher levels of follower performance on tasks related to analytical thinking (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. Recent research focuses on how leaders can encourage followers to engage in less morally problematic behavior, such as free-riding and self-serving behaviors (Boulu-Reshef, Holt, Rodgers, & Thomas-Hunt, 2020), ethical violations (Gubler, Kalmoe, & Wood, 2015), and misconduct (Moore et al., 2019). Leaders' communication about moral concerns plays an important role 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 decisions (Moore et al., 2019, p. 132). In contrast, when leaders use violent rhetoric (e.g., "I am declaring war on the competition", "I want you to fight for every customer"), followers become more willing to engage in ethical violations (Gubler et al., 2015, p. 709). As morally-based leadership theories become increasingly important (Banks, Fischer, Gooty, & Stock, 2021), this stream of research provides evidence that a leader's ethical communication plays a critical role in motivating followers' to enact their moral agency responsibly.

Stakeholder Responses to Leader Communication. A small body of papers in our review analyzes stakeholders' communication to politicians' and business leaders' communication,

including editorials' responses to presidents' binary discourse (Coe et al., 2004), constituents' tweets related to presidential candidates' debates (Jordan et al., 2018), and online users' replies to managers' crisis communication on Facebook (Ki & Nekmat, 2014). They find that stakeholders react to leaders' communication more positively when leaders respond to their comments and engage in two-way communication when handling a crisis (Ki & Nekmat, 2014). Furthermore, the way stakeholders tweet about political leaders appears to track both aspects of those leaders' communicative tone, as well as the stakeholders' preferences about way they *wish* the candidate communicated (Jordan et al., 2018). This has been an emerging research theme as the digital age, with commonly-held portable devices and ready access to open-source online platforms expanding the possibilities for free expressions in democratic cultures (Balkin, 2004).

Macro-Level Outcomes

Organizational Strategy and Performance. Top leaders' verbal behaviors are powerful signals that drive consequential organizational outcomes (Crilly, Hansen, & Zollo, 2016; Sanchez-Ruiz, Wood, & Long-Ruboyianes, 2021; Segars & Kohut, 2001). This research often use 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 is a strategic tool that improves firm reputations and earns positive stakeholder evaluations (Guo, Sengul, & Yu, 2020; Li, Shi, & Dasborough, 2021). A major research theme in this domain 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 language of low readability, a firm's strategies become more difficult for competitors and stakeholders to discern,

ultimately leading to better strategic performance, reflected in fewer competitive entrants (Guo et al., 2017) and higher social ratings (Fabrizio & Kim, 2019). Yet other research has linked the conceptual complexity of CEOs to higher social performance ratings for their firms (Wong, Ormiston, & Tetlock, 2011), indicating that different forms of complexity may relate differently to firm social performance. This research underscores the importance of leaders' corporate communications, showing how strategic communication tactics can help manage stakeholders' impressions and drive desirable organizational outcomes.

Nation- and State-Level Performance. A small set of recent studies have investigated how politicians' linguistic signals affect performance at the state or national level (Afanasyev, Fedorova, & Ledyaeva, 2021; Medeiros et al., 2022; Sergent & Stajkovic, 2020). A sentiment analysis using former U.S. president Donald Trump's Twitter posts showed that his negative tweets against Russia (e.g., using words like "fake" and "collusion") was correlated with the ruble's depreciation in the three days following his tweets, providing evidence of a measurable effect of politicians' social media communication on a rival country's economic performance (Afanasyev et al., 2021). Recent research also provided empirical evidence that national political leaders' communication was associated with their countries' COVID-19's infection and death rates. For example, empathetic language associated with female governors was correlated with fewer coronavirus-related deaths in their states (Sergent & Stajkovic, 2020). A second related study found that national leaders' whose communication sustained emphasis on the most immediate needs for their people and demonstrated reliance on experts to generate evidence-based solutions was associated with lower infection rates, suggesting pragmatic bases of effective crisis communication (Medeiros et al., 2022). This research furthers our understanding

that the way political leaders speak can actually be indicative of policy choices that serve national interests.

1.4. Empirical Approaches for Leader Communication Data

In this section we categorize the methodological landscape of research on leader communication using three criteria: (1) their level of reliance on human assessment, (2) their primary research design (i.e., laboratory or field study), and (3) communication type (i.e., if the method is used to analyze text, voice recordings, photos, or videos). We identify six broad methodological approaches. (1) *Human assessment approaches* include qualitative analyses and manual coding, primarily from text data. (2) *Experimental studies* manipulate verbal or nonverbal communication content to isolate the causal effect of specific aspects of that content. (3) *Word count and dictionary-based computer-aided text analyses* track the choice and counts of words or word categories. (4) *Voice recognition tools and technologies* objectively measure aspects of leaders' vocal delivery. (5) *Facial recognition tools and technologies* include computer-aided tools that assess leaders' facial cues. (6) Finally, *Artificial Intelligence (AI)* approaches that feature *Machine Learning (ML)* algorithms use labeled datasets to train computers to detect, classify, and understand relationships between units of data (such as words or phrases), as well as unlabeled datasets to uncover topics or themes present in data (e.g., topic-modeling).

We represent the distribution of these analytical approaches across time in Figure 1.2. As it makes clear, although studies that use methods that require more human intervention (manual coding, qualitative analyses, and lab studies) account for over 50% of review articles, the methodological landscape is shifting rapidly toward tools that favor more automation.

Specifically, dictionary-based word count measures account for one third of studies from the last two decades, with vocal and facial recognition tools and AI-based analyses comprising up to a fifth of studies in the last decade. In the following subsections, we describe studies that represent solid examples of each analytical approach and point out their strengths and weaknesses. We summarize these methodologies in Table 1.2.

1.4.1. Human Assessment Approaches

Early methods to study leader communication used predominantly text-based data and manually coded words, phrases, and sentences to explore theoretical constructs of interest (Fiol et al., 1999; Tetlock, 1985). Human assessment approaches require researchers' subjective estimation and judgment, unaided by computers. These approaches are typically qualitative rather than quantitative, and include narrative analyses of sentences, paragraphs, or phrases, as well as manual coding, which identifies specific features of verbal and nonverbal communication using pre-determined or emergent coding schemes. These methods account for over one third of our review articles (n=77) and were the dominant approach for research on leader communication until the 1990s. Researchers using these methods typically conduct descriptive analyses that use archival communication data from leaders to explore pre-existing theoretical constructs, such as charismatic rhetoric (Den Hartog & Verburg, 1997; Fanelli & Grasselli, 2006; Fiol et al., 1999; Mio et al., 2005), integrative complexity (Tetlock, 1985; Wong, Ormiston, & Tetlock, 2011), and vision communication (Carton & Lucas, 2018). These methodologies have also been used to explore leaders' pessimistic and optimistic linguistic styles (Zullow et al., 1988), communication toward minority groups (Portice & Reicher, 2018), and facial expressions of submissiveness and provocativeness (Hill et al., 2019).

Figure 1.2. Distribution of Articles by Empirical Approach, Overall and by Decade

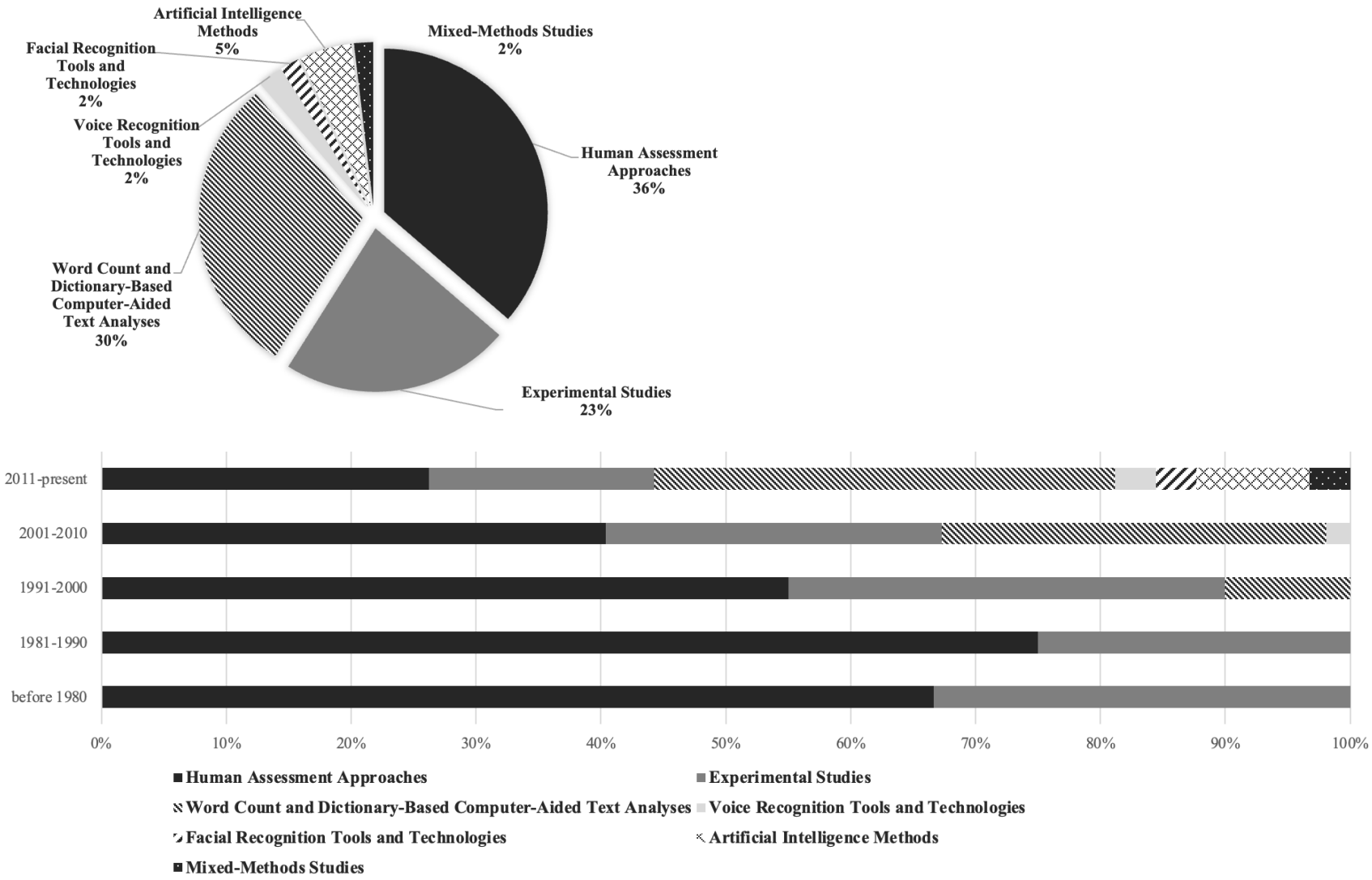


Table 1.2. Methods of Studying Leader Communication

Methods	*Communication type*	*Primary data source*	*Strengths*	*Weaknesses*	*Exemplar studies*
Human assessment approaches	Text, voice recordings, photos, videos	Lab and field	• Better than computers at analyzing complex semantic and syntactic structures such as metaphors	• 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	• Well-controlled environment • Able to make causal claims (few endogeneity issues)	• 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	• Automatic • Unobtrusive and objective	• 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	• Automatic • Unobtrusive and objective	• May require higher entry level technical skills	Niebuhr, Voße, & Brem, 2016
Facial recognition tools and technologies	Photos, videos	Lab and field	• Automatic • Unobtrusive and objective	• May require higher entry level technical skills	Gerpott, Lehmann-Willenbrock, Silvis, & Van Vugt, 2018; Maran, Furtner, Liegl, Kraus, & Sachse, 2019
Artificial intelligence methods	Text, voice recordings, photos, videos	Field	• More reliable and scalable • Allows data-driven analysis • Able to detect unexpected aspects of communication	• May require higher entry level technical skills	Choudhury, Wang, Carlson, & Khanna, 2019; Tonidandel, Summerville, Gentry, & Young, 2021

Many early studies of charismatic communication relied on researchers' own evaluations of what linguistic elements made leaders more charismatic (Conger, 1991; Den Hartog & Verburg, 1997; Shamir et al., 1994). Conger (1991) analyzed samples of communication from famous corporate and political leaders, such as Steve Jobs, Martin Luther King Jr., and Mary Kay Ash, and described how they used metaphors, analogies and stories to communicate organizational values. Documenting these various rhetorical tools revealed the key role that metaphors play in charismatic leader communication. In a slightly more elaborate study, Mio and colleagues (2005) developed a standard coding scheme to identify metaphors and trained two independent judges to give metaphor scores to each of 36 U.S. President's inaugural speeches, which they correlated with ratings of the Presidents' charisma generated in earlier research.

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. 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). As of yet, it is difficult to train a computer to recognize conceptually sophisticated elements of language such as metaphors consistently and accurately, or to explain why a given metaphor is effective and another not. Human assessment approaches thus remain important in determining how leaders use these linguistic tools effectively. The use of metaphors may be a key marker of charisma, but using metaphors inappropriately will certainly 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. A clear drawback to

qualitative analysis and manual coding, however, is that it is time-intensive, and a limited volume of communication can be feasibly coded manually.

1.4.2. Experimental Studies

Almost one fourth of the studies in our review manipulate communication content in laboratory settings (*n*=48). 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 opportunities to analyze 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 language. While the communication present in these studies 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 naturally occurring communication.

Studies that manipulate aspects of speech, text, or nonverbal communication 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; Gubler et al., 2015). They have also manipulated non-text communication, using actors trained to express different emotions (Van Kleef et al., 2010). Alternatively, studies have used pre-selected photos and video clips of real-world leaders with different facial expressions (Bucy, 2000; McHugo et

al., 1985), or photographs or clips of corporate leaders wearing different clothing and displaying different body gestures (Maran et al., 2021).

The biggest strength of manipulating aspects of leader communication in laboratory studies is that it allows 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 makes laboratory studies critically different from real-world settings that feature naturally occurring dynamics and more realistic affective relationships between leaders and followers.

1.4.3. Word Count and Dictionary-Based Computer-Aided Text Analysis

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*=63). Linguistic Inquiry and Word Count software (LIWC) is the dominant tool for this type of analysis (Tausczik & Pennebaker, 2010). LIWC has been used to study leaders' emotional states (Jordan et al., 2018; Pennebaker & Lay, 2002), attentional focus (Gamache et al., 2015; Gamache et al., 2020), and social interaction patterns (Romero et al., 2015; Shi et al., 2019). Another commonly used computer aided text analysis program is DICTION (Hart, 2001), which has been used to measure leader hubristic personality (Craig & Amernic, 2018), as well as multiple linguistic dimensions of charismatic rhetoric (Baur et al., 2016; Bligh et al., 2004a, 2004b; Davis & Gardner, 2012).

In an early example adopting computer word count measures to assess how leaders' language reflects their personality, 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. Specifically, they looked at his use of first-person singular pronouns and first-person plural pronouns, which the authors argue revealed the extent to which his social identity was individualistic or collective, as well as his use of positive and negative words as a proxy for his emotional state, and his use of causal words and negations, representing his cognitive clarity and complexity. 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).

A more recent study uses DICTION to analyze leaders' charismatic rhetoric (Baur et al., 2016). This study systematically operationalized multiple elements of rhetorical tools of charisma. Using transcripts from more than 60 presidential candidates' debates, the authors were able to show that adopting multiple rhetorical devices of charisma simultaneously is associated with gaining public support and receiving popular votes in general elections (Baur et al., 2016; Shamir et al., 1994; Shamir, House, & Arthur, 1993). Computer-aided linguistic tools help researchers process a larger volume of data more easily and draw more nuanced theoretical implications about the combinational use of different dimensions of language (Bligh & Kohles, 2014).

Computer-aided word count and dictionary-based measures process communication data automatically, which permits more consistent analyses of larger volumes of data. They also facilitate measuring leaders' underlying psychological mechanisms and individual differences unobtrusively using real-world communication (Pennebaker & King, 1999; Tausczik & Pennebaker, 2010). However, word count and linguistic computer measures are sometimes criticized because they count word frequencies without being able to consider their context (Boyd & Schwartz, 2021). For example, the word "passion" is typically included in dictionaries

with a positive valence (such as positive emotion). But if someone talks about "hating something with a passion", the word would be allocated inaccurately to a positive word category. In addition, these methods have been criticized for too often failing to disclose the validation process behind proprietary linguistic categories (Eichstaedt et al., 2021; Yeomans, 2021).

1.4.4. Voice Recognition Tools and Technologies

A small number of articles (*n*=5) have employed voice recognition technologies and automatic computer measures of vocal features, all since 2010. This method has become increasingly popular in the study of charismatic leadership, with researchers using voice recordings to measure aspects of a leaders' vocal delivery and to investigate gender differences in charismatic speeches (Niebuhr et al., 2016; Signorello et al., 2020). One study using these methods found that sounding masculine ("deep and low", signaling an individual's physical strength) is correlated with perceptions leadership quality (Nair, Haque, & Sauerwald, 2021).

PRAAT (Boersma, 2001), a computer software for speech analysis in phonetics, can automatically measure various acoustic features of speech. Using PRAAT to analyze sound files from two of Steve Jobs' most well-known product presentations, Niebuhr and colleagues (2016) found that Jobs' vocal characteristics were consistent with several signals of charisma, including animated pitch, and loud volume, and vocal fluency. The study was the first 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).

This technology allows researchers to analyze real-world leaders' vocal signals systematically in an unobtrusive way. As Niebuhr et al., (2016) note, the phonetic analysis of leaders' vocal data as a methodological strategy remains underrepresented in this text-dominant field, presenting future opportunities for research. Multiple tools exist for this type of analysis. In

addition to PRAAT (Nair et al., 2021; Niebuhr et al., 2016; Signorello et al., 2020), "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, Aime, Johnson, & Kluemper, 2011).

1.4.5. Facial Recognition Tools and Technologies

A limited number of studies have explored facial expression 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 explore how observers react to leaders' different facial expressions (Stewart & Dowe, 2013). However, 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 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 individuals who made eye contact with other team members and showed dynamic gestures emerged as leaders more often than those who used more passive body language (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 to 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 various aspects of non-verbal communication, facilitating more fine-grained analyses of nonverbal facial cues on leadership outcomes.

1.4.6. Artificial Intelligence Methods

AI tools have become increasingly common in analyzing leaders' verbal and nonverbal communication, particularly in the last five years, and now account for 5% of reviewed articles (n=11). Machine Learning (ML) is the dominant form of AI used in research on leader communication. ML models are classified into two broad types: 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 to recognize relationships between variables. Unsupervised ML models uncover underlying regularities in the data without the need for pre-labeled data, requiring less human involvement.

Studies of leader communication enlist ML models to identify and evaluate various types of verbal and nonverbal communication. Relevant applications using text data have identified linguistic characteristics that reflect leader hubris (Akstinaite, Garrard, & Sadler-Smith, 2021), Big Five personality traits (Harrison et al., 2019; Malhotra et al., 2018), and crisis response

strategies (Montiel, Uyheng, & Dela Paz, 2021). Tonidandel and colleagues (2021) used transcripts of over 8000 leaders' verbal responses during 360-degree leadership assessments to identify how they perceived challenges in leadership roles. Instead of relying on predefined vocabulary or coding criteria (a necessary component of dictionary-based text analysis), ML algorithms automatically and iteratively search for the frequency, uniqueness, and associations between different words, to classify text into topics (topic modelling) covering related concepts (e.g., words like "report", "manager", "feedback", and others can form the topic of "Leading Others"). The algorithms show the extent to which a topic is dominant within a single document, revealing the overall focus of a leader's communication, or whether certain topics often appear together, implying how leaders perceive different challenges simultaneously. The study advances our understanding of leader development by uncovering patterns of behavior that are not theorized *a priori*, using a large corpus of unstructured text, demonstrating the power of ML methods for data-driven inductive analyses of leader communication (Tonidandel et al., 2021).

ML also has applications to non-textual data involving the analysis of leaders' micro facial expressions (Choudhury, Wang, Carlson, & Khanna, 2019) and vocal attractiveness (Truninger et al., 2020). In particular, AI- and ML-based technologies for nonverbal communication can learn from pre-labeled data created by humans. For example, in addition to calculating pitch or loudness (Niebuhr et al., 2016), ML models can determine how "captivating" a vocal delivery is (Truninger et al., 2020). Or, in addition to recognizing the muscular movements on human faces (Stewart & Dowe, 2013), AI-based tools can also recognize and inductively deduce distinct emotional types. One AI-based technology, Microsoft Azure Computer Vision REST Application Program Interface (API) (Yu & Zhang, 2015), is able to process up to 30,000 static images at a rate of 20 images per minute. In one study, this API

automatically interpreted leaders' facial expressions from interview videos and scored them on eight types of emotions (e.g., happiness, anxiety, disgust). The authors were then able to associate leader communication styles (via their facial expressions) with firm performance (Choudhury et al., 2019). Such breakthroughs of AI image recognition technology create opportunities to analyze available rich data sources of images and videos in new ways.

These new technologies allow more data-driven inductive analyses to uncover novel relationships between leader communication and outcomes that might be overlooked with deductive approaches (Evans & Aceves, 2016; Leavitt, Schabram, Hariharan, & Barnes, 2021). They provide more reliable and scalable methods for assessing communication data than computerized word count tools, using open-vocabulary approaches that allow more transparent validation of linguistic categories (Eichstaedt et al., 2021; Yeomans, 2021). In many ways, AI and ML approaches surface insights about leader communication in a similar way to the earliest inductive studies on leader communication that coded data manually, except that these new approaches can identify characteristics of leader communication using infinitely large corpora of text, videos, and photos. As a result, many studies that use these technologies are descriptive, where researchers let the tools "do their work" and classify communicative elements relevant to researchers' interest.

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 increasing levels of computer-aided methods. This revolution now extends to the study of nonverbal data in terms of voice recordings and videos. Nevertheless, each method offers unique opportunities to study various elements of leader

communication. Jointly, this wealth of methods presents a rich set of alternatives to leadership scholars' dominant approaches.

1.5. Future Research Directions

The insights gathered in our review imply several promising avenues for future research on leader communication.

1.5.1. Leader Communication in a VUCA Environment

24/7 Communication and Crisis Responses. We first highlight the increasing importance for leaders to communicate effectively and with agility in the volatile, uncertain, complex, and ambiguous (VUCA) world, where peoples' lives are constantly disrupted by unpredictable events, from severe weather to healthcare crises, and inflation to wars. Leaders today are scrutinized 24/7 by their followers on multiple communication platforms, both traditional (e.g., television, newspaper) and social (e.g., Twitter, YouTube). What and how they communicate in response to critical events across different mediums has become an essential predictor of their leadership success. For example, at the beginning of the Covid-19 pandemic, New Zealand Prime Minister Jacinda Ardern demonstrated successful leadership by hosting both press conferences and live streams on Facebook to answer questions from her followers and communicate with authenticity and clarity (CNN, 2020). Ukrainian President Volodymyr Zelensky has also showed remarkable communication strategies during Russia's invasion, sending concise, memorable, and authentic messages on Facebook, Twitter and TV shows to bring his people together (Forbes, 2022). We encourage future scholars to explore how leaders harness multiple mediums to communicate effectively to stakeholders during threatening events.

Recent research in crisis leadership points out the importance for scholars to explore how leaders manage their stakeholders' negative emotions during times of crisis (Wu, Shao, Newman, & Schwarz, 2021). Since stakeholders psychological needs may change over the course of a crisis, leaders need to consider their communication strategies carefully, because effective responses may vary across the phases of a crisis (Bundy, Pfarrer, Short, & Coombs, 2017). We encourage future scholars to address these underattended areas of focus, by asking questions such as "How can leaders communicate to reduce the discomfort and anxiety of their stakeholders during times of crisis?" or "How do leaders communicate flexibly and strategically to meet the changing psychological needs of their stakeholders across the lifecycle of a crisis?"

Diffusion of Disinformation, Social Opposition, and Ethical Leadership. Relatedly, we argue that leadership communication in a VUCA environment needs to not only be agile and frequent, but also ethical and responsible, in both crisis and non-crisis situations. In particular, leaders' have a heightened need to communicate responsibly to tackle the diffusion of disinformation in digital environments. While the ways in which social media has facilitated the spread of disinformation (Bovet & Makse, 2019; Ross & Rivers, 2018) and political polarization (Brady et al., 2019) are gaining attention, we know less about how leaders can communicate to circumvent or limit this phenomenon. Prior research indicates that leaders' negative and hostile language more easily provokes their followers and solicits higher levels of social media engagement than positive language (Lee & Xu, 2018; Maskor, Steffens, & Haslam, 2021). This makes understanding how to diffuse ethical messages and truthful claims more effectively using convenient and fast-diffusing communication tools even more critical. In line with a recent call for more research on developing virtuous and moral leaders (Day, Riggio, Tan, & Conger, 2021), we encourage future scholars to pursue inquiries in this direction to provide insights into how

leader communication can reveal and project their values and ethical behaviors in fast-changing and (dis)information-rich digital environments.

1.5.2. Empowered Followership in the Digital Era

Reciprocal Leader-Follower Relationships. A promising research direction centers on communication as part of the leader-follower relationship, in particular its dynamic and reciprocal nature. Leadership is a mutual influence process rather than a unidirectional one between active leaders and passive followers (Avolio, Sosik, Kahai, & Baker, 2014; DeRue & Ashford, 2010; Oc & Bashshur, 2013). It is thus essential to consider how leaders and followers interact when examining leadership outcomes (Uhl-Bien, Riggio, Lowe, & Carsten, 2014). Nevertheless, as this review documents, research in leader communication has still remained nearly exclusively focused on leaders themselves, with very few studying reciprocal leader-follower communication dynamics. Given the relational nature of leadership (DeRue & Ashford, 2010), more can be done to examine communicative dynamics between leaders and followers. For example, a recent study showed that leaders who engage in two-way communication with their followers elicit followers' prosocial behaviors, suggesting an enhanced sense of voice in the followers' decision-making process (Boulu-Reshef et al., 2020). Future research can further explore the effect of different aspects of two-way communication between leaders and followers, such as communication quality, length, and content, on leadership success and follower performance, as well as the effects of shifting temporary leader roles among group members, which may reveal more dynamic aspects of leadership.

Relatedly, expanding mediums of communication, particularly on social media, generate real-time behavioral data and therefore facilitate field research of dyadic leader-follower interactions. Compared to traditional communication mediums, which tend to be temporally

lagged and unidirectional from leaders to audiences, social communication mediums tend to be bidirectional, involving temporally immediate and potentially two-way communication. As of yet, there have been few studies on how leaders and followers interact on instant messaging platforms. In one of these, scholars showed the greater a leader's willingness to interact with their followers on Facebook, the more positive the followers' comments to that leader were (Ki & Nekmat, 2014). We encourage future scholars to explore reciprocal leader-follower dynamics in field studies. With increasing availability of real-time two-way behavioral data, we can now examine not only how followers respond to leader communication, but also how leaders respond to followers' responses. To truly understand leader-follower dynamics and how leader communication shapes leadership effectiveness via its effects on those with whom they are communicating, we need to capture more steps in this reciprocal process.

Real Follower Behaviors. The most common approach used to evaluate leaders' communication effectiveness to date has been laboratory experiments, in which participants (as "followers") evaluate the effectiveness of real or fabricated leaders as a function of stimulus materials. But these studies do not capture reactions of "actual" followers. Non-questionnaire approaches to capture actual follower responses to leaders remain rare, though a few studies have tracked followers' eye gazing patterns towards leaders (Gerpott et al., 2018), captured their endorsements of leaders on social media (liking and sharing leaders' tweets) (Brady et al., 2019; Tur et al., 2021), and content analyzed their actual responses to leader communication on Facebook (Ki & Nekmat, 2014). In keeping with recent calls for more objective behaviors in organization studies (Banks, Woznyj, & Mansfield, 2021; Fischer, Hambrick, Sajons, & Van Quaquebeke, 2020), we encourage researchers to capture the attitudes and behaviors of "real"

followers, including social media engagement with leaders, and real-time responses to leaders' communication.

1.5.3. Mixed-Methods Studies

Our final suggestion for future research is for researchers to integrate field and lab studies more often. Laboratory and field studies have unique strengths: field studies can document naturally occurring dynamics between leaders and followers as well as contextual richness, laboratory studies offer the opportunity to establish causality more directly. Multi-method work remains a tiny minority of studies on leader communication (including Carton et al., 2014; Crilly, 2017; Jacquart & Antonakis, 2015; Stam et al., 2018; Witkower et al., 2020). Opportunities abound for mixed methods studies, which allow scholars to explore real-world phenomena and then test the causal effects they imply in the lab. In particular, unsupervised ML models may uncover previously hidden patterns in data that can be used to develop hypotheses to test subsequently in the lab. We encourage future scholars to adopt this approach more often, so they can establish causality in a compelling way using insights generated from real-world data.

1.6. Conclusion

We explore the contributions of research on leader communication across the disciplines of management, psychology, political science, and communication. We detail how 212 studies from the last 50 years that use real leader communication as data have contributed to and extended various theories relevant to leadership research. Specifically, we discuss how understanding leader communication helps us understand leaders themselves, how leaders affect followers and stakeholders, as well as how they influence macro-level organizational outcomes.

An important contribution of our review is to profile the many ways in which scholars can use leader communication to measure several key attributes of leaders and aspects of leadership more unobtrusively, objectively, and systematically (Banks, Woznyj, et al., 2021). As such, our review supports the shift towards prioritizing behavioral data over self-reported measures (Banks, Woznyj, et al., 2021; Fischer et al., 2020), as well as recent recommendations to increase the use of archival communication data to measure leader characteristics (Michael Holmes Jr, Hitt, Perrewé, Palmer, & Molina-Sieiro, 2021; Vera, Bonardi, Hitt, & Withers, 2022). For example, we document how charisma is no longer an unquantifiable leadership trait or ability (Antonakis et al., 2016; van Knippenberg & Sitkin, 2013) and can be measured using leaders' visionary language, animated voice and eye contact (Jacquart & Antonakis, 2015; Maran et al., 2019).

Our review also informs implicit leadership theories (ILTs) by highlighting powerful nonverbal "leader-like" signals, such as the expressiveness of leaders' upper bodies (Tskhay et al., 2014), or head-tilting and lip-moving behaviors that can signal intelligence (Melwani et al., 2012). Work on leader communication has made concrete what several of these prototypical leader behaviors are, allowing ILT to move beyond abstract sets of attributes or follower perceptions (Lord, Epitropaki, Foti, & Hansbrough, 2020). The work reviewed here also enriches newer leadership theories that focus on moral leadership behaviors, such as humility (Owens & Hekman, 2012) and inclusiveness (Weiss, Kolbe, Grote, Spahn, & Grande, 2018), by showing how communicating one's morality can be done in subtle dimensions of leaders' language (such as their use of pronouns). Communication data allow these leadership constructs to become more measurable, visible and trainable, offering an important and varied toolkit for leadership development.

We conclude our review with three thoughts about the most generative paths forward for research that draws on leader communication. First, we stress the importance of scholars to take advantage of our information-rich digital age and how it has broadened opportunities to observe, collect data on, and analyze leaders' real communicative behaviors in a 24/7, multi-medium world of complexity and uncertainty. Second, the last decade's greater focus on followers' active role in leadership processes implies that more research about reciprocal leader-follower dynamics as well as followers' actual behaviors are needed. Last but not least, integrating field studies using AI-powered tools with laboratory approaches facilitates not only data-driven analyses, but also helps researchers back novel findings with causal evidence. We hope this review offers original insights into leader communication in this increasingly technologically advanced era, and will stimulate cross-disciplinary conversations on this key leader behavior.

We stress the importance of scholars to take advantage of the broader data availability in our information-rich digital age to observe and analyze leaders' 24/7 and multi-medium communicative behaviors, as well as their ethical and responsible communication in a world of complexity and uncertainty. Relatedly, greater focus on empowered followership implies that more research about reciprocal leader-follower dynamics as well as followers' actual behavioral outcomes (instead of self-reported questionnaire items) are needed. Last but not least, integrating field studies using AI-powered tools with laboratory approaches will not only facilitate data-driven analyses, but also help researchers back their novel findings with causal evidence. We hope this review offers novel insights into leader communication in our increasingly digital and technologically advanced era, and will stimulate cross-disciplinary conversations on this key leader behavior.

Leader Communication and Stakeholder Responses in the COVID-19 Pandemic *(with Professor Cassandra Chambers & Professor Celia Moore)*

2.1. Introduction

Communication is a fundamental aspect of leadership. It is how leaders claim their roles (Jacquart & Antonakis, 2015), maintain support from followers (Norman, Avolio, & Luthans, 2010), and drive organizational performance (Wong, Ormiston, & Tetlock, 2011). In observing how leaders communicate, scholars have long recognized that the valence of communication, whether it is negative or positive, is a strong predictor of follower behaviors and approval. Positive language, whereby leaders express positive emotions, typically elicits positive reactions, such as followers' positive mood (Bono & Ilies, 2006); whereas, negative language, whereby leaders display negative emotions, is often associated with negative outcomes, such as lower leadership evaluations (Gaddis, Connelly, & Mumford, 2004; Lewis, 2000). These studies, however, tend to examine everyday forms of leader communication, where the choice of what and how to communicate is less constrained. In certain contexts, such as a crisis, a highly disruptive event threatening an organization's viability as well as the relationship between managers and their stakeholders (Bundy, Pfarrer, Short, & Coombs, 2017; Pearson & Clair, 1998), leaders are required to leverage the use of the two types of language. On the one hand, they want to convey hope and faith to provide comfort for their stakeholders; on the other hand, they need to communicate the bad news surrounding the aversive event, risking people's backlash against the uncomfortable truth. In this case, how can leaders communicate effectively to make their stakeholders be on their side throughout a crisis?

In this paper, through the lens of the process view of crisis leadership, we examine how stakeholders respond to leaders' positive and negative language in a prolonged crisis *over time* (Bundy et al., 2017; Wu, Shao, Newman, & Schwarz, 2021). We first predict that stakeholders' emotional responses to leaders' positive language will be less and less positive, and more and

more negative as a chronic negative event wears on. We argue that stakeholders' reactions to leaders' positive language weaken as time goes by because they adapt to leaders' positive message after being exposed to it multiple times (Wilson & Gilbert, 2008). Also, the more time into a crisis, the more negative contextual cues (e.g., unemployment, casualties, hospitalization… and other bad news), wherein stakeholders will expect negative communicative behaviors from their leaders (Burgoon, 1993). Thus, leaders' positive language will be less and less consistent with stakeholders' evaluations of the crisis situation (Swann, 2012; Swann, Pelham, & Krull, 1989) and even make them doubt about whether the leader is sugarcoating the bad news (Fang, Kim, & Milliken, 2014), resulting in negative stakeholder response. Drawing on similar theoretical arguments, we predict that stakeholders will react to leaders' negative language less and less negatively, and more and more positively over time. Not only will their negative reactions to leaders' negative language will weaken, but also, the negative situational cues will make leaders' negative messages more and more appropriate and reasonable over time (Bucy, 2000; Schoofs & Claeys, 2021). As a result, stakeholders will perceive leaders as increasingly trustworthy and credible and react positively to leaders' negative language.

We test our predictions with data of political leaders' communication during the COVID-19 pandemic and stakeholders' reactions to those communications. Examining leaders' COVID-19 related communications (259 speeches and press conferences) in majority English-speaking Organization for Economic Co-operation and Development (OECD) countries, as well as 107 million coronavirus-related tweets made by stakeholders between March and October 2020, we explore how leaders' positive and negative language affected stakeholder responses. By matching chronologically proximal leader communication and stakeholder responses, we find that time moderates the relationship between leaders' positive and negative language and

stakeholders' emotional reactions. Consistent with our hypotheses, while stakeholders react to leaders' positive communication less and less positively and more and more negatively over time, they react to leaders' negative communication less and less negatively and more and more positively as the pandemic goes on.

Our findings contribute to theories of leadership and crisis research. First, although how leaders can gain social approval from their stakeholders is critical in crises, it has only really been theorized about at the *onset* of a crisis (Bundy & Pfarrer, 2015), and not in a prolonged crisis. Also, scholars in recent reviews emphasize the importance of the process view of crisis leadership (Wu et al., 2021), whereby more investigations into the "temporal changes in how organizations and stakeholders respond to crises over time" are needed (Bundy et al., 2017, p. 1683). We respond to this call by providing empirical evidence of process view of crisis leadership. Bridging it with the affective adaptation theory, we show leaders' evolving influence on their stakeholders' emotions throughout a prolonged crisis. Second, we show how and *when* leaders can use positive and negative language effectively (Bucy, 2000; Visser, van Knippenberg, van Kleef, & Wisse, 2013). In particular, we speak to prior literature on leadership and emotions and show that effective communication is contingent on context and time. While positive communication is often deemed desirable, it can backfire over time in a chronic crisis; although negative communication is generally regarded as unfavorable, it can be more rewarded and appreciated as a crisis wears on. Importantly, our study sheds light on how leaders can manage their stakeholders and protect their well-being in chronic aversive events, such as a recession, an inflation crisis, or even wars. Essentially, there is no "one-size-fits-all" communication strategy (Hersel, Gangloff, & Shropshire, 2022). Rather, leaders should be

attuned to stakeholders' evolving psychological and emotional needs and deploy positive and negative communication strategically, ultimately resulting in higher leadership approval.

Last but not least, to our knowledge, this study is one of the first to associate leaders' and stakeholder's real-time communication, providing important insights into the process of mutual influencing between leaders and stakeholders in the digital era (Avolio, Sosik, Kahai, & Baker, 2014). Prior research on leader communication during crises focused predominantly on leader communication alone (Beelitz & Merkl-Davies, 2012; D'Aveni & MacMillan, 1990). If stakeholders were addressed directly, researchers used questionnaire-based approval ratings to assess how they evaluated leadership performance (e.g., Bligh, Kohles, & Meindl, 2004; Davis & Gardner, 2012). The ongoing COVID-19 crisis has received considerable scholarly attention, but leaders and stakeholders have still been mostly considered separately. Scholars have focused either on leader communication alone (Medeiros, Crayne, Griffith, Hardy, & Damadzic, 2022; Montiel, Uyheng, & Dela Paz, 2021), or on how stakeholders discuss COVID-19 (Basiri, Nemati, Abdar, Asadi, & Acharrya, 2021; Kabir & Madria, 2021). Our study actively bridges leader communication and real-time stakeholder responses, showing how leadership communication functions in the instant, dyadic, and interactive digital era.

2.2. Theory Development and Hypotheses

2.2.1. Leader Communication During Times of Crisis

Effective communication with stakeholders, or alternatively termed as followers, audiences, constituents, and those who are generally affected by the leader's decisions and actions, is a critical element of leadership. This is especially true when it comes to a crisis (Coombs, 1995; Coombs & Holladay, 2002), which is defined as "a low-probability, high-impact

event that threatens the viability of the organization and is characterized by ambiguity of cause, effect, and means of resolution, as well as by a belief that decisions must be made swiftly" (Pearson & Clair, 1998, p. 60). Stakeholders are affected by the turbulence and uncertainty caused by the crisis and thus tend to look up to their leader in the hope that she will take bold and decisive actions (Bligh et al., 2004). They also carefully attend to what the leader has to say to provide information about the crisis and further resolve their unease and discomfort. Indeed, prior research has shown that leader communication during times of crisis critically affect whether stakeholders approve (Bastardoz, Jacquart, & Antonakis, 2022; Bligh et al., 2004; Coombs & Holladay, 2008; Davis & Gardner, 2012) and endorse their leader (Stam, van Knippenberg, Wisse, & Nederveen Pieterse, 2018), as well as their willingness to follow the leader's advice (Jensen et al., 2021).

A dominant research domain in leadership communication pertains to the valence of leaders' communication, which is a strong predictor of follower reactions and approval. Positive leader language, in which leaders express positive emotions in their verbal and nonverbal communication, are associated with positive organizational outcomes, such as more prosocial behavior and lower voluntary turnover rates (George & Bettenhausen, 1990), and higher organizational performance (George, 1995; Venus, Stam, & van Knippenberg, 2013). Stakeholders are also more likely to perceive the leaders who express positive emotions frequently as more effective (Trichas, Schyns, Lord, & Hall, 2017) and attractive leaders (Newcombe & Ashkanasy, 2002; Staw & Barsade, 1993). Unsurprisingly, stakeholders typically receive negative communication badly (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001; Taylor, 1991). Leaders who express anger frequently are viewed as cold, unlikable, and have difficulty building good relationships with other organizational members (George, 2000;

Tiedens, 2001). Leaders' expression of sadness can signal weakness and submissiveness and further induce negative emotions in their followers (Madera & Smith, 2009). Consequently, when a leader delivers information using negative words and/or expressing negative emotions, the negative communication is generally associated with negative stakeholder responses, such as low leadership effectiveness (Lewis, 2000), involuntary followership (Tiedens, 2001), and poor follower performance (Gaddis et al., 2004).

During times of crises, to win their stakeholders' approval and elicit positive stakeholder reactions, should leaders communicate using positive or negative language? On the one hand, leaders' positive language will instill hope and faith in their stakeholders' minds and make them more confident and motivated (Shamir, Arthur, & House, 1994), particularly in times of turbulence and uncertainty when people actively seek positive information and reassurance (Bligh et al., 2004). On the other hand, however, crises will require leaders to communicate the uncomfortable truth and deliver negative news, such as casualty in terrorist attacks and natural disasters (Benoit & Henson, 2009; Davis & Gardner, 2012), and lockdown and stay-at-home orders in global pandemics (Andreadis et al., 2021; Medeiros et al., 2022; Montiel et al., 2021; Sergent & Stajkovic, 2020). Justifiably, it is hardly possible to communicate negative information without expressing negative emotions. In other words, leaders *have to* use negative language when communicating crisis-related information with their stakeholders. Consequently, a major challenge for leadership communication during crisis events is how a leader can leverage the use of positive language (which the leader should be tempted to use) and negative language (which the leader can't avoid using).

2.2.2. A Process View of Crisis Leadership

To make their stakeholders be on their side during a crisis, should leaders use positive language to boost the morale, or should they use negative language to communicate the uncomfortable truth? We aim to answer this question through the lens of process view of crisis leadership. A relatively overlooked area in crisis research (Wu et al., 2021), the process view of crisis leadership argues that a crisis consists of different phases, including pre-crisis phase, in-crisis phase, and post-crisis phase (Bundy et al., 2017; Tokakis, Polychroniou, & Boustras, 2019). Using COVID-19 pandemic as an example, pre-crisis phase may refer to the time period when there were increasing infected cases without a clear trend of transmission; in-crisis phase can refer to when the World Health Organization (WHO) declared it to be a global pandemic and when countries around the world were imposing restrictions (e.g., lockdowns); post-crisis phase can refer to when there was very low number of infected cases and when the restrictions were lifted (Wu et al., 2021, p. 16). Understanding crisis events through these different phases will allow leaders to take measures to prevent crisis from occurring, manage an ongoing crisis, and maximize organizational learning after a crisis (Bundy et al., 2017).

While theoretical arguments surrounding the process view of crisis leadership have been developed, empirical evidence to support them remain scarce. Current literature on crisis leadership focuses predominantly on acute crises, where scholars examine leader communication in crisis events that unfold and develop in a rather short period of time. For example, research looks into how former U.S. president George W. Bush communicated with American people in the aftermath of the 9/11 crisis and Hurricane Katrina (Benoit & Henson, 2009; Bligh et al., 2004; Davis & Gardner, 2012; Liu, 2007), as well as former French president François Hollande's rhetorical strategies after a series of terrorist attacks in Paris (Bastardoz et al., 2022).

Other relevant investigations include political leaders' responses after their personal scandals were revealed (Madera & Smith, 2009; Pennebaker & Lay, 2002) and CEOs' communication with shareholders during financial crises when the market faced sudden turbulence and uncertainty (Patelli & Pedrini, 2014). The above research treats crises and leader communication as one-time events. We still have little field evidence of how leaders communicate in *prolonged* crises (e.g., the global pandemic) and how they manage stakeholders in different phases of the negative events.

Recent reviews have encouraged researchers to adopt the perspective of process view of crisis leadership to explore the dynamic leadership process during crises (Wu et al., 2021), such as "temporal changes in how organizations and stakeholders respond to crises over time" (Bundy et al., 2017, p. 1683), as well as "real-time discourse and information exchange that occurs between an organization and its stakeholders as they make sense of a crisis" (Bundy et al., 2017, p. 1682). Leaders may need to deploy different communication strategies at different points of time because stakeholders have evolving demands throughout different phases of a crisis. Again, taking the COVID-19 crisis as an example, in the beginning of the pandemic where people were unfamiliar with the virus, stakeholders may experience a high level of anxiety and wish the spread of the disease to end immediately, thus expecting their leader to provide good news. In later phase of the pandemic where there had been another lockdown or heightened restrictions, stakeholders may start to feel doubtful about the good news leaders provide and become impatient with leaders' stay-at-home orders. They may also feel less anxious and become more accustomed to the crisis, looking for some more fact-based and scientific information from their leader in order to learn about the virus more properly.

Drawing on the process view of crisis leadership, we argue that a leader's single communication strategy, i.e., the use of either positive or negative language, may not be universally effective across different phases of a prolonged crisis. More specifically, we suspect that while stakeholders will arguably respond to leaders' positive language positively and respond to leaders' negative language negatively, time will moderate the relationship between leaders' communication valence and stakeholder responses. We postulate that such relationship will depend on stakeholders' evolving psychological and emotional needs in different phases of a chronic aversive event.

2.2.3. Stakeholders' Changing Reactions to Positive Language

We predict that stakeholders' reactions to leaders' positive language will change over time, such that their emotional responses to leaders' positivity will become less and less positive, and more and more negative, as a prolonged crisis wears on. Using affective adaptation theory, expectancy violation theory, and self-verification theory, we postulate several mechanisms behind this prediction. First, affective adaptation is defined as "the psychological processes that cause an affective response to weaken after one or more exposures to a stimulus" (Frederick & Loewenstein, 1999; Wilson & Gilbert, 2008, p. 370). In other words, an individual's emotional reaction to a certain stimulus will be the strongest when s/he is first exposed to it, and that reaction will decline over time as s/he gets familiar with and used to the same stimulus. Also, "affective adaptation likely involves higher order mental processes that alter the meaning of those events" (Wilson & Gilbert, 2008, p. 370), suggesting that stakeholders will not only get used to an emotional stimulus, but also, they will reevaluate the way they react to the stimulus as the number of exposure to the stimulus increases. Thus, we argue that in the beginning of a prolonged crisis, stakeholders will react positively to leaders' positive language, but as the crisis

wears on, they will adapt to leaders' positivity and further alter the way they perceive the positive language.

Second, according to expectancy violation theory, an individual anticipates the behaviors of her or his counterpart in an interpersonal communication based on three factors, the counterpart's characteristics, the relationship between the individual and the counterpart, and the communication context (Burgoon, 1993). Contextual and situational cues inform an individual how s/he can interpret the counterpart's communicative behavior as reasonable and appropriate. When contextual cues are positive, positive communicative behaviors will be expected; whereas, when contextual cues are negative, individuals will expect negative communicative behaviors from their counterparts. As time passes by in a prolonged crisis and that the negative event does not seem to end yet, leaders' positive language will contradict the negative contextual cues, violating their stakeholders' expectations. We argue that stakeholders will interpret leaders' positive language as less reasonable and less appropriate as a prolonged crisis wears on, resulting in lower and lower positive response over time.

Third, self-verification theory states that individuals have a "passion for truth" (Swann et al., 1989, p. 782). Individuals have tendencies to seek self-verification, because self-verifying evaluations, even when the evaluations are negative, help them perceive the world as more coherent and predictable (Swann, 2012). In later phases of a prolonged crisis, because stakeholders come to realize that things are still bad and not improving, they view the world more and more negatively. In this case, leaders' positive language becomes less and less consistent with their view, hindering their quest for truth. What's worse, we argue that leaders' positive language start to give negative signals, such that stakeholders think that leaders are

using positive language to sugarcoat bad news and hide uncomfortable truth in the crisis (Fang et al., 2014).

Taking the above arguments together, we argue that while stakeholders have higher tendency to buy the leaders' positive statements at first, as time goes by and they realize that the crisis is still around, they come to adapt to leaders' positive language, reevaluate that positivity, and react less positively to it. Further, as the crisis wears on, leaders' positive language contradicts stakeholders' negative perception of the environment. Eventually, leaders' positive language no longer helps stakeholders comprehend the crisis, and stakeholders even become more doubtful about factuality behind the positive information leaders convey. In other words, stakeholders will not only react less and less positively to leaders' positive language, but also, they may even react more and more negatively to it over time. We therefore propose the following hypotheses:

Hypothesis 1a. *In a prolonged crisis, time moderates the relationship between leader positive language and stakeholder positive response such that as time goes by, leader positive language is associated with lower and lower stakeholder positive response.*

Hypothesis 1b*. In a prolonged crisis, time moderates the relationship between leader positive language and stakeholder negative response such that as time goes by, leader positive language is associated with higher and higher stakeholder negative response.*

2.2.4. Stakeholders' Changing Reactions to Negative Language

Drawing on similar theoretical arguments, we predict that stakeholders' reactions to leaders' negative language will change as a prolonged crisis wears on, such that their emotional responses to leaders' negativity will become less and less negative, and more and more positive over time. First, we posit that people's responses to leaders' negativity will exhibit affective

adaptation. In the beginning of the aversive event, stakeholders are emotionally influenced by leaders' negative language and react to the communication negatively. As time goes by, stakeholders adapt to leaders' negativity and their negative emotional reactions to the leaders' negative language wear off (Wilson & Gilbert, 2008). Also, as the number of exposures to negative language increases, stakeholders will come to reevaluate leaders' negativity and try to explain the negative event in a different way, leading to their altered perception of negative language (Wilson & Gilbert, 2008).

Second, as time passes by in a chronic aversive event, negative contextual and situational cues become more obvious and salient, which inform stakeholders to expect more and more negative communicative behaviors from their leaders (Burgoon, 1993). In other words, as a prolonged crisis goes on, leaders' negative language will become more and more consistent with stakeholders' expectations, where leaders' delivery of bad news will help stakeholders comprehend the negative crisis environment. Thus, we argue that stakeholders will perceive leaders' negative language more reasonable and appropriate over time.

Third, leaders' negative language will be more and more able to verify stakeholders' evaluations of the world as the negative event continues – that the crisis is still around, and people are still facing turbulence and uncertainty (Swann, 2012; Swann et al., 1989). Leaders' delivery of bad news now signals that the leader is telling the truth, fulfilling stakeholders' needs to reduce discomfort and uncertainty (Berger & Calabrese, 1975) and helping them see the world in a more coherent and predictable manner. Prior research has shown that leaders' negative emotions can sometimes be evaluated as more trustworthy and credible than positive emotions (Bucy, 2000; Schoofs & Claeys, 2021). Scholars also find that leaders' negative emotions can

facilitate stakeholders' logical analysis of information (Visser et al., 2013). This suggests that stakeholders will respond to leaders' negative language more and more positively over time.

Taking the above arguments together, we argue that as a prolonged crisis unfolds over time, stakeholders will adapt to leaders' negative language and have weakening negative responses to leaders' negativity. Moreover, as time goes by, leaders' negative language matches stakeholders' expectations and evaluations of the crisis environment and helps them understand what is actually going on. Eventually, stakeholders will come to appreciate and see the positive signals underlying leaders' negative messages, perceiving the leader as more credible and trustworthy. In other words, we argue that leaders' negative language will pay off over time in a prolonged crisis, such that their negative language will elicit less and less negative response, and more and more positive responses from their stakeholders. We therefore propose the following hypothesis:

Hypothesis 2a. *In a prolonged crisis, time moderates the relationship between leader negative language and stakeholder negative response such that as time goes by, leader negative language is associated with lower and lower stakeholder negative response.*

Hypothesis 2b. *In a prolonged crisis, time moderates the relationship between leader negative language and stakeholder positive response such that as time goes by, leader negative language is associated with higher and higher stakeholder positive response.*

2.3. Methods

2.3.1. Empirical Setting: The COVID-19 Pandemic

We conducted a field study on how leader communication affects stakeholder responses during the global coronavirus pandemic between March and October 2020. We chose this

empirical setting for the following reasons. First, as the pandemic hit every region around the world, it allowed us to analyze leader communication in a crisis at the global level, and not just in one specific country (e.g., Beelitz & Merkl-Davies, 2012; Benoit & Henson, 2009), enabling us to generalize our findings as widely as possible. Second, COVID-19 pandemic is a chronic crisis that consisted of different phases (e.g., multiple waves of cases and lockdown orders). It thus offered us a unique opportunity to learn about an evolving leader-stakeholder relationship and gain insights into the process view of crisis leadership. Third, COVID-19 is a crisis in the digital era. Digitally empowered stakeholders thus provided us with a rich environment to analyze real-time social media responses to leaders' coronavirus-related communication, complementing the traditional survey-measures to track stakeholders' emotional reactions and psychological well-being (Guntuku et al., 2020).

2.3.2. Data and Sample

We chose the heads of governments of majority English-speaking OECD countries. The leaders in our sample consist of the political leaders in office during the time period when the COVID-19 pandemic outbreak took place in January 2020, including New Zealand Prime Minister Jacinda Ardern, former United Kingdom Prime Minister Boris Johnson, former Australia Prime Minister Scott Morrison, Canada Prime Minister Justin Trudeau, former United States President Donald Trump, and former Ireland Prime Minister Leo Varadkar. We excluded Donald Trump and former Leo Varadkar. Trump was excluded because stakeholder responses (which we will elaborate in the measures section later) about him accounted for over 90% of the total sample, which would disproportionally affect the overall relationship between leader communication and stakeholder responses. He has also been largely independently studied as a special leadership case (Afanasyev, Fedorova, & Ledyaeva, 2021; Bovet & Makse, 2019;

Dumitrescu & Ross, 2020; Ross & Rivers, 2018). Varadkar was also removed but for the opposite reason: his tenure was only until June 27th, 2020 and stakeholder responses about him accounted for only 0.07% of the dataset.

For each leader, we collected their COVID-19 related communications on traditional and social media from March to October 2020, beginning with the first wave of the pandemic, and approximately before the second wave of the coronavirus cases.[4] We downloaded the transcripts of the leaders' COVID-19 related speeches, statements, addresses to congress, media briefings and press conferences from the governments' official websites.

Leader communication. To determine if a leader's communication was COVID-19 related, first, we checked the titles of the communications from the governmental websites to see of it contained the keywords of "COVID-19" or "coronavirus". For example, communications named as "*Prime Minister Boris Johnson made a statement on coronavirus*" was considered as COVID-19 related. Second, in cases when the keywords were not present in the communication title, we checked both titles and contents to see if the leaders were indeed talking about the coronavirus pandemic. For example, communications named "*Prime Minister's remarks halfway through Alert Level 4 lockdown*" was COVID-19 related. Third, in the cases when the titles of the communications were not distinguishable, such as "*Press Conference - Australian Parliament House*", we went through the contents of the transcripts to see if there was at least one paragraph of leader's communication was about the coronavirus pandemic.[5]

[4] We identified the waves of global cases from Our World in Data: https://ourworldindata.org/covid-cases.
[5] We considered a paragraph to be COVID-19 related when it addressed the following topics: number of new cases and deaths, hospitalizations, travel bans, lockdown policies, protective equipment (e.g., ventilators, face masks), closing schools, economic recessions, national emergency announcements, wage subsidy schemes, rebuilding and recovery plans, job creations, re-opening schools, and vaccination plans.

For communications in the forms of speeches, statements, addresses, which contained only lines of a leader, we used the entire transcript as our data. For communications in the form of media briefings and press conferences, where multiple people spoke (e.g., the leader, medical experts, government officials, media reporters), we included only the leader's lines in the transcripts. In total, we identified 38 press conferences from Jacinda Ardern, 41 speeches from Boris Johnson, 71 press conferences from Scott Morrison, and 103 speeches from Justin Trudeau.

Stakeholder responses. We used Twitter's API to retrieve real-time tweets about the COVID-19 crisis by using the keywords "COVID-19" and "coronavirus". From March 15th to October 31st, 2020, we retrieved 107 million tweets (*N*=107,592,758) made by public Twitter users around the world. Specifically, we randomly chose three to five hours a day to perform the real-time streaming so that we were able to retrieve tweets from stakeholders in different time zones (Americas, Europe, Asia Pacific). Around 400k tweets were collected every day from March to October 2020.

To identify the tweets that were responses towards the leaders in our sample, we selected only those that were in English and were targeting one (or more) of each of the five leaders in our sample. Specifically, we identified the following cases in which a leader is addressed in a given tweet: 1) the focal stakeholder (i.e., the Twitter user) mentioned the leader's name in the original text of the focal tweet (the leader's name can be anywhere in the text); 2) another stakeholder mentioned the leader in a tweet, and the focal stakeholder quoted (retweeted and replied) that tweet in the focal tweet; 3) another stakeholder mentioned the leader in another tweet, and the focal stakeholder simply retweeted that tweet as the focal tweet; 4) the leader himself tweeted, and the focal stakeholder quoted (retweeted and replied) the leader's tweet in

the focal tweet.[6] In total, we identified 53,846 stakeholders' tweets about Jacinda Ardern, 485,799 stakeholders' tweets about Boris Johnson, 48,549 stakeholders' tweets about Scott Morrison, and 86,883 stakeholders' tweets about Justin Trudeau.

2.3.3. Measures and Empirical Strategy

Dependent variables. Each stakeholder tweet was analyzed using Linguistic Inquiry and Word Count software (LIWC2015), a dictionary-based computer-aided text analysis program for measuring emotional states and psychological processes from language (Tausczik & Pennebaker, 2010). It has been used to measure the linguistic dimensions in short texts such as tweets (Brady, Wills, Burkart, Jost, & Van Bavel, 2019; Jordan, Pennebaker, & Ehrig, 2018), but following Jordan and colleagues' (2018) advice, we excluded tweets that were fewer than 10 words, as tweets under 10 words are too short to be meaningfully quantified. Of the final set of tweets, 49,991 tweets were about Jacinda Ardern; 442,796 tweets were about Boris Johnson; 46,525 tweets were about Scott Morrison; 81,924 tweets were about Justin Trudeau.

Using "positive emotion" and "negative emotion" categories in LIWC2015, we measured *stakeholder positive response* as the percentage of positive emotions words in each stakeholder tweet, and *stakeholder negative response* as the percentage of negative emotions words in each stakeholder tweet. Prior research has also used these LIWC categories to measure the emotionality in leaders' communication (Pennebaker & Lay, 2002). Example positive emotion words include "love", "nice", and "sweet"; example negative emotion words include "hurt", "ugly", and "nasty" (Pennebaker, Boyd, Jordan, & Blackburn, 2015, p. 3).

[6] We did not consider the cases where a focal stakeholder only retweeted the leader's tweet without quoting, because such retweeting behavior does not count a proper "response"; rather, it is more like echoing and approving leader's communication, which is not of our interest in this paper.

Independent variables. We matched each stakeholder tweet with a chronologically proximal leader communication, which took place *before* the stakeholder's tweet. Specifically, we matched each stakeholder tweet with the target leader's speech in the previous 24 hours. All of leaders' and stakeholders' tweets are timestamped in the form of YYYY/MM/DD hh:mm:ss GMT+0. For example, if a stakeholder tweeted about Boris Johnson on 2020/05/11 20:00:00, the stakeholder tweet will be matched with Johnson's speech on 2020/05/10. Or, if a stakeholder tweeted about Scott Morrison on 2020/03/30 7:00:00, the stakeholder tweet will be matched with Morrison's speech on 2020/03/29.[7]

Stakeholder tweets that were not successfully matched with leaders' communication were not included in our empirical analysis. Out of the successfully matched sample, Jacinda Ardern's speeches were matched with 7,354 stakeholder tweets; Boris Johnson's speeches were matched with 91,477 stakeholder tweets; Scott Morrison's speeches were matched with 10,090 stakeholder tweets; Justin Trudeau's speeches were matched with 39,152 stakeholder tweets.

We used LIWC2015 software to operationalize leader communication. Using "positive emotion" category, we measured *leader positive language* as the percentage of positive emotions words in a leader's daily speech; using "negative emotion" category, we measured *leader negative language* as the percentage of negative emotions words in a leader's daily speech.

Moderator. Our moderator is time, which we operationalized as *country pandemic month*. Specifically, we consider the pandemic to have started in a specific country, i.e., day 1, when total COVID-19 cases exceeded 100. Using the information provided by Our World in Data (https://ourworldindata.org/), day 1 for Australia was March 10, 2020; day 1 for Canada

[7] Leaders' speeches published on governmental websites did not always have specific time information, i.e., in which hour during the day. In order not to mistakenly match stakeholders' tweets that took place *before* a leader's speech on the same day, we match stakeholders' tweet with leaders' speech in the previous day.

was March 11, 2020; day 1 for New Zealand was March 22, 2020; day 1 for the United Kingdom was March 2, 2020. The number of country pandemic month becomes 1 on day 30, and 2 on day 60… and so on. The higher the number of country pandemic month, the more time a country is experiencing in the coronavirus crisis.

Control variables. We controlled for a number of stakeholder(tweet)-level and leader-level variables in our empirical analysis. Regarding stakeholder-level variables, we controlled for 1) *retweeted*, dummy variable, which equals 1 if the tweet is a retweet, 2) *quoted*, dummy variable, which equals 1 if the tweet is a quote (i.e., retweet and reply to another tweet), 3) *reply others*, dummy variable, which equals 1 if the tweet is a reply to another account (i.e., the tweet begins with "@another account…"), 4) *quoted leader*, dummy variable, which equals 1 if the tweet is a quote of the target leader, 5) *replied leader*, dummy variable, which equals 1 if the tweet is a reply to the target leader's account (i.e., the tweet begins with "@leader…"), 6) *stakeholder frequency*, logged count of tweets produced by the focal stakeholder for the same target leader, 7) *tweet frequency*, logged count of tweets of the same contents for the same target leader.

As to leader-level variables, we controlled for 1) *target leader*, a categorical variable indicating the four leaders in our sample, which was also used to control with leader fixed effects in the empirical specification, 2) *leader communication frequency*, logged count of stakeholder tweets that a leader's given daily speech had been matched with.

We also controlled for the pandemic situation in each of the leader's country, i.e., Australia, Canada, New Zealand, and United Kingdom. Specifically, we controlled for the country's pandemic-related dimensions when the stakeholder tweeted about the country's leader, i.e., on the day when the focal stakeholder created the tweet. We included the following variables

collected from Our World in Data (https://ourworldindata.org/): 1) *country restriction level*, the level of restriction (0~100, 100 = strictest; for example, a level of 90 indicated that the strictest subregion in the country was under lockdown), 2) *deaths per million*, logged count of newly confirmed COVID-19 deaths per million people, and 3) *reproduction rate*, COVID-19's reproduction rate.

Empirical strategy. We adopted pooled OLS regressions controlling with leader fixed effects, with standard errors clustered by stakeholders' Twitter IDs. Hypotheses 1a posits that time moderates the relationship between leader positive language and stakeholder positive response such that as time goes by, leader positive language is associated with lower and lower stakeholder positive response, and Hypothesis 1b posits that time moderates the relationship between leader positive language and stakeholder negative response such that as time goes by, leader positive language is associated with higher and higher stakeholder negative response. To test Hypotheses 1a and 1b, we regress stakeholder positive response and stakeholder negative responses to leader positive language, respectively, controlling for the above-mentioned covariates. Hypothesis 2a argues that time moderates the relationship between leader negative language and stakeholder negative response such that as time goes by, leader negative language is associated with lower and lower stakeholder negative response, and Hypothesis 2b argues that time moderates the relationship between leader negative language and stakeholder positive response such that as time goes by, leader negative language is associated with higher and higher stakeholder positive response. To test Hypotheses 2a and 2b, we regress stakeholder positive response and stakeholder negative responses to leader negative language, respectively, controlling for the above-mentioned covariates. For each specification, we did not have homoscedasticity of residuals and multicollinearity issues.

2.4. Results

2.4.1. Descriptive Statistics

Table 2.1 shows the descriptive statistics of the sample. Table 2.2 reports the baseline models where we regress stakeholder positive response and stakeholder negative response to the control variables. Models in Table 2.3 add leader positive language and leader negative language and report the main effects of leaders' communication valence. Controlling for stakeholder- and leader-level covariates, Model 2c shows that leader positive language was positively associated with stakeholder positive response: with every 1% increase in leaders' use of positive language in a daily communication, there was a 0.237% increase in positive language in each stakeholder tweet. Leader negative language was negatively associated with stakeholder positive response: with every 1% increase in leaders' use of negative language in a daily communication, there was a 0.168% decrease in the positivity of stakeholders' tweets. Model 2d shows that both leader positive language and negative language were associated with higher stakeholder negative responses: with every 1% increase in leaders' positive language, there was a 0.481% *increase* in stakeholder negative response. Every 1% increase in leaders' negative language was associated with a 0.430% increase in stakeholder negative response. We observed consistent main effects for leaders' negative language, but not for positive language. What is worth noting is that time (country pandemic month) is negatively associated with stakeholder positive response and positively associated with stakeholder negative response, meaning that stakeholders' overall sentiment was declining over time during the prolonged coronavirus crisis.

Table 2.1. Summary Statistics

	Variable	Mean	Std.	Min	Max	1	2	3	4	5
1	Stakeholder positive response	2.619	3.190	0	45.45	-				
2	Stakeholder negative response	2.805	3.602	0	56	-0.031*	-			
3	Leader positive language	3.234	0.906	0.8	6.99	0.082*	0.055*	-		
4	Leader negative language	1.272	0.665	0	4.8	-0.096*	0.055*	-0.525*	-	
5	Time (country pandemic month)	3.949	2.206	1	9	-0.061*	0.069	0.005	0.067*	-
6	Retweeted	0.780	0.414	0	1	0.003	0.019*	0.009*	-0.0008	-0.029*
7	Quoted	0.247	0.431	0	1	0.095*	0.006*	0.112*	-0.080*	0.022*
8	Reply others	0.053	0.225	0	1	-0.018*	-0.022*	-0.015*	0.010*	0.047*
9	Quoted leader	0.012	0.110	0	1	0.126*	-0.005	0.062*	-0.008*	-0.015*
10	Replied leader	0.013	0.115	0	1	0.0001	-0.006*	-0.0004	-0.005	0.011*
11	Stakeholder frequency	1.808	1.184	0.693	7.784	-0.058*	0.068*	0.015*	0.049*	0.145*
12	Tweet frequency	3.484	2.247	0.693	8.786	0.068*	0.046*	-0.036*	0.031*	0.032*
13	Leader communication frequency	7.589	1.320	1.946	9.610	0.054*	0.097*	-0.111*	0.193*	0.093*
14	Country restriction level	69.570	8.582	19.44	96.3	-0.024*	0.048*	0.012*	0.147*	-0.359*
15	Deaths per million	0.932	0.609	0	2.724	-0.029*	0.011*	-0.092*	0.361*	-0.280*
16	Reproduction rate	1.049	0.436	0.24	2.66	-0.046*	-0.027*	0.022*	0.038*	-0.092*

Notes. * designates significance at $p<0.05$.

Table 2.1. Summary Statistics (Continued)

	Variable	6	7	8	9	10	11	12	13	14
6	Retweeted	-								
7	Quoted	-0.173*	-							
8	Reply others	-0.448*	-0.014*	-						
9	Quoted leader	-0.094*	0.194*	-0.011*	-					
10	Replied leader	-0.219*	0.018*	0.490*	-0.003	-				
11	Stakeholder frequency	-0.010*	-0.007*	0.102*	-0.043*	-0.017*	-			
12	Tweet frequency	0.056*	-0.231*	-0.283*	-0.070*	-0.135*	-0.071*	-		
13	Leader communication frequency	0.075*	-0.035*	-0.042*	-0.020*	-0.012*	0.087*	0.333*	-	
14	Country restriction level	-0.006*	0.018*	-0.005*	0.029*	-0.004	0.008*	-0.056*	0.054*	-
15	Deaths per million	0.022*	0.018*	-0.018*	0.038*	-0.014*	0.014*	0.073*	0.346*	0.381*
16	Reproduction rate	-0.047*	0.012*	0.027*	0.058*	0.008*	-0.027*	-0.232*	-0.271*	0.097*

	Variable	15	16
15	Deaths per million	-	
16	Reproduction rate	-0.023*	-

Notes. * designates significance at $p<0.05$.

Table 2.2. Stakeholder Responses to Leader Communication, *Controls*

	Model 2a: Stakeholder positive response	Model 2b: Stakeholder negative response
Retweeted	-0.183***	-0.025
	(0.034)	(0.043)
Quoted	0.663***	0.208***
	(0.024)	(0.026)
Reply others	0.081	-0.394**
	(0.077)	(0.143)
Quoted leader	3.367***	-0.061
	(0.176)	(0.098)
Replied leader	0.072	0.241
	(0.116)	(0.161)
Stakeholder frequency	-0.122***	0.137***
	(0.010)	(0.027)
Tweet frequency	0.123***	0.052***
	(0.005)	(0.006)
Leader speech frequency	0.309***	-0.246***
	(0.015)	(0.016)
Country restriction level	-0.0008	0.021***
	(0.001)	(0.0009)
Deaths per million	-0.198***	-0.394***
	(0.019)	(0.024)
Reproduction rate	0.039	-0.486***
	(0.025)	(0.029)
Time (country pandemic month)	-	-
Leader positive language	-	-
Leader negative language	-	-
Leader positive language x Time	-	-
Leader negative language x Time	-	-
Constant	1.021***	2.377***
	(0.134)	(0.136)
Leader fixed effect	Yes	Yes
Clustering SE by stakeholder Twitter IDs	Yes	Yes
Number of observations	148,101	148,101
R-squared	0.0410	0.0326

Notes. Significance levels include: *** p<0.001, ** p<0.01, *p<0.05. Standard errors are in parentheses.

Table 2.3. Stakeholder Responses to Leader Communication, *Main Effects*

	Model 2c: Stakeholder positive response	Model 2d: Stakeholder negative response
Retweeted	-0.200***	-0.039
	(0.034)	(0.043)
Quoted	0.649***	0.166***
	(0.025)	(0.026)
Reply others	0.142*	-0.393**
	(0.078)	(-0.146)
Quoted leader	3.288***	0.216*
	(0.173)	(0.100)
Replied leader	0.014	0.252
	(0.114)	(0.163)
Stakeholder frequency	-0.105***	0.123***
	(0.010)	(0.027)
Tweet frequency	0.124***	0.051***
	(0.005)	(0.006)
Leader speech frequency	0.210***	-0.221***
	(0.014)	(0.016)
Country restriction level	-0.012***	0.023***
	(0.001)	(0.001)
Deaths per million	-0.207***	-0.356***
	(0.020)	(0.025)
Reproduction rate	-0.064**	-0.402***
	(0.025)	(0.031)
Time (country pandemic month)	**-0.135*** **	**0.040*** **
	(0.005)	(0.006)
Leader positive language	**0.237*** **	**0.481*** **
	(0.013)	(0.017)
Leader negative language	**-0.168*** **	**0.430*** **
	(0.018)	(0.021)
Leader positive language x Time	-	-
Leader negative language x Time	-	-
Constant	2.372***	-0.044
	(0.143)	(0.168)
Leader fixed effect	Yes	Yes
Clustering SE by stakeholder Twitter IDs	Yes	Yes
Number of observations	148,101	148,101
R-squared	0.0545	0.0424

Notes. Significance levels include: *** p<0.001, ** p<0.01, *p<0.05, †p<0.1. Standard errors are in parentheses.

2.4.2. Hypotheses Testing

Models in Table 2.4 report results for the four hypotheses. Using stakeholder positive response as the dependent variable, Model 2e shows that there was a negative interaction effect between leader positive language and time, as well as a positive interaction effect between leader negative language. With every 1 unit increase in time (one more month into the pandemic), every 1% increase in leader positive language was associated with 0.044% decrease in stakeholder positive response. Thus, Hypothesis 1a is supported. With every 1 unit increase in time, every 1% increase in leader negative language was associated with 0.051% increase in stakeholder positive response. Hypothesis 2b is supported. Using stakeholder negative response as the dependent variable, Model 2f shows that there was a positive interaction effect between leader positive language and time, as well as a negative interaction effect between leader negative language and time. With each month into the pandemic, every 1% increase in leader positive language was associated with 0.071% increase in stakeholder negative response, supporting Hypothesis 1b, and every 1% increase in leader negative language was associated with 0.066% decrease in stakeholder negative response, supporting Hypothesis 2a.

Figures 2.1 and 2.2 plot the marginal effects of leader positive language on stakeholder positive response and stakeholder negative response over time, respectively. Figures 2.3 and 2.4 plot the marginal effects of leader negative language on stakeholder positive response and stakeholder negative response over time, respectively. The results support our predictions that stakeholders' emotional responses to leaders' positive and negative language are moderated by time. While they reacted to leaders' positive language less and less positively, and more and more negatively over time, they reacted to leaders' negative language less and less negatively, and more and more positively over time**.**

Table 2.4. Stakeholder Responses to Leader Communication, *Interaction Effects*

	Model 2e: Stakeholder positive response	Model 2f: Stakeholder negative response
Retweeted	-0.206***	-0.029
	(0.034)	(0.043)
Quoted	0.658***	0.151***
	(0.025)	(0.026)
Reply others	0.130†	-0.376***
	(0.077)	(0.134)
Quoted leader	3.256***	-0.164
	(0.172)	(0.100)
Replied leader	0.028	0.232
	(0.112)	(0.154)
Stakeholder frequency	-0.107***	0.125***
	(0.010)	(0.025)
Tweet frequency	0.128***	0.044***
	(0.005)	(0.006)
Leader speech frequency	0.202***	-0.211***
	(0.015)	(0.016)
Country restriction level	-0.011***	0.022***
	(0.001)	(0.001)
Deaths per million	-0.206***	-0.354***
	(0.020)	(0.025)
Reproduction rate	-0.092***	-0.364***
	(0.025)	(0.030)
Time (country pandemic month)	-0.061*	-0.101***
	(0.024)	(0.026)
Leader positive language	0.431***	0.167***
	(0.027)	(0.028)
Leader negative language	-0.386***	0.715***
	(0.038)	(0.040)
Leader positive language x Time	**-0.044*** **	**0.071*** **
	(0.006)	(0.006)
Leader negative language x Time	**0.051*** **	**-0.066*** **
	(0.008)	(0.010)
Constant	2.028***	0.599**
	(0.176)	(0.186)
Leader fixed effect	Yes	Yes
Clustering SE by stakeholder Twitter IDs	Yes	Yes
Number of observations	148,101	148,101
R-squared	0.0558	0.0447

Notes. Significance levels include: *** p<0.001, ** p<0.01, *p<0.05, †p<0.1. Standard errors are in parentheses.

Figure 2.1. Average Marginal Effects of Leader Positive Language on Stakeholder Positive Response Over Time

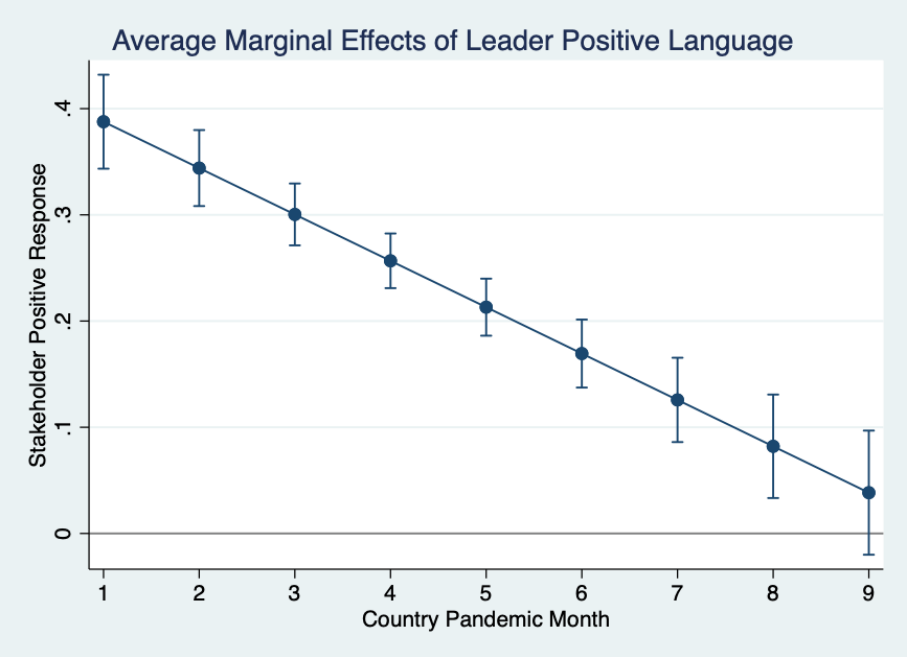


Figure 2.2. Average Marginal Effects of Leader Positive Language on Stakeholder Negative Response Over Time

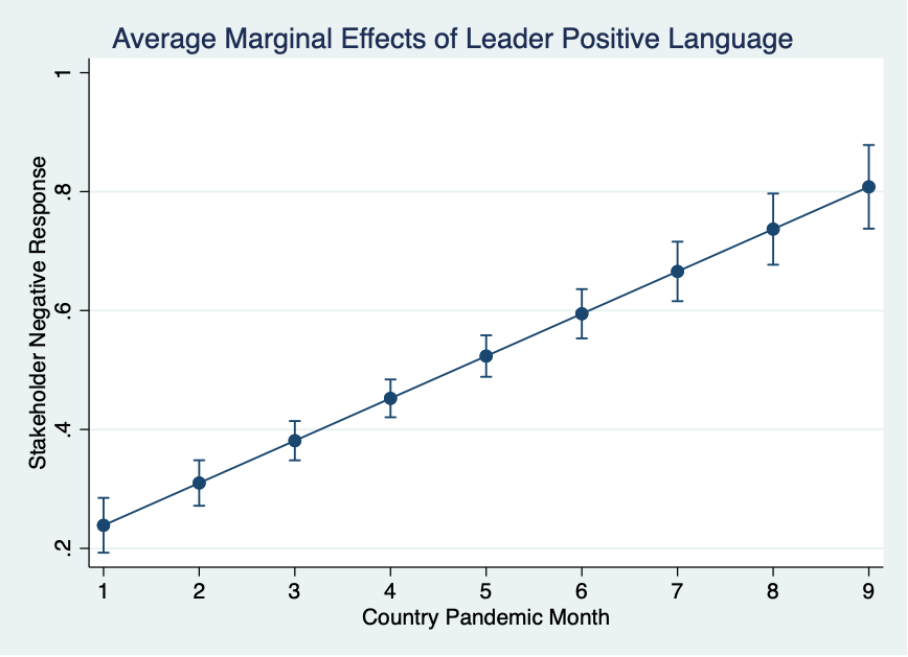


Figure 2.3. Average Marginal Effects of Leader Negative Language on Stakeholder Positive Response Over Time

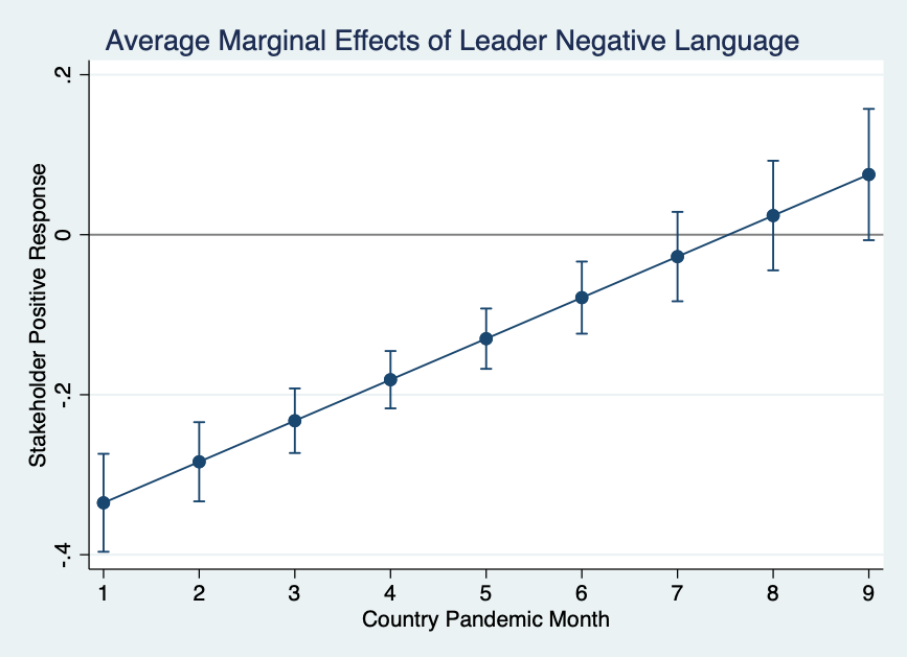
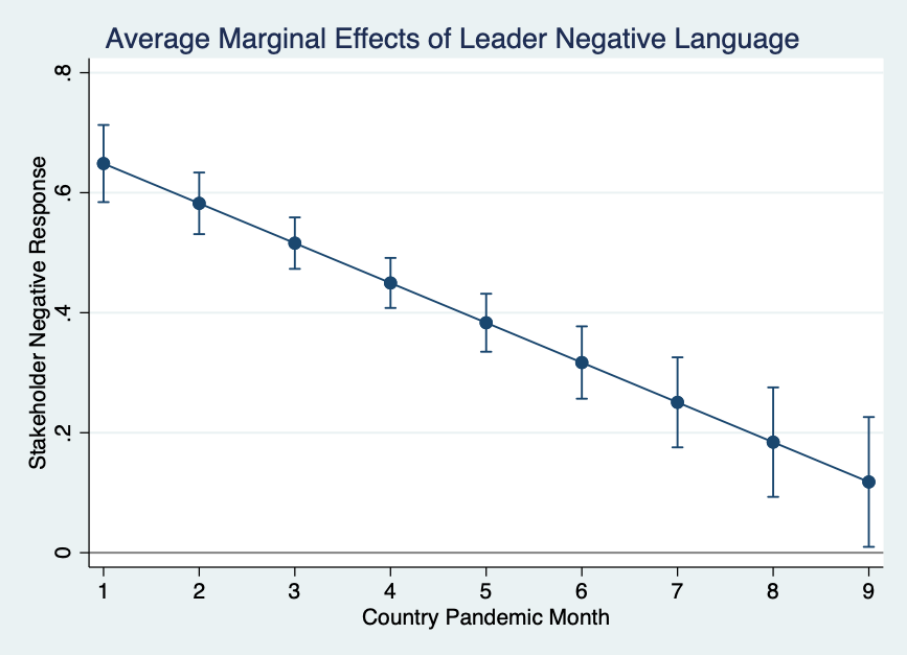


Figure 2.4. Average Marginal Effects of Leader Negative Language on Stakeholder Negative Response Over Time



2.4.3. Qualitative Analyses

Based on our findings from the above analyses, we conducted some follow-up qualitative analyses to gain insights into how stakeholders responded to leaders' communication in terms of their *actual* use of words and phrases. Below we show the examples of stakeholders' reactions to leaders' negative language over time. Specifically, we selected leaders' relatively early (between March and May 2020) and relatively late (between July and October 2020) communications during the pandemic and sorted their communication by the percentage of negative words in each daily communication. We then compared stakeholders' reactions to those communications, and explored how consistent our theoretical arguments are with what the data revealed.

In general, the negative messages leaders delivered throughout the COVID-19 crisis shared the same topic: telling the public that cases are rising, and that people should stay at home, which will hurt the country's economic growth. For example, New Zealand Prime Minister Jacinda Ardern told her people in the first two weeks of April 2020 that lockdown is essential for slowing the spread of the decease ("*The main message remains stay home to save lives. It remains the most effective way to break the chain of transmission*"). Canada Prime Minister Justin Trudeau admitted the negative impact the lockdown would have on people's work and life in his speeches in early May 2020 ("*Right now, Canadians are hurting because of this pandemic… some sectors have been hit especially hard*"). Stakeholders reacted negatively to those negative information, as shown below:

Stakeholder responses to Ardern (April 16th, 2020). "*Ardern's not surprised about the alarming economic impact… NZ will lose the ability to pay its bills…*", "*She…[ruined] the New Zealand economy and [took] away my rights.*"

Stakeholder responses to Trudeau (May 11th, 2020). "*Trudeau's coronavirus lockdown is destroying Canada: let us work!*", "*This is the problem when we have a leader like Trudeau. He would love to lock us down for a year…*", ""*@justintrudeau do not blame covid…the blame lies on you for unemploying millions.*"

Unfortunately, leaders had to deliver the same bad news as the pandemic wore on. For example, Jacinda Ardern had to announce another lockdown in Auckland after the government spotted new coronavirus cases in August 2020 ("…*we have not yet been able to determine the source of the case…we are asking people in Auckland to stay home to stop the spread*"). Similarly, Justin Trudeau had to communicate similar messages to his people in October 2020 when Canada saw record cases of COVID-19 ("*Canada is now in the second wave of this pandemic… people's lives are at stake…sadly, that's the reality*"). Yet, this time, people's reactions to their communications became more positive than those in April and May:

Stakeholder responses to Ardern (August 11th, 2020). "*I don't like some of what Jacinda has done, but she had been right*", "*Let New Zealand show everyone else a masterclass on how to decisively handle #coronavirus #covid__19, with great care and attention to each person*", "*New Zealand reports first local covid-19 transmission in 102 days but shut down the city immediately. The world needs decision-makers not #misinformation*".

Stakeholder responses to Trudeau (October 27th, 2020). "*This pandemic does suck…I appreciate @justintrudeau for his sincerity and truth*", "*Love [his] straight up honesty*.", "*This is how a leader addresses his country: being honest, asking us to work together, and having hope for our future.*"

As shown in the above examples, stakeholders reacted to leaders' negative language in contrasting ways in different phases of the pandemic. In the beginning, their reactions showed

fear and anger, where they were resentful of the lockdown policies that took away their freedom and made them unemployed. In later phases of the pandemic, however, leaders' negative language gave them the impression that the leaders were being right, decisive, sincere, and honest. We believe this is quite consistent with our theoretical arguments: when people are first exposed to stimuli of a negative event, they react strongly and negatively to the stimuli, but as time goes by, they get familiar with and adapt to the stimuli and even come to be able to process them in a positive light. In later stages of the pandemic, leaders' negative language was consistent with their expectations and evaluations of the crisis situations – they admitted that the leader "had been right", and they appreciated that the leader was being sincere and honest, and telling the truth.

2.5. Discussion

2.5.1. Contributions and Implications

How do leaders communicate with their stakeholders in a prolonged crisis? To make their stakeholders be on their side over time, should leaders use positive language to boost the morale, or should they use negative language to communicate the uncomfortable truth? Documenting leaders' communication during the COVID-19 pandemic as well as stakeholders' social media reactions to those communications, we show stakeholders' responses to leaders' positive and negative language depended on points in time, i.e., number of months into the coronavirus crisis. People react to leaders' positive language less and less positively, and more and more negatively, over time. On the contrary, stakeholders react to leaders' negative language less and less negatively, and more and more positively, as the prolonged pandemic persists.

Our research enhances the field's current understanding of crisis leadership by addressing the relatively unattended area of process view of crisis leadership. Essentially, recent reviews on crisis leadership calls for more investigation into "the emotion management process through which leaders can mitigate the negative emotions and restore the positive emotions of stakeholders during crises" (Wu et al., 2021, p. 16) and "the real-time discourse and information exchange that occurs between an organization and its stakeholders as they make sense of a crisis" (Bundy et al., 2017, p. 1682). Our study responds to their calls. While prior research mostly focused on short and acute crises and leaders' one-time and universally applicable communication strategy (e.g., Bligh et al., 2004; Schoofs & Claeys, 2021), we provide empirical evidence of the changing and evolving leader-stakeholder relationship by monitoring leaders' communication and stakeholders' responses throughout eight months in the global coronavirus pandemic. We highlight the leadership implications for crisis management, especially in prolonged crises, where there may not be a universally effective communication tactic over time.

Second, and relatedly, we contribute to leadership research by showing how and when leaders' positive and negative language elicit favorable stakeholder reactions. While prior literature generally considers negative communication less favorable than positive ones (Gaddis et al., 2004; Lewis, 2000; Soroka, 2006), we highlight the moderating role of communication context in which negative language can elicit positive responses, and that positive language can result in backlash. Depending on the development of a prolonged crisis, i.e., the amount of time passed by, stakeholders may have affective adaptions to leaders' positive and negative language (reactions weaken over time), as well as evolving cognitive capacities that allow them to make sense of the positive and negative language in a different way (reactions flip over time). Positive language in later phases of a chronic crisis can be perceived negatively, as it violates

stakeholders' expectations and makes stakeholders become doubtful about whether the leader is telling the truth. Negative language, on the other hand, may increasingly meet stakeholders' expectations of the crisis environment and signal leaders' intent to be honest, resulting in more stakeholders' positive response over time. A key practical implication is that leaders should pay attention to the changing psychological needs of their stakeholders and adjust communication strategies accordingly. Leaders may want to use relatively more positive language in the beginning in a prolonged crisis, and as the crisis goes on, shift to use more negative language.

The study also makes methodological contributions. To our knowledge, we are among one of the first to draw correlations between leaders' and stakeholder's real-time communication, providing important insights into the mutual-influencing process of leader-stakeholder relationship in the digital era (Avolio et al., 2014) and during the unprecedented global coronavirus pandemic. Prior research on leader communication during crisis largely focused only on the leaders (Beelitz & Merkl-Davies, 2012; D'Aveni & MacMillan, 1990; Medeiros et al., 2022; Montiel et al., 2021; Patelli & Pedrini, 2014), and if stakeholders were ever addressed, researchers used questionnaire-based approval ratings (Bastardoz, Monney, Tur, & Antonakis, 2018; Bligh et al., 2004; Davis & Gardner, 2012), or via survey responses in laboratory studies (Madera & Smith, 2009; Stam et al., 2018). We not only further the studies which relied on questionnaire-based measures by using stakeholders' real-time tweets (Guntuku et al., 2020), but also, we show how those tweets shaped leadership performance in the instant, dyadic, and interactive leader-stakeholder relationship.

2.5.2. Boundary Conditions, Limitations, and Next Steps

There are several potential boundary conditions of our findings. First, we were exploring leader-stakeholder relationship in a political setting, and not a traditional organization, whereby

employees are not able to vote out their employers as constituents do to their heads of governments in democratic states. However, we highlight the importance that both organizational and national leaders ought to communicate with their stakeholders to seek approval in order to increase the viability of the collectives. Our findings thus do provide generalizable organizational insights. Second, COVID-19 pandemic is a chronic sanitary crisis, which is different from a swiftly changing crisis that can usually be resolved quickly (e.g., natural disasters or terrorist attacks). It is thus possible that leader communication functions differently in different types of crises. Nevertheless, we do not think this potential boundary condition should prevent us from drawing insights into how leaders can communicate in a highly uncertain and negative event. For example, how can managers communicate to their employees when there is an expected acquisition deal or in an ongoing financial crisis that could lead to massive layoffs? How can CEOs communicate with their stakeholders during times of recession? How can political leaders communicate with their constituents in global climate crises, and even wars? We hope our findings can help leaders develop more convincing communication tactics during times of uncertainty and turbulence.

A major limitation of the study is endogeneity. That is, although we matched the chronologically proximal leader communication and stakeholder tweets and controlled for stakeholder- and leader-level covariates, without a natural environmental shock, we still cannot claim causality between leader communication and stakeholder response. In other words, it is difficult for us to argue that stakeholder responses were affected *solely* by leaders' communication and not other factors, such as their existing opinions on their leaders or their political party affiliation. Also, although we conducted follow-up qualitative analyses of leaders' speeches and stakeholders' tweets, we did not properly test the *mechanisms* through which

leaders' negative communication drive contrasting stakeholder reactions. To address this limitation, we plan to carry out laboratory studies which will allow us to make causal claims. For example, we can test the potential mediating effect of stakeholders' perceived leader honesty and authenticity (e.g., Walumbwa, Avolio, Gardner, Wernsing, & Peterson, 2007) on the relationship between leaders' negative communication and stakeholder responses in different phases of a crisis. Such carefully designed laboratory study will help us clarify and gain insights into how leaders' positive and negative communication drive stakeholder responses.

2.6. Conclusion

The COVID-19 pandemic has had an unprecedented, devastating, and long-lasting impact on global society. The need for self-isolation to fight the coronavirus made leader-stakeholder relationships in digital environments more critical than ever. In this paper, we provide insights into how leaders' communication affect stakeholders' real-time responses over time throughout the prolonged coronavirus crisis. We hope our findings will help current and future leaders become more compelling communicators in the digital era and better able to guide their stakeholders through turbulence and uncertainty.

Essay III. How Leaders Build Relationships in High-Stakes Conversations *(with Professor Michael Yeomans)*

3.1. Introduction

Scholars in strategic leadership have long been studying how organizational leaders deliver information and respond to questions in highly scrutinized corporate settings, such as shareholder meetings, investor meetings, and earnings conference calls (e.g., Hollander et al., 2010; Kanze, Huang, Conley, & Higgins, 2018; Larcker & Zakolyukina, 2012). One of the most obvious characteristics of these corporate settings is information asymmetry between question askers and answerers, whereby question answerers (C-suite executives) have private information about the company's performance, and question askers (analysts, investors, or reporters) try to extract that information. A typical assumption scholars in this group of work make is that the question askers' evaluation of the question answerers is predominantly shaped by the extent to which their questions are answered (Barth, Mansouri, & Wöbbeking, 2022; Gow, Larcker, & Zakolyukina, 2021). In other words, executives face a trade-off between 1) truthfully disclosing the information and satisfying the question askers' needs (while potentially harming the company by sharing sensitive information and even bad news) and 2) not (fully) disclosing the information through obfuscation and question dodging (Bushee, Gow, & Taylor, 2017; Rogers & Norton, 2011), risking dissatisfying the question askers and receiving lower evaluation (e.g., performance rating, stock recommendations).

We aim to challenge this assumption and propose relationship-building answering strategies that can help leaders engage in high-stakes conversations more effectively. We do so by drawing on the framework of conversational circumplex, whereby individuals leverage informational and relational goals in conversations (Yeomans, Schweitzer, & Brooks, 2022). While the realization of informational goals depends on the level of accuracy of the information exchanged between individuals (e.g., telling the truth versus lying), the pursuit of relational goals

involves the extent to which individuals seek to build relationships with one another (e.g., admitting mistakes versus blaming). Prior research has focused primarily on the informational dimension, i.e., whether leaders provide accurate information for question askers, and paid scant attention to the relational dimension, i.e., whether leaders seek to build relationships with those askers. In this paper, we investigate this relatively overlooked dimension and explore how relationship-building reflects in leaders' verbal strategies. Essentially, we ask: can leaders use relationship-building answering strategies to satisfy the question askers' needs? Will those answers be evaluated positively by the question askers?

Our early work analyzes 338,832 pairs of question-and-answer turns between executives and analysts during the Q&A sessions in 14,629 quarterly earnings calls from 1,596 firms listed in the New York Stock Exchange between 2010 and 2013. We investigate how executives answer analysts' questions and how analysts react to their answers Specifically, we use whether an answer turn led to a follow-up question by the same analyst as the proxy for whether executive(s)' answer is satisfying to that analyst (Barth et al., 2022). We first conducted qualitative analyses to identify potential relationship-building answering strategies, whereby leaders made compliments (e.g., "*that's a great question*"), expressed gratitude (e.g., "*I appreciate the question*"), admitted unknown (e.g., saying "*I don't know*" instead of providing a non-answer), and admitted unwillingness to answer the question (e.g., saying "*I would rather not comment on that*" instead of dodging the question). Next, quantitative analyses added question-level covariates (e.g., question sentiment), answer-level covariates (e.g., non-answer), and firm-quarter level covariates (e.g., sales performance). Results suggest that executives' expression of gratitude is associated with lower probabilities of receiving a follow-up question.

These findings offer insights into strategic leadership and conversation research. Importantly, we highlight leaders' discretion in leveraging their relational goals in difficult communications. In addition to the choice between giving and not giving information, or between giving more and less accurate information, leaders can also seek to build relationships with question askers by expressing gratitude. We show that controlling for leaders' informational motive, i.e., the extent to which leaders provide accurate information instead of non-answers (Barth et al., 2022; Gow et al., 2021), leaders' relationship-building strategies, especially gratitude expression, are effective in satisfying the question askers' needs. Note that we are not encouraging leaders to pursue relational goals at the expense of providing accurate information. Indeed, in order to communicate effectively in high-stakes conversations, a leader should harness both informational and relational motives in her verbal strategies. While scholars in existing research assume that leaders only move along and are constrained by the informational space, our study shows that they can also make use of the relational space strategically.

3.2. Theory Development and Research Question

3.2.1. High-Stakes Conversations

A key research domain in strategic leadership is regarding how organizational leaders, especially C-suite executives like Chief Executive Officers (CEOs) and top management team members, engage in high-stakes conversations with their stakeholders in highly scrutinized corporate settings, such as shareholder meetings, investor meetings, and earnings conference calls (Bochkay, Hales, & Chava, 2020; Brochet, Kolev, & Lerman, 2018; Gow et al., 2021; Kanze et al., 2018; Larcker & Zakolyukina, 2012; Lee, 2016). The conversations are of high stakes in that executives typically have private information about the company (e.g., financial

performance, business strategies and forecasts), and their stakeholders (analysts, investors, reporters) try to extract that information by asking questions. In these conversations, question askers' and answers' opinions may differ as they have contrasting and even conflicting objectives: withholding versus obtaining information. Ultimately, stakeholders evaluate the executives and their firms, driving consequential organizational and leadership outcomes, including leadership retention (Hersel, Gangloff, & Shropshire, 2022; Park, Chung, & Rajagopalan, 2021; Shin & You, 2020), executive compensation (Nair et al., 2021), investment decisions (Sanchez-Ruiz, Wood, & Long-Ruboyianes, 2021), stock recommendations (Fanelli et al., 2009), and performance (Fabrizio & Kim, 2019; Ormiston et al., 2021; Scoresby, Withers, & Ireland, 2021).

How do organizational leaders deliver information and respond to questions in these high-stakes conversations, and how are they evaluated by question askers? A typical assumption scholars in this group of work make is that the question askers' evaluation of the question answerers is predominantly shaped by the extent to which their questions are answered (Barth et al., 2022; Gow et al., 2021). They assume that executives face a trade-off between two choices. First, executives may choose to disclose the information truthfully and satisfy the question askers' needs, while in doing so they may potentially harm the organization by sharing sensitive and confidential information and even bad news. Second, executives may choose not to (fully) disclose the requested information. Prior research has shown that executives may try to deceive (Larcker & Zakolyukina, 2012) and obfuscate (Bushee et al., 2017; Fabrizio & Kim, 2019) the question askers, or provide non-answers (Barth et al., 2022; Gow et al., 2021). This choice, however, often leads to lower evaluations of the question askers (Hollander et al., 2010). In other

words, scholars assume that leaders are inevitably constrained by the information they can and cannot provide in high-stakes conversations.

3.2.2. Informational Versus Relational Goals in Conversations

According to the framework of conversational circumplex, individuals leverage informational and relational goals in conversations (Yeomans et al., 2022). While the realization of informational goals depends on the level of accuracy of the information exchanged between individuals (e.g., providing information versus staying quiet, telling the truth versus lying), the pursuit of relational goals involves the extent to which individuals seek to build relationships with one another (e.g., admitting mistakes versus blaming, flattering versus claiming credit (Yeomans et al., 2022, p. 294). Drawing on this framework, we challenge the prior assumption that leaders' communication effectiveness depends solely on their pursuit of informational goals. Instead, we argue that leaders can engage in high-stakes conversations more effectively by pursuing relational goals.

Current research focused disproportionately on leaders' informational motives in highly scrutinized corporate communications. For example, scholars investigate executives' choice between giving (disclosing news) and not giving information (remaining silent) and found that stakeholders interpreted no news as bad news (Hollander et al., 2010). They also examine how executives use verbal strategies to deliver more or less accurate information, such as complex versus simple language (Bushee et al., 2017; Guo et al., 2020), vague versus clear language (Guo et al., 2017), deceptive versus truthful language (Crilly et al., 2016; Larcker & Zakolyukina, 2012), and answers versus non-answers (Barth et al., 2022; Gow et al., 2021). General findings suggest that the delivery of less accurate information is associated with more negative organizational evaluations.

Scholarly attention to leaders' relational motives in high-stakes conversations has still been scant in strategy literature. As one of the few examples, a study reports a mixed relationship between entrepreneurs' use of ingratiation rhetoric (e.g., language containing flattery and self-deprecation) and funding amount (Sanchez-Ruiz et al., 2021). Other research domains, such as organizational behavior, suggests that leaders can express hope and optimism (Norman et al., 2010), or show care to employees (Gittell et al., 2006), to gain follower trust and produce more resilient organizational performance. In addition, psychology scholars argue that individuals should pursue benevolence (e.g., be kind) and honesty (e.g., be authentic) in difficult conversations (Levine et al., 2020). We thus aim to speak to strategy research by examining executives' relationship-building behaviors in corporate dyadic conversational settings. In particular, we are curious about whether executives can leverage their relational motives to build and improve relationships with their conversational counterparts, and how they do it with verbal behaviors, stated as follows:

Research Question. *When answering questions in high-stakes conversations, can executives engage in relationship-building verbal strategies and be evaluated positively by their question askers?*

3.3. Methods

3.3.1. Empirical Setting: Q&As in Earnings Conference Calls

Following prior studies in strategy literature, we used public firms' quarterly earnings conference calls as our empirical setting (e.g., Chen et al., 2018; DesJardine & Shi, 2021; Frankel, Jennings, & Lee, 2017). An earnings conference call is a formal corporate meeting between top executives of a public company and their stakeholders, including analysts and

investors, which typically take place at the end of a quarter in a fiscal year. A call consists of two sections: the "speech" section, whereby CEOs and top executives give prepared remarks about the firm's summary information on financial performance, and the "questions and answers (Q&A)" section, whereby analysts ask questions to executives, and executives answer to those questions.

The Q&A section in conference calls is an ideal setting for answering our research question for at least two reasons. First, since the speech section allows executives to provide information (i.e., pursuing informational goals), we can reasonably assume that executives have the discretion to leverage their relational motives during the Q&A section. Second, and relatedly, the Q&As are iterative interactions between executives and analysts, which offer us opportunities to observe their social interactions and how they build relationships with one another. How executives provide information in the speech section can affect how analysts ask questions in the Q&A section, and how analysts ask questions then affects how executives answer them, which will in turn affect analysts' reactions to those answers… and so on. By analyzing their question-and-answer turns, we can document their verbal strategies of delivering and responding to information.

3.3.2. Data and Sample

We collected transcripts of earnings conference calls from Capital IQ Transcripts, which provides historical conference call transcripts of public companies around the world. We retrieved call transcripts from firms listed in New York Stock Exchange between 2010 and 2013. Our sample consists of 14,629 conference calls from 1,596 firms.

We used the Q&A sections of the calls and analyzed the conversations between executives and analysts. Specifically, we analyzed how executives answered to each analyst's

questions, which can be answered by one or more than one executive. Typically, after executive(s) answer a question, either thing can happen: 1) the same analyst asks another question, i.e., a follow-up question to the focal question, or 2) the same analyst does not ask another question, and another analyst will in turn ask the next (his or her first) question. Within our dataset, there are on average 9 askers (analysts) and 32 questions per call, and each asker asks 5 questions per call, suggesting that receiving an analyst's follow-up questions is quite common. Figure 3.1 depicts the distribution of number of questions per asker. It shows that less than one-fourth of askers asked only one question, and over 75% of them asked follow-up questions.

We use whether the same analyst asks a follow-up question as a proxy of analysts' satisfaction of the focal answer (which we will elaborate on in the next subsection). We first removed the last pair of question and answer in each call, because the absence of a follow-up question in the last pair of Q&A is irrelevant to executives' answers. Typically, executives answered the last question and concluded (e.g., "thank you for joining us today", "thank you and we look forward to seeing you next quarter"), and then everyone left the call. We then excluded the questions less than ten words as they generally cannot form meaningful question sentences (e.g., "Hello", "Good morning", "Hi guys", "Congratulations, Tammy"). After excluding the last pair of questions and answers, as well as those extremely short questions, our dataset consists of 338,832 pairs of questions and answers.

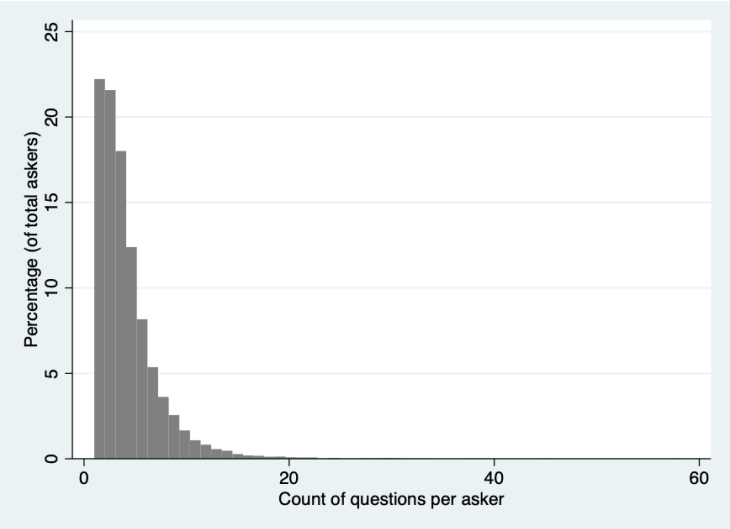
3.3.3. Empirical Strategy: Qualitative and Quantitative Approaches

We first selected a small proportion of the dataset and conducted qualitative analyses with analysts' first questions and executives' first answers, i.e., the *first* pair of each analyst's question and executive(s)' answer. We tried to explore the sentences, phrases, and words that

signal executives' relational motives which can potentially constitute a relationship-building answering strategy. To determine whether executives' first answers are received positively, we compared the first answers that led to a second question by the same analyst with those that did not. We think it is reasonable to assume that if an analyst asks a second (i.e., follow-up) question, s/he is not entirely satisfied with the first answer, whereas if the analyst does not ask a follow-up question, s/he is satisfied with the information provided in the first answer. This approach has also been used in existing research to measure analysts' reactions to non-answers (Barth et al., 2022).

We read and manually coded 100 first answers that led to follow-up questions and 100 first answers that did not lead to follow-up questions. This qualitative analysis helped us explore how questions are asked and answered, factors that can affect how a question is asked, as well as the linguistic cues (words, phrases, sentences) underlying the first answers that potentially trigger or does not trigger a follow-up question. Based on the findings from the qualitative analyses (elaborated in section 3.4), we then developed empirical models and conducted quantitative analyses with the full dataset (elaborated in section 3.5).

Figure 3.1. Count of Questions Per Asker, in Percentage



3.4. Qualitative Analyses

Upon reading the first answers that did *not* lead to follow-up questions, we noticed two broad linguistic characteristics which we posited revealed executives' relationship-building intentions: 1) signals of benevolence and 2) signals of honesty. While the first characteristic suggests executives' goodwill and motivation of kindness towards the analyst and the question, the second characteristic shows the executives' willingness to be truthful. We argue that both communicative features (compared to the first answers without those features) can be helpful in enhancing the relationship between question askers and answerers, making the question askers more satisfied with the answer and less inclined to ask a follow-up question. We provide examples below to illustrate how the two features are reflected in executives' verbal behaviors.

3.4.1. Answering Strategies Signaling Benevolence

Making compliments. Executives show their benevolence by complimenting the question as well as the question asker. Below is an example of an executive praising the analyst's question:

Analyst: "Maybe you can talk a little bit about strategy on [][8]*... because if the theory is correct, then it's a very slow recovery. How do you look at trying to remix that business bringing back the higher end customer…?"*

*Executive: "**Good question, really to the heart of the matter**. If we have a rather cold-blooded look at the near future, the question is, what do you do then? And once again, here is the oldest story in the book when it comes to our company…"*

[8] Names of firms, brands, products, and market locations are masked.

The relationship-building intention is also reflected in how executives and analysts addressed each other's names. In the following example, the executive answered the question by praising the question and mentioning the analyst's name simultaneously.

Analyst: "Ron, I think you mentioned that the [] spend in 1q would be down compared to last year. I know last year was pretty high. but in the context of still a tough new move in environment, how do you think about the [] spend? And maybe why not consider being more aggressive given the demand conditions you described?"

*Executive: "**That's a good question, Michael. really,** the swing in the [] spend Q1 '09 to Q1 this year is []. We spent I want to say about $3 million in [] last year as a test…And so we dropped -- the big swing year-over-year is we've moved out of [] this year. We've also…"*

Expressing gratitude. We documented another verbal strategy to show benevolence: extending appreciation for question askers as well as their questions. In the example below, the executive thanked the analyst but did not provide the requested information. However, the analyst did not ask a follow-up question.

Analyst: "Art, I'm wondering if you might be willing to give us a little peek into f 2011 at this point…Obviously, there's a lot of chit-chat at [] last week from the other companies, so maybe you could put yourself in perspective relative to what you see here or to everybody else is?"

*Executive: "Yes. Vincent, **I appreciate the question**... The reality is that we're still 2.5 months away from the end of the fiscal year. We're consolidating and locking down our plans, talking to the board about it et cetera. So probably won't give you a much sense for that. …what I would say is that we're working through the plans and we'll tell you more later…"*

The expression of gratitude can also signal the executives' humility. The following example shows that the executive was grateful for having the opportunity to provide his/her point of views thanks to the analyst's question.

Analyst: "I was wondering if you could talk for a minute about the [] potential and… any comments on what kind of companies are most interested in getting into the []? What do you see as a potential to, given your comments about the [] on the wells and the production rates to do better than, say, the midpoint of the guidance next year?"

Executive: "Well, ***thank you for giving me possible points that I could comment on.*** *but as I said, during the next week, we anticipate retaining a specific investment advisor to work with us in exploring the issues, some of which you mentioned. And I think everybody should look for a fuller statement on it shortly."*

3.4.2. Answering Strategies Signaling Honesty

Admitting unknown. We noticed that executives not receiving follow-up questions typically admit that they do not have the answers to the analyst's question in an explicit way. Although admitting something they don't know can indicate incompetence or weaknesses, the executives do not dodge the question. We believe this signals the executives' motives to be honest and truthful, as shown below:

Analyst: "Quick question about the []. We'd heard that you made the decision to stop selling [] inventory through the exchange, which I believe you've been doing for the last year or so. and I'm just curious what impact that may have on your business and if it's in the 240 million impact on the [] initiatives."

*Executive: "****Honestly, I don't know anything about that decision, not to my knowledge have we made that decision.*** *It's certainly not part of the $240 million. The exchange is, it's an open exchange...So it's a great, very-viable exchange, so what you're hearing about [] or any meaningful -- any change at all with regard to how we handle [] is incorrect."*

Executives can also signal honesty by aligning their knowledge level with that of the analyst:

Analyst: "A quick question regarding [], if they're ever visiting what was mentioned before regarding the increase in gas sales, what do you know about it? I mean, is that something

that you have heard down there in the ground? And then how do you see then, basically the situation on there?...."

*Executive: "Jose, this is John**. I think we probably know about as much as you do,** as far as what's been in the headlines. And I think in general **that's the extent of our knowledge**, and I do think that there will continue to be opportunities [] in the country…**But I don't know a whole lot about the details right now**…"*

Admitting unwillingness. Executives sometimes decline to provide information, which we believe is a costly answering strategy that can risk dissatisfying the analyst and signal honesty simultaneously. Typically, they communicate clearly what they can and cannot disclose. In the following example, the executive does not want to provide the requested information, but s/he specifies a time when the information should be available:

Analyst: "I was hoping to get a little more color on the []. Just any updates that you can share with things maybe you're learning and are you attracting a different customer? And maybe a higher end customer and just any more color or just to update the current projection."

*Executive: "I want to start up by saying this is very early on. What we do know is that… although I will tell you, we have spent time, effort and money to find out if that's really true or not in a way of a study… and those results are being presented to us in the next week. **So I don't want to guesstimate what those results are going to say. But I'd be more than happy to share them publicly when we find out what it says.**"*

In addition to expressing the unwillingness to provide requested information during the call, executives make it clear that if s/he were to provide an immediate answer, the answer would not be factual anyways, as shown in the example below:

Analyst: "You mentioned that you've experienced positive organic growth throughout all geographies. Can you give us a little more -- a numeric example as to what that organic growth was in each case?"

Executive: "…as we've mentioned, ***we don't ordinarily provide*** *the organic growth rates on the call by segment…Let's leave it today just to say you see a little bit of kind of quarterly oscillation between [] and [] bouncing around the company averages with some of this one-time stuff kind of tell them the story on the trends there. And you'll see [] continuing to be the higher growth performer, something approaching 20% organic for the year.* ***So without a handy number in hand, I don't want to throw something out that's not going to be factual.****"*

3.5. Quantitative Analyses

Drawing on the findings of our qualitative analysis, we wondered if our intuition for the answering strategies from the reading of 200 first answers would apply to the rest of the dataset. We then conducted quantitative analyses to investigate how the four answering strategies, "making compliments", "expressing gratitude", "admitting unknown", and "admitting unwillingness" affect the presence of follow-up questions.

3.5.1. Measures

Dependent variable. The outcome variable, *follow-up question*, is a dummy variable, which receives a value of 1 if an answer (i.e., the focal answer) leads to a follow-up question from the same analyst and receives a value of 0 if an answer does not lead to a follow-up question. We assume that not receiving a follow-up question, compared to receiving one, is a more desirable outcome, which suggests that the analyst is satisfied with the focal answer.

Independent variables. The explanatory variables are the four answering strategies we identified from the qualitative analyses. Specifically, we used certain keywords and phrases that can potentially constitute an answering strategy to perform string search in each answer. We looked for *making compliments* by using the following keywords: "good question", "great question", "excellent question", "favorite question" and "right question"; we located *expressing gratitude* by using the keywords of "thank you", "thanks", "I appreciate", "we appreciate",

"gratitude", and "grateful"; *admitting unknown* is identified with the keywords of "I don't know", "we don't know", "I do not know", "we do not know", "I can't tell", "we can't tell", "I can't provide", and "we can't provide"; we identified *admitting unwillingness* using the keywords of "I don't know", "we don't know", "I do not know", "we do not know", "I can't tell", "we can't tell", "I can't provide", and "we can't provide". The string search gave us the count of those keywords and phrases in each answer turn – the higher the count of the keywords, the more executive(s) were using a given answering strategy. We can scaled each of the four answering strategies from count variables to continuous variables (with values between 0 and 1).

Control variables. We controlled for 1) question-level covariates, 2) answer-level covariates, and 3) firm-quarter level covariates. For question-level control variables, we included a) *question sentiment (LM score)*, the extent to which a question contains positive sentiment, where we took the difference between positive sentiment words and negative sentiment words from the Loughran and McDonald (2011) ("L&M") finance-oriented dictionaries, scaled (with values between 0 and 1), b) *question sentiment (TR score)*, the extent to which a question contains positive sentiment, which we calculated using Tyler Rinker's Sentimentr packages (Rinker, 2017), scaled (with values between 0 and 1), c) *question length*, count of words in an analyst's question, and d) *sub-questions*, count of question marks in an analyst's question[9]. We include either question sentiment (LM score) or question sentiment (TR score) in each model specification.

For answer-level control variables, we included a) *answerers*, count of answerers (executives) for an analyst's question, b) *answer length*, count of words in executive(s)' answer

[9] A question turn does not always contain a question mark. A question without a question mark can look like this: "I am wondering if you can tell us more about…". The more question marks, the more sub-questions in an analyst's question.

to an analyst's answer (which can consist of multiple answer turns if there are multiple answerers), and c) *Non-Answer*, operationalized as "the occurrence of trigrams from the glossary in all responses of the Q&A session and divide by the total number of word", calculated using the codes from Barth and colleagues (2022, p. 7). The glossary consists of 1,364 trigrams which signal the absence of requested information in answer (e.g., "not_sure_i", "back_to_you", "early_to_tell"), which Barth and colleagues derived using machine-learning method via a large training data in earnings call Q&As. Including non-answers in our model specification allows us to control for the informational dimension of executives' answers, i.e., the extent to which executives are providing accurate information. In other words, holding the level of informational dimension constant, we are able to see how executives' relationship-building verbal strategies are effective in reducing the likelihood of receiving a follow-up question.

Following prior studies using earnings calls data (Chen et al., 2018; Dai, Gong, Jackson, & Peng, 2022; Gow et al., 2021), we controlled for the following financial measures at the firm-quarter level obtained from WRDS (Wharton Research Data Services): a) *total assets*, b) *sales*, c) *market value*, d) *leverage*, e) *market to book ratio*, and f) *SUE (Standardized Unexpected Earnings) score*. [10] Including these variables allows us to control for pre-call firm performance, where each question is tied to the firm's financial performance in a specific quarter in a fiscal year. It is reasonable to assume that pre-call economic environment (e.g., how much revenues is a firm generating, how much is its market value) will affect analysts' questions. For example, a more negative economic environment can lead to analysts' questions containing lower

[10] The existing variables in WRDS dataset include *Total Assets* (ATQ), *Sales*, sales revenue (SALEQ), and *SUE score*. We follow Gow et al (2021, p. 1362) to calculate the other measures. *Market value* is the product of common shares outstanding (CSHOQ) and fiscal-year closing price (PRCCQ_F). *Leverage* is total debt (DD1Q + DLTTQ) divided by total assets (ATQ). *Market-to-book ratio* is the sum of market value and total assets minus book value of equity divided by total assets.

sentiments or more follow-up questions, regardless of executives' answering strategies. It is worth noting that we lost quite a few observations when taking into account these financial measures. Not every earnings call is matched with all the financial measures (e.g., data for total assets is available for 70% of the firm quarters; data for market to book ratio is available for only 30% of the firm quarters). The inclusion of the financial measures made us drop over 80% of the question-and-answer turns from 338,832 turns to 47,609 turns.

Empirical strategy. We conducted logistic regressions by regressing follow-up questions on the four answering strategies, controlling for the covariates. We also controlled for year fixed effect. Standard errors were clustered by individual analyst's IDs so we were able to potentially control for unobserved individual-level differences (e.g., their question asking habits and linguistic styles).

We further restricted our sample in the aim of considering instances when "follow-up questions are at the discretion of the analysts" and that "executives' verbal strategies are used with the analysts, and not among themselves between the multiple answer turns". First, we consider calls with more than four analysts and removed the last three analysts who asked questions close to the end of a call. We assume that the end-of-call analysts will be less inclined to ask follow-up questions due to time constraints. Also, they may not ask follow-up questions because earlier in the call they have acquired the information from the questions asked by other analysts. Or, they have already observed the verbal strategies of the executives, which inform them whether it can be useful to ask a follow-up question in order to acquire desired information. Second, we removed instances when executives asked a question at the end of an answer turn (e.g., clarification of the question or concepts). Here, we assume that the analysts are obliged to speak, which then constitutes a new question turn, but the question turn occurs not necessarily

because the analysts have follow-up questions to ask. Finally, we noticed that when multiple executives changed turns in answering an analyst's question, they thanked each other, whereby the gratitude was not for the analyst. Thus, when there are multiple answer turns and that gratitude ("thanks", "thank you") takes place immediately after executives changed turns, the answer will not be considered as possessing the "*expressing gratitude*" verbal strategy. Our final sample consists of 26,171 question-and-answer turns. For each specification, we did not have homoscedasticity of residuals and multicollinearity issues.

3.5.2. Results

Table 3.1 shows the descriptive statistics of the sample. Table 3.2 reports results for the logistic regressions with only control variables. We used either question sentiment (LM score) or question sentiment (TR score) in a given model and treat them as robustness checks for one another. Model 3a uses LM score and Model 3b uses TR score to measure question sentiment, and the two models yield similar results. For example, question sentiment is negatively associated with the likelihood of getting a follow-up question, that is, the more positive the question, the less likely the analyst is going to ask a follow-up question. Also, both market value and market-to-book ratio are negatively associated with the probability of receiving a follow-up question. This suggests that when the conversational environment is friendly (askers ask questions with positive mood) and that the economic environment is positive (the firm is performing well and has positive market outlook), the analysts are less inclined to ask follow-up questions. Non-answers, on the other hand, are associated with the presence of follow-up questions. This is consistent with prior findings that when executives do not provide accurate information when requested, analysts react to it negatively and ask more follow-up questions (Barth et al., 2022).

Table 3.1. Summary Statistics

	Variable	Mean	Std.	Min.	Max	1	2	3	4	5
1	Follow-up question	0.725	0.446	0	1	-				
2	Making compliments	0.006	0.044	0	1	-0.011*	-			
3	Expressing gratitude	0.002	0.015	0	1	-0.050*	0.038*	-		
4	Admitting unknown	0.008	0.043	0	1	-0.013*	0.020*	0.006*	-	
5	Admitting unwillingness	0.008	0.039	0	1	-0.023*	0.017*	0.019*	0.102*	-
6	Question sentiment (LM score)	0.495	0.043	0	1	-0.020*	-0.004*	-0.019*	-0.007*	-0.009*
7	Question sentiment (TR score)	0.566	0.046	0	0.988	0.048*	-0.004*	-0.011*	-0.007*	-0.008*
8	Question length	54.430	33.620	11	1703	-0.045*	0.072*	0.120*	0.051*	0.074*
9	Sub-questions	1.417	0.909	0	14	-0.036*	0.037*	0.052*	0.026*	0.040*
10	Answerers	1.186	0.426	1	8	-0.083*	0.012*	0.117*	0.063*	0.039*
11	Answer length	129.061	126.133	1	7,848	0.125*	0.108*	0.169*	0.128*	0.152*
12	Non-Answer	0.901	0.023	-0.303	1.279	-0.021*	0.026*	0.053*	0.133*	0.081*
13	Total assets	31052.3	151999.8	46.671	2372307	0.001	0.002	0.006*	0.013*	0.017*
14	Sales	2612.154	7405.549	-1933.496	112781	-0.041*	0.012*	0.027*	0.006*	0.010*
15	Market value	11362.95	28058.95	34.686	438702	-0.059*	0.016*	0.052*	0.011*	0.014*
16	Leverage	0.256	0.238	0	3.705	0.006	-0.003	-0.026*	0.004	-0.004
17	Market to book ratio	1.537	1.266	0.037	19.463	-0.075*	0.015*	0.031*	0.002	0.002
18	SUE score	1.608	27.870	-101.677	1541.883	-0.0002	-0.003	-0.002	0.0007	0.003

Notes. * designates significance at $p<0.05$.

Table 3.1. Summary Statistics (Continued)

	Variable	6	7	8	9	10	11	12	13	14
6	Question sentiment (LM score)	-								
7	Question sentiment (TR score)	0.758*	-							
8	Question length	-0.092*	-0.048*	-						
9	Sub-questions	-0.044*	-0.024*	0.388*	-					
10	Answerers	-0.032*	-0.020*	0.131*	0.082*	-				
11	Answer length	-0.027*	-0.014*	0.442*	0.230*	0.346*	-			
12	Non-Answer	-0.001	0.002	0.075*	0.049*	0.118*	0.168*	-		
13	Total assets	-0.026*	-0.025*	0.027*	-0.012*	-0.003	-0.005*	-0.045*	-	
14	Sales	-0.021*	-0.019*	0.064*	0.013*	0.045*	0.035*	0.005*	0.384*	-
15	Market value	-0.026*	-0.023*	0.078*	0.023*	0.046*	0.049*	0.004*	0.497*	0.795*
16	Leverage	0.009*	0.005	-0.012*	-0.007*	-0.014*	-0.012*	0.001	-0.058*	-0.083*
17	Market to book ratio	0.018*	0.015*	0.042*	0.049*	-0.012*	0.047*	0.031*	-0.139*	-0.138*
18	SUE score	0.007*	0.005*	-0.007*	-0.005	0.004	-0.002	-0.002	0.004	-0.007*

	Variable	15	16	17	18
15	Market value	-			
16	Leverage	-0.071*	-		
17	Market to book ratio	0.023*	0.117*	-	
18	SUE score	-0.0004	-0.069*	0.060*	-

Notes. * designates significance at $p<0.05$.

Table 3.2. Likelihood of Getting a Follow-Up Question

	Model 3a Follow-up question *Controls*	Model 3b Follow-up question *Controls*
Question-level controls		
Question sentiment	-2.030***	
(LM score)	(0.325)	-
Question sentiment		-3.667***
(TR score)	-	(0.317)
Question length	0.002**	0.002**
	(0.001)	(0.001)
Sub-questions	-0.028†	-0.029†
	(0.016)	(0.016)
Answer-level controls		
Answerers	-0.108**	-0.111**
	(0.032)	(0.326)
Answer length	-0.002***	-0.002***
	(0.0001)	(0.0001)
Non-Answer	1.452*	1.419*
	(0.606)	(0.607)
Firm-quarter level controls		
Total assets	-2.220	-2.780
	(2.420)	(2.400)
Sales	2.200	2.310
	(3.410)	(3.480)
Market value	-9.470***	-9.590***
	(1.280)	(1.290)
Leverage	0.176†	0.181†
	(0.090)	(0.090)
Market to book ratio	-0.114***	-0.114***
	(0.012)	(0.012)
SUE score	-0.002	-0.001
	(0.003)	(0.003)
Answering strategies		
Making compliments	-	-
Expressing gratitude	-	-
Admitting unknown	-	-
Admitting unwillingness	-	-
Constant	1.186†	2.302***
	(0.587)	(0.595)
Year fixed effect	Yes	Yes
Clustering SE by asker IDs	Yes	Yes
Number of observations	26,171	26,171
R-squared	0.0235	0.0270

Notes. Significance levels include: *** p<0.001, ** p<0.01, *p<0.05, †p<0.1. Standard errors are in parentheses.

Table 3.3 reports results for the logistic regressions adding the four answering strategies, *making compliments*, *expressing gratitude*, *admitting unknown*, and *admitting unwillingness*. Controlling for question-level, answer-level, and firm-quarter level covariates, Model 3c shows that only the answering strategy *expressing gratitude* is associated with lower likelihood of receiving a follow-up question. For every 1% increase in expressing gratitude in an answer, there is a 1.978 decrease in the log-odds of receiving a follow-up question. The effects for the other three answering strategies are not significant.

3.6. Discussion and Next Steps

In high-stakes conversations whereby leaders are closely scrutinized by their stakeholders and that their communicative behaviors can lead to consequential organizational outcomes, how can they communicate effectively to satisfy their stakeholders' needs? Analyzing question and answer turns in quarterly earnings calls qualitatively, we categorize four potential relationship-enhancing answering strategies that signal executives' willingness to be benevolent (making compliments and expressing gratitude) and honest (admitting not knowing the answer to the question and admitting not wanting to answer the question). Our quantitative analyses further control for question-level, answer-level, and firm-quarter level covariates and show that only expression of gratitude significantly lowers the likelihood for executives to receive follow-up questions.

3.6.1. Contributions and Implications

The study contributes to literature on strategic leadership as well as conversation research. Specifically, we speak to prior studies whereby scholars typically assume that in high-stakes conversations, leaders are constrained by the choices between giving and not giving

Table 3.3. Likelihood of Getting a Follow-Up Question, by Answering Strategy

	Model 3c Follow-up question	Model 3d Follow-up question
Question-level controls		
Question sentiment	-2.012***	
(LM score)	(0.326)	-
Question sentiment		-3.659***
(TR score)	-	(0.317)
Question length	0.002**	0.002**
	(0.001)	(0.001)
Sub-questions	-0.028†	-0.029†
	(0.016)	(0.156)
Answer-level controls		
Answerers	-0.107**	-0.110**
	(0.033)	(0.033)
Answer length	-0.002***	-0.002***
	(0.0001)	(0.0001)
Non-Answer	1.356*	1.328*
	(0.610)	(0.611)
Firm-quarter level controls		
Total assets	-2.280	-2.840
	(2.410)	(2.390)
Sales	2.140	2.250
	(3.410)	(3.470)
Market value	-9.430***	-9.540***
	(1.270)	(1.280)
Leverage	0.171†	0.176*
	(0.089)	(0.090)
Market to book ratio	-0.113***	-0.113***
	(0.011)	(0.012)
SUE score	-0.002	-0.001
	(0.003)	(0.003)
Answering strategies		
Making compliments	-0.241	-0.232
	(0.266)	(0.265)
Expressing gratitude	**-1.978***	**-2.015****
	(0.859)	(0.864)
Admitting unknown	0.318	2.979
	(0.337)	(0.338)
Admitting unwillingness	0.489	0.501
	(0.349)	(0.350)
Constant	1.255*	2.372***
	(0.589)	(0.596)
Year fixed effect	Yes	Yes
Clustering SE by asker IDs	Yes	Yes
Number of observations	26,171	26,171
R-squared	0.0238	0.0273

Notes. Significance levels include: *** p<0.001, ** p<0.01, *p<0.05, †p<0.1. Standard errors are in parentheses.

information, or between giving more and less accurate information, and then face the trade-off between harming the company (when disclosing too much information) and dissatisfying the question askers (when disclosing too little information) (Gow et al., 2021; Hollander et al., 2010). Drawing on the framework of conversational circumplex (Yeomans et al., 2022), we argue and show that leaders can also leverage their relational goals by signaling their benevolence and honesty (and especially gratitude). Essentially, the answering strategies are not necessarily costly: by expressing approval and respect for the question asker, or being thankful for the question, leaders can satisfy question askers' needs and save themselves from more interrogations.

Gratitude expression appears to be a particularly effective answering strategy in high-stakes conversations. In fact, the trigram "thank_you_for" is in Barth and colleagues' (2022) non-answer glossary, whereby their machine-learning algorithms identified it as a linguistic cue signaling the absence of requested information in answer. Our models control for the non-answer glossary but still show significant effect of gratitude expression on askers' satisfaction of answer, suggesting that gratitude expression is quite a powerful communication skill that can thwart potentially tough questions. We think this is interesting and worth further investigations. Indeed, psychology research has shown that gratitude is an "other-praising" emotion (Algoe, Kurtz, & Hilaire, 2016). When an individual expresses gratitude, his/her counterpart perceives the relationship to be of high quality (Algoe, Fredrickson, & Gable, 2013) and feels more connected and satisfied (Algoe, Gable, & Maisel, 2010). While prior research on gratitude expression primarily focused on romantic relationships and personal relationships, this paper provides empirical evidence that gratitude plays a unique role in building social bonds in corporate settings that can generate consequential organizational outcomes.

Our findings on the answering strategies signaling honesty ("admitting unknown" and "admitting unwillingness") offer more complex implications. Although in our qualitative analyses we spotted them as potentially effective answering strategies, we did not find their significant effects on reducing the likelihood of receiving follow-up questions in our quantitative analyses. Meanwhile, trigrams such as "to_be_honest", "im_not_sure", "do_not_disclose", and "not_know_the" are among the Barth and colleagues' (2022) non-answer glossary, which are also arguably the keywords and phrases executives use to show that they don't know the answer to a question or they are not willing to disclose information. In this case, when an executive says, "I do not know the answer", or "I cannot disclose the information", is s/he being honest (signaling positive relational intention to not lie) or is s/he providing non-answers (signaling negative informational intention to not give an answer)? This will depend on the analysts' own interpretations of executives' conversational motives, and we do not have an answer to this question based on our empirical analyses. However, this yields an interesting question: how can leaders give honest impression when facing tough questions? That would be an interesting research avenue for future explorations.

3.6.2. Limitations and Next Steps

We acknowledge necessary limitations of this early work and will address them in the next 6 to 12 months. The first is with our empirical strategy. The presence of a follow-up question may not always be equivalent to the analyst's negative evaluation: a follow-up question might be a new question concerning a new topic or addressing another executive of the same firm, and not relevant to the previous question. Or, even if an analyst does not ask a follow-up question, s/he might not be satisfied with the answer and give the firm a negative rating after the conference call. To address this concern, we will use analysts' stock recommendations before

and after the call as an alternative dependent variable to validate the effectiveness of the executives' answers (i.e., if an analyst asks a follow-up question *and* downgrades the firm's stock) (Fanelli et al., 2009).

Another limitation is with our current text analysis approach, where we used string search to locate the keywords and phrases automatically and identify answering strategies accordingly. Without considering the context (such as preceding or following sentences of the keywords, or the whole answer turn), it may be difficult to conclude that an executive's answer reflects the relational motives underlying our theoretical arguments. For example, the phrase "I don't know" can appear in different places of an answer turn and mean many different things. It could be that the executive admits what s/he does not know the answer to the question (e.g., "I don't know the details of…") or a business strategy (e.g., "I don't know if we will enter the market…"); it can also be a disagreement (e.g., "I don't know if that is true…"), or just a filler (e.g., "I don't know, I mean look, I think…"). Same for the phrase "grateful": executives can be grateful for people joining the call, for a question, or for someone pointing something out. To have more precise features of the answering strategies, we will adopt a machine-learning based natural language processing (NLP) approach to complement our current text analyses (e.g., Frankel, Jennings, & Lee, 2022; Wilke, 2022; Yeomans, Kantor, & Tingley, 2019). Specifically, we plan to hire research assistants to code the answer turns manually and use the human-annotated subsample to train the dataset. Such NLP approach will help us gain more nuanced insights into each answering strategy beyond the mere count of keywords and phrases.

Last but not least, the field study will inevitably have endogeneity issues: financial analysts' asking behaviors and their evaluations of the firms can be affected by other factors and not just the leaders' answering strategies. More importantly, our current analyses prevent us from

testing the *mechanisms* through which an answer leads to or does not lead to a follow-up question. For example, although we find gratitude expression is effective in reducing follow-up questions, we do not know if the analysts *do* find the answer satisfied and perceive the relationship with the executive to be enhancing. Also, as we mentioned, it is not clear whether analysts interpreted executives' use of "admitting unknown" or "admitting unwillingness" strategies as honesty signals or non-answer signals. We will draw on the field research and conduct a laboratory study to test the causal effect of leaders' answering strategies on how their answers are received, and why. Through different experimental designs, we will also be able to study difficult conversations in other contexts, such as political (e.g., presidential debates) or interpersonal (e.g., relationship conflicts), which will allow us to generalize our findings across different domains.

3.7. Conclusion

In this article, we address the often-neglected aspect of leaders' behavioral choice when engaging in high-stakes conversations: verbal strategies signaling relational motives. Our early work with conversations between executives and analysts in conference calls shows the potential benefits of executives' answering strategies of gratitude expression. To be successful in answering tough questions and further achieve desirable organizational outcomes, while seeking to provide accurate information, leaders can leverage their relational goals by expressing appreciation and prosocial emotions.

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Appendices

Appendix 1. Summary of Review Procedure

Reasons of including and excluding articles	*Numbers of articles added or subtracted*
Proposal (February 2021) & Full-length article (August 2021)	
Total number of articles in our submitted proposal on February 26, 2021	+85
Added from the reviewing team's suggestions	+5
Another round of screening using the following keywords*:	+102*
• Keywords: combinations of "leader" AND "communication" "leader": "leader", "CEO", "manager", "executive", "president", "political" "communication": "communication", "language", "rhetoric", "linguistic styles", "non-verbal communication", "letters", "messages", "tweets", "videos"	
Dropped during screening	-61
Dropped after careful reading because they were not about "leader communication"	-10
Added after checking references, publications and working papers for key authors	+9
Dropped from key authors screening round because they were not about "leader communication"	-6
Dropped from proposal scope because of updated inclusion criteria and keywords	-4
Total number of articles in our full-length article submitted on August 15, 2021	120
First revision (February 2022)	
Added from the reviewing team's suggestions	+5
Another round of screening using the following keywords*:	+436*
• Keywords: combinations of "leader" AND "communication" "leader": "leader", "CEO", "manager", "executive", "president", "political" "communication": "communication", "language", "rhetoric", "linguistic", "letter", "message", "speech", "tweet", "text", "discourse", "nonverbal", "video", "tone of voice", and "facial expression"	
Dropped during screening	-259
Dropped after careful reading because they were not about "leader communication"	-91
Added after checking references, publications and working papers for key authors	+4
Dropped because of updated inclusion criteria and keywords	-3
Total number of articles in our revised article submitted on February 20, 2022	212
Second revision (August 2022)	
Replaced two working papers with their published versions in 2022	no change
Added one more article that we unintentionally omitted from references	+1
Total number of articles in our revised article submitted on August 20, 2022	213

Third revision (February 2023)	
Removed three articles because they use leaders' biographies written by others and portraits of the leaders by media and don't use any of leaders' communication data	-5
Added five articles of key authors	+4
Total number of articles in our revised article submitted on February 1, 2023	**212**

Notes:

1. "*Screening*": quick scanning based on article titles and abstracts (without downloading them) to check if an article is potentially about leader communication and is published in a mainstream journal.
2. "*Careful reading*": downloading and reading the articles to make sure if an article is about leader communication and is published in a mainstream journal.
3. *"Leader communication":* articles that use actual verbal or nonverbal communication as data, including textual (e.g., written text, speech transcripts) and non-textual (e.g., voice and video recordings) data. These data can be from field settings (e.g., CEO letters to shareholders, presidential speeches) and lab settings (e.g., text or video that is typically manipulated so as to isolate specific characteristics of the textual, verbal, or non-verbal communication).
4. *"Key authors":* authors with more than 10,000 citations (as of February 2022) according to Google Scholar, and, 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).
5. *"Mainstream journals":* journals for the scholarly disciplines of psychology, management, political science, and communication whose H-index in Scimago Journal & Country Rank (SJR) is above 80.
6. In our manuscript, we said "these inclusion criteria resulted in 646 articles which we screened more carefully". 646 equals the sum of all the added articles (with "+" signs) from proposal (February 2021) to the first revision (February 2022).

***** Between the full-length article and the first revision, we adjusted our keywords criteria to make it stricter and more specific to leader communication. We added "speech", "text", and "discourse" as keywords. We also adjusted keywords for nonverbal communication. At the beginning, we used "voice" and "face" as keywords to look for studies on leaders' nonverbal communication. During the search process, we changed these two keywords to "tone of voice" and "facial expression", respectively, because using "voice" as a keyword yielded us many studies in the voice literature, which in most cases were not about leader communication. Using "face" as a keyword was not optimal, either, as it yielded many studies that were irrelevant to leader's nonverbal communication (e.g., challenges that leaders "face", or leaders' physical appearances).

Appendix 2. Review Articles on Leader Communication

Author(s) (year), journal published[11]	*Major research category*	*Subcategory*	*Leader type*[12]	*Main independent variable(s)*	*Main dependent variable(s)*	*Communi-cation type*	*Analysis approach for communication data*
Sims, 1993, BJM	Topics and rhetoric in leader communication	Not applicable	Corporate	Not applicable - descriptive study	Corporate leaders' discourse in their biographies	Text	Human assessment approached (qualitative analysis)
Coe & Domke, 2006, JC	Topics and rhetoric in leader communication	Not applicable	Political (US presidents)	Not applicable - descriptive study	Presidential religious language	Text	Human assessment approaches (manual coding)
Liu, 2007, PRR	Topics and rhetoric in leader communication	Not applicable	Political (George W. Bush)	Not applicable - descriptive study	President image repair discourse	Text	Human assessment approached (qualitative analysis)
Guerini, Strapparava, & Stock, 2008, JITP	Topics and rhetoric in leader communication	Not applicable	Political	Not applicable - descriptive study	Political leader persuasive communication	Text	Word count and linguistic computer measures
Benoit & Henson, 2009, PRR	Topics and rhetoric in leader communication	Not applicable	Political (George W. Bush)	Not applicable - descriptive study	President image repair discourse	Text	Human assessment approached (qualitative analysis)
Esch, 2010, Polit Psychol	Topics and rhetoric in leader communication	Not applicable	Political (George W. Bush and US officials)	Not applicable - descriptive study	Leader rhetoric about political myths (e.g., American Exceptionalism)	Text	Human assessment approached (qualitative analysis)
Golbeck, Grimes, & Rogers, 2010, JASIST	Topics and rhetoric in leader communication	Not applicable	Political (US congress members)	Not applicable - descriptive study	Leader tweet types (e.g., information, official business, personal messages)	Text	Human assessment approaches (manual coding)
Hargie, Stapleton, & Tourish, 2010, Organization	Topics and rhetoric in leader communication	Not applicable	Corporate (CEOs)	Not applicable - descriptive study	CEO apology strategies	Text	Human assessment approached (qualitative analysis)
Savoy, 2010, JQL	Topics and rhetoric in leader communication	Not applicable	Political (John McCain, Barack Obama)	Not applicable - descriptive study	Most frequently used words in McCain's and Obama's speeches	Text	Word count and linguistic computer measures

[11] We listed all the authors' last names if there are fewer than five authors in the article.

[12] We listed the names of the leader(s) if there are fewer than five leaders in the study. The "Fabricated" leader type means that researchers recruited participants or professional actors to play the role of leaders in laboratory studies. While the communication present in these studies is not "real" in the sense that it is not naturally occurring, unaltered behavior, it is real in that participants are responding to actual text, tone, and nonverbal cues that are typically present in naturally occurring communication.

Appendix 2. Review Articles on Leader Communication (Continued)

Author(s) (year), journal published	*Major research category*	*Subcategory*	*Leader type*	*Main independent variable(s)*	*Main dependent variable(s)*	*Communi-cation type*	*Analysis approach for communication data*
Beelitz & Merkl-Davies, 2012, JBE	Topics and rhetoric in leader communication	Not applicable	Corporate (CEOs)	Not applicable - descriptive study	CEO communication (of restoring organizational legitimacy)	Text	Human assessment approached (qualitative analysis)
Coe & Chenoweth, 2013, CT	Topics and rhetoric in leader communication	Not applicable	Political (US presidents)	Not applicable - descriptive study	Presidents' Christian discourse	Text	Word count and linguistic computer measures
Frame & Brachotte, 2015, PRR	Topics and rhetoric in leader communication	Not applicable	Political (French politicians)	Not applicable - descriptive study	Leader tweeting behaviors for impression management	Text	Human assessment approached (qualitative analysis)
Nolan, 2015, PRR	Topics and rhetoric in leader communication	Not applicable	Corporate	Not applicable - descriptive study	Leader tweet themes and objectives (e.g., disaster response, education, poverty)	Text	Human assessment approaches (manual coding)
Heracleous & Klaering, 2017, JBR	Topics and rhetoric in leader communication	Not applicable	Corporate (Steve Jobs)	Not applicable - descriptive study	Steve Jobs' rhetoric of identification	Text	Human assessment approached (qualitative analysis)
Portice & Reicher, 2018, Polit Psychol	Topics and rhetoric in leader communication	Not applicable	Political (UK politicians)	Not applicable - descriptive study	Leader rhetoric against the immigrants (spatial, economic, security, and diversity threat)	Text	Human assessment approached (qualitative analysis)
Grover, Kar, & Ilavarasan, 2019, IJIM	Topics and rhetoric in leader communication	Not applicable	Corporate	Not applicable - descriptive study	Leader tweeting behaviors about CSR	Text	Word count and linguistic computer measures
Peres et al., 2020, JIM	Topics and rhetoric in leader communication	Not applicable	Political	Not applicable - descriptive study	Leader tweet topics (e.g., diplomacy, economy, personal issues)	Text	Artificial Intelligence methods
Maskor, Steffens, & Haslam, 2021, Polit Psychol	Topics and rhetoric in leader communication	Not applicable	Political (Hilary Clinton, Donald Trump)	Not applicable - descriptive study	Attack messages of leadership destabilization	Text	Human assessment approaches (manual coding)
Montiel, Uyheng, & Dela Paz, 2021, Polit Psychol	Topics and rhetoric in leader communication	Not applicable	Political	Not applicable - descriptive study	Leaders' rhetorical storylines in the COVID-19 pandemic	Text	Artificial Intelligence methods
Paul, Parameswar, Sindhani, & Dhir, 2021, JBR	Topics and rhetoric in leader communication	Not applicable	Political (Indian politicians)	Not applicable - descriptive study	Politicians tweets about corruption	Text	Word count and linguistic computer measures

Appendix 2. Review Articles on Leader Communication (Continued)

Author(s) (year), journal published	*Major research category*	*Subcategory*	*Leader type*	*Main independent variable(s)*	*Main dependent variable(s)*	*Communi-cation type*	*Analysis approach for communication data*
Tonidandel, Summerville, Gentry, & Young, 2021, LQ	Topics and rhetoric in leader communication	Not applicable	Corporate	Not applicable - descriptive study	Leader narratives about the challenges they face (e.g., role transition, daily management)	Text	Artificial Intelligence methods
Conger, 1991, AME	Leader characteristics and attributes	Charisma	Corporate and political (e.g., Steve Jobs, Martin Luther King, Mary Kay Ash)	Not applicable - descriptive study	Leader charismatic rhetoric	Text	Human assessment approached (qualitative analysis)
Holladay & Coombs, 1993, MCQ	Leader characteristics and attributes	Charisma	Fabricated	Communication delivery (strong vs. weak)	Attribution of leader charisma	Voice, facial cues, body gestures	Experimental Studies
Holladay & Coombs, 1994, MCQ	Leader characteristics and attributes	Charisma	Fabricated	Vision content and delivery of leader communication	Perception of leader charisma	Text, voice, facial cues, body gestures	Experimental Studies
Shamir, Arthur, & House, 1994, LQ	Leader characteristics and attributes	Charisma	Political (Jesse Jackson, Michael Dukakis)	Charismatic vs. non-charismatic leader (Jackson vs. Dukakis)	Leader charismatic rhetoric (e.g., similarity to followers, hope and faith)	Text	Human assessment approached (qualitative analysis)
Den Hartog & Verburg, 1997, LQ	Leader characteristics and attributes	Charisma	Corporate (Anita Roddick, Jan Timmer, Matthew Barrett)	Leader (Roddick vs. Timmer vs. Barret)	Charismatic rhetorical devices (e.g., contrasting, listing, position taking)	Text	Human assessment approached (qualitative analysis)
Awamleh & Gardner, 1999, LQ	Leader characteristics and attributes	Charisma	Fabricated in lab based on corporate (Steve Jobs, Arch McGill) and political (John F. Kennedy) leaders	Vision content and delivery of leader communication	Perceptions of leader charisma and effectiveness	Text, voice, facial cues, body gestures	Experimental Studies
Fiol, Harris, & House, 1999, LQ	Leader characteristics and attributes	Charisma	Political	Leader (charismatic vs. non-charimatic) and tenure (initial vs. middle vs. later)	Leader linguistic dimensions (e.g., negation, inclusive language)	Text	Human assessment approaches (manual coding)

Appendix 2. Review Articles on Leader Communication (Continued)

Author(s) (year), journal published	*Major research category*	*Subcategory*	*Leader type*	*Main independent variable(s)*	*Main dependent variable(s)*	*Communi-cation type*	*Analysis approach for communication data*
Emrich, Brower, Feldman, & Garland, 2001, ASQ	Leader characteristics and attributes	Charisma	Political	Proportion of image-based words in a president's speech	Perception of leader charisma and greatness	Text	Word count and linguistic computer measures
Frese, Beimel, & Schoenborn, 2003, Pers. Psychol	Leader characteristics and attributes	Charisma	Corporate (managers) in lab trainings	Training for charismatic leadership communication	Charismatic communication skills (e.g., eye-contact, use of metaphors)	Text, voice, facial cues, body gestures	Human assessment approaches (manual coding)
Mio, Riggio, Levin, & Reese, 2005, LQ	Leader characteristics and attributes	Charisma	Political	1) Charismatic vs. non-charismatic presidents, 2) presidents' use of metaphors	1) Use of metaphors, 2) perceived inspiration in presidents' speeches	Text	Human assessment approaches (manual coding)
Fanelli & Grasselli, 2006, Organ. Stud	Leader characteristics and attributes	Charisma	Corporate (CEOs)	CEO succession events	CEO charismatic discourse	Text	Human assessment approached (qualitative analysis)
Naidoo & Lord, 2008, LQ	Leader characteristics and attributes	Charisma	Fabricated in lab based on political leader (Franklin Roosevelt)	Imagery in a leader's speech	Perceptions of leader charisma and leadership	Text	Experimental Studies
Seyranian & Bligh, 2008, LQ	Leader characteristics and attributes	Charisma	Political	Leader (charismatic vs. non-charimatic) and tenure (initial vs. middle vs. later)	Leader rhetoric to introduce social change	Text	Word count and linguistic computer measures (DICTION software)
Bligh & Robinson, 2010, LQ	Leader characteristics and attributes	Charisma	Political	Gandhi vs. US presidents	Leader charismatic rhetoric	Text	Word count and linguistic computer measures (DICTION software)
Galvin, Waldman, & Balthazard, 2010, Pers. Psychol	Leader characteristics and attributes	Charisma	Corporate leaders in lab surveys	Leader narcissism and vision statement	Attribution of leader charisma	Text	Human assessment approaches (manual coding)
Antonakis, Fenley, & Liechti, 2011, AMLE	Leader characteristics and attributes	Charisma	Fabricated	1) Charismatic leadership training, 2) leader charisma	1) Charismatic leadership speech tactics, 2) attribution of charismatic leadership Leader emergence	Text	Human assessment approaches (manual coding)

Appendix 2. Review Articles on Leader Communication (Continued)

Author(s) (year), journal published	*Major research category*	*Subcategory*	*Leader type*	*Main independent variable(s)*	*Main dependent variable(s)*	*Communi-cation type*	*Analysis approach for communication data*
DeGroot, Aime, Johnson, & Kluemper, 2011, LQ	Leader characteristics and attributes	Charisma	Political (US presidents & Canadian Prime Ministers)	Leaders' vocal attractiveness	Perceptions of leader effectiveness	Voice	Voice recognition tools and technologies
Kong, 2013, PID	Leader characteristics and attributes	Charisma	Political	Charismatic versus non-charismatic leaders	Leaders' use of action-oriented terms and negation terms	Text	Word count and linguistic computer measures (LIWC software)
Niebuhr, Voße, & Brem, 2016, CHB	Leader characteristics and attributes	Charisma	Corporate (Steve Jobs)	Steve Jobs versus reference adult speakers	Acoustic profile of charisma (e.g., melody, loudness, tempo, fluency)	Voice	Voice recognition tools and technologies
Wasike, 2017, LQ	Leader characteristics and attributes	Charisma	Political (US presidents)	Leader integrative complexity scores (from Thoemmes & Conway (2007))	Leader charisma	Text	Word count and linguistic computer measures (DICTION software)
Maran et al., 2019, LQ	Leader characteristics and attributes	Charisma	Fabricated	Leaders' gaze towards their followers' eyes	Attribution of leader charisma	Eye-gazing patterns	Facial recognition tools and technologies
Signorello et al., 2020, JV	Leader characteristics and attributes	Charisma	Political	Male and female charismatic leaders across cultures and languages	Leaders' voice fundamental frequency and sound pressure level	Voice	Voice recognition tools and technologies
Maran et al., 2021, JBR	Leader characteristics and attributes	Charisma	Corporate (CEOs) and fabricated (in lab)	Leader clothing style (formal vs. smart vs. casual)	Perceptions of leader prototypicality and charisma, leader approval	Clothes	Experimental Studies
Chatterjee & Hambrick, 2007, ASQ	Leader characteristics and attributes	Narcissism	Corporate (CEOs)	CEO narcissism	Firm strategy, M&A behavior, performance	Text, photo prominence (nonverbal cues of vanity)	Word count and linguistic computer measures
Craig & Amernic, 2011, JBE	Leader characteristics and attributes	Narcissism	Corporate (CEOs)	CEOs (of Enron Starbucks, and GE)	Linguistic properties of narcissism	Text	Human assessment approached (qualitative analysis)

Appendix 2. Review Articles on Leader Communication (Continued)

Author(s) (year), journal published	*Major research category*	*Subcategory*	*Leader type*	*Main independent variable(s)*	*Main dependent variable(s)*	*Communi-cation type*	*Analysis approach for communication data*
Petrenko, Aime, Ridge, & Hill, 2016, SMJ	Leader characteristics and attributes	Narcissism	Corporate (CEOs)	CEO narcissism	Firm CSR performance	Facial cues	Human assessment approaches (manual coding)
Craig & Amernic, 2018, JBE	Leader characteristics and attributes	Narcissism	Corporate (CEOs)	Hubristic vs. non-hubristic CEOs	Linguistic signals of hubris	Text	Word count and linguistic computer measures (DICTION software)
Buyl, Boone, & Wade, 2019, JOM	Leader characteristics and attributes	Narcissism	Corporate (CEOs)	CEO narcissism	Organizational risk-taking and resilience to environmental shocks	Text	Word count and linguistic computer measures
Akstinaite, Robinson, & Sadler-Smith, 2020, JBE	Leader characteristics and attributes	Narcissism	Corporate (CEOs)	Hubristic vs. non-hubristic CEOs	Linguistic signals of hubris	Text	Word count and linguistic computer measures (LIWC software)
Akstinaite, Garrard, & Sadler-Smith, 2021, BJM	Leader characteristics and attributes	Narcissism	Corporate (CEOs)	Hubristic vs. non-hubristic CEOs	Linguistic signals of hubris	Text	Artificial Intelligence methods
Zanoni & Janssens, 2004, Organ. Stud	Leader characteristics and attributes	Morality	Corporate	Not applicable - descriptive study	Leader diversity discourse (e.g., devaluing and valuing diversity)	Text	Human assessment approached (qualitative analysis)
Weber, 2010, JBE	Leader characteristics and attributes	Morality	Corporate (CEOs)	Leader role (CEO vs. manager) and nationality (Asian, European, US)	Leader moral reasoning	Text	Human assessment approaches (manual coding)
Owens & Hekman, 2012, AMJ	Leader characteristics and attributes	Morality	Corporate	Organizational contexts (e.g., organizational culture, power dynamics)	Humble leadership behaviors (e.g., says “we” when talking about success)	Text	Human assessment approaches (manual coding)
Amernic & Craig, 2012, JBE	Leader characteristics and attributes	Morality	Corporate (Rupert Murdoch)	Not applicable - descriptive study	Cultural and ethical signs in leader's language (e.g., the use of "I")	Text	Human assessment approached (qualitative analysis)
Yim, 2019, PRR	Leader characteristics and attributes	Morality	Corporate (CEOs)	CEO tweeting behaviors (professional, political, personal)	Perceived leader authenticity	Text	Experimental Studies

Appendix 2. Review Articles on Leader Communication (Continued)

Author(s) (year), journal published	*Major research category*	*Subcategory*	*Leader type*	*Main independent variable(s)*	*Main dependent variable(s)*	*Communi-cation type*	*Analysis approach for communication data*
Hermann, 1980, ISQ	Leader characteristics and attributes	Other individual characteristics	Political	Leader characteristics (e.g., beliefs, motives, interpersonal styles)	Foreign policy behaviors	Text	Human assessment approaches (manual coding)
Zullow, Oettingen, Peterson, & Seligman, 1988, AP	Leader characteristics and attributes	Other individual characteristics	Political (Lyndon Johnson)	Leader explanatory style (pessimistic vs. optimistic)	Leaders' active or passive behaviors, election outcomes	Text	Human assessment approaches (manual coding)
Kaarbo & Hermann, 1998, LQ	Leader characteristics and attributes	Other individual characteristics	Political (Margaret Thatcher, John Major, Konrad Adenauer, Helmut Kohl)	Leadership styles (e.g., responsiveness to political constraints, motivation for position)	Leader policy making process	Text	Human assessment approaches (manual coding)
Pennebaker & Lay, 2002, JRP	Leader characteristics and attributes	Other individual characteristics	Political (Rudolph Giuliani)	Pre vs. post crises (events of 9/11 and the leader's personal crisis)	Leader personality (e.g., social identity, emotionality, cognitive clarity)	Text	Word count and linguistic computer measures (LIWC software)
Slatcher, Chung, Pennebaker, & Stone, 2007, JRP	Leader characteristics and attributes	Other individual characteristics	Political (John Kerry, John Edwards, George W. Bush, Dick Cheney)	Political candidates (Kerry vs. Edwards vs. Bush vs. Cheney)	Leader linguistic dimensions (e.g., femininity, depression, honesty)	Text	Word count and linguistic computer measures (LIWC software)
Renshon, 2008, JCR	Leader characteristics and attributes	Other individual characteristics	Political (George W. Bush)	Four phases of President Bush's political career	Changes in the Bush's core beliefs	Text	Word count and linguistic computer measures
McClelland, Liang, & Barker, 2010, JOM	Leader characteristics and attributes	Other individual characteristics	Corporate (CEOs)	1) CEO age, tenure, organizational and industry factors, 2) CEO CSQ	1) CEO commitment to the status quo (CSQ), 2) firm performance	Text	Word count and linguistic computer measures
Stewart & Dowe, 2013, Polit Psychol	Leader characteristics and attributes	Other individual characteristics	Political (Barack Obama)	Leader facial expression (e.g., smile, neutral)	Perception of leader emotion	Facial cues	Facial recognition tools and technologies
Grant & Taylor, 2014, BH	Leader characteristics and attributes	Other individual characteristics	Corporate (CEOs)	Male vs. female CEOs	Communication about accomplishment (content, gestures, and facial expressions)	Text, facial cues, body gestures	Human assessment approached (qualitative analysis)

Appendix 2. Review Articles on Leader Communication (Continued)

Author(s) (year), journal published	*Major research category*	*Subcategory*	*Leader type*	*Main independent variable(s)*	*Main dependent variable(s)*	*Communi-cation type*	*Analysis approach for communication data*
Cuhadar, Kaarbo, Kesgin, & Ozkececi-Taner, 2017, Polit Psychol	Leader characteristics and attributes	Other individual characteristics	Political (Turkish leaders)	Leadership roles (e.g., minister of foreign affairs vs. president)	Leader personal characteristics (e.g., need for power, distrust of others)	Text	Word count and linguistic computer measures
Lee, Hwang, & Chen, 2017, SMJ	Leader characteristics and attributes	Other individual characteristics	Corporate (CEOs)	1) Founder CEOs vs. professional CEOs, 2) CEO overconfidence	1) CEO overconfidence, 2) investor reactions	Text	Word count and linguistic computer measures
Malhotra, Reus, Zhu, & Roelofsen, 2018, ASQ	Leader characteristics and attributes	Other individual characteristics	Corporate (CEOs)	CEO extraversion	Firm's M&A likelihood and size	Text	Artificial Intelligence methods
Gupta, Nadkarni, & Mariam, 2019, ASQ	Leader characteristics and attributes	Other individual characteristics	Corporate (CEOs)	CEO ideologies, narcissism, and extraversion	Firm's CSR strategy and workforce downsizing	Facial cues and body gestures	Human assessment approaches (manual coding)
Harrison, Thurgood, Boivie, & Pfarrer, 2019, SMJ	Leader characteristics and attributes	Other individual characteristics	Corporate (CEOs)	CEO Big Five personality traits	Firm strategic change	Text	Artificial Intelligence methods
Hill, Recendes, & Ridge, 2019, SMJ	Leader characteristics and attributes	Other individual characteristics	Corporate (CEOs)	CEO submissiveness and provocativeness	Competitive attacks on the CEO's firm	Facial cues and body gestures	Human assessment approaches (manual coding)
Semenova & Winter, 2020, Polit Psychol	Leader characteristics and attributes	Other individual characteristics	Political (Boris Yeltsin, Vladimir Putin, Dmitry Medvedev)	Three Russian presidents (Yeltsin vs. Putin vs. Medvedev)	Leader language of achievement, affiliation, and power motives	Text	Human assessment approaches (manual coding)
Wang & Chen, 2020, IM	Leader characteristics and attributes	Other individual characteristics	Corporate (CEOs)	CEO personality (linguistic cues on social media)	Firm operational and financial performance	Text	Word count and linguistic computer measures
Ormiston, Wong, & Ha, 2021, LQ	Leader characteristics and attributes	Other individual characteristics	Corporate (CEOs)	CEO emotional stability and TMT affective tone	Firm financial performance	Text	Human assessment approaches (manual coding)
Park, Chung, & Rajagopalan, 2021, SMJ	Leader characteristics and attributes	Other individual characteristics	Corporate	CEO internal attributions of positive firm performance	Financial analysts' comments on the firm and CEO dismissal	Text	Word count and linguistic computer measures
Gamache, McNamara,	Leader characteristics and attributes	Attention and cognitive focus	Corporate (CEOs)	CEO regulatory focus	Proclivity of firms to undertake acquisitions	Text	Word count and linguistic computer

Appendix 2. Review Articles on Leader Communication (Continued)

Author(s) (year), journal published	*Major research category*	*Subcategory*	*Leader type*	*Main independent variable(s)*	*Main dependent variable(s)*	*Communi-cation type*	*Analysis approach for communication data*
Mannor, & Johnson, 2015, AMJ							measures (LIWC software)
Kashmiri, Gala, & Nicol, 2019, JBR	Leader characteristics and attributes	Attention and cognitive focus	Corporate (CEOs)	CEO regulatory focus	Firm strategic marketing behaviors	Text	Word count and linguistic computer measures (DICTION software)
Gamache, Neville, Bundy, & Short, 2020, SMJ	Leader characteristics and attributes	Attention and cognitive focus	Corporate (CEOs)	CEO regulatory focus	Firm stakeholder strategy	Text	Word count and linguistic computer measures (LIWC software)
Scoresby, Withers, & Ireland, 2021, JPIM	Leader characteristics and attributes	Attention and cognitive focus	Corporate (CEOs)	CEO regulatory focus	Firm R&D investments	Text	Word count and linguistic computer measures (LIWC software)
Nadkarni & Chen, 2014, AMJ	Leader characteristics and attributes	Attention and cognitive focus	Corporate (CEOs)	CEO temporal focus	Company's rate of new product introduction	Text	Word count and linguistic computer measures (LIWC software)
Back, Rosing, Dickler, Kraft, & Bausch, 2020, EMJ	Leader characteristics and attributes	Attention and cognitive focus	Corporate (CEOs)	CEO temporal focus	Firm strategic change	Text	Word count and linguistic computer measures (LIWC software)
DesJardine & Shi, 2021, AMJ	Leader characteristics and attributes	Attention and cognitive focus	Corporate (CEOs)	CEO option wealth and temporal focus	M&A investment	Text	Word count and linguistic computer measures (LIWC software)
D'Aveni & MacMillan, 1990, ASQ	Leader characteristics and attributes	Attention and cognitive focus	Corporate	Managers leading bankrupt vs. non-bankrup firms	Leader attentional patterns to external and internal environments	Text	Human assessment approaches (manual coding)
Abrahamson & Hambrick, 1997, JOB	Leader characteristics and attributes	Attention and cognitive focus	Corporate	Discretion in the industry (managers' latitude in an industry)	Manager attentional patterns	Text	Word count and linguistic computer measures
Cho & Hambrick, 2006, Organ. Sci	Leader characteristics and attributes	Attention and cognitive focus	Corporate	1) Pre- vs. post-deregulation, 2) managerial attention	1) Managerial attention, 2) firm entrepreneurial strategy	Text	Word count and linguistic computer measures

Appendix 2. Review Articles on Leader Communication (Continued)

Author(s) (year), journal published	*Major research category*	*Subcategory*	*Leader type*	*Main independent variable(s)*	*Main dependent variable(s)*	*Communi-cation type*	*Analysis approach for communication data*
Watson, 1982, AMJ	Antecedents of leader communication	Roles	Fabricated	Leader vs. subordinate roles	Relational dimension of communication (e.g., dominance, submissiveness)	Text	Human assessment approaches (manual coding)
Johnson, 1994, ASR	Antecedents of leader communication	Roles	Fabricated	Role authority (manager vs. subordinates) and gender (male vs. female)	Conversational dimensions (e.g., time talked, interruptions)	Text, facial cues	Human assessment approaches (manual coding)
Tetlock, 1981b, JPSP	Antecedents of leader communication	Political affiliation and policy stances	Political	Political position (isolationist vs nonisolationists)	Leader integrative/conceptual complexity	Text	Human assessment approaches (manual coding)
Pancer et al., 1992, Polit Psychol	Antecedents of leader communication	Political affiliation and policy stances	Political (Canadian politicians)	Leader political roles (policy-making vs. opposition role)	Leader integrative/conceptual complexity	Text	Human assessment approaches (manual coding)
Tetlock, Armor, & Peterson, 1994, JPSP	Antecedents of leader communication	Political affiliation and policy stances	Political (American politicians)	Political position (abolitionist vs. advocates of slavery)	Leader integrative/conceptual complexity	Text	Human assessment approaches (manual coding)
Thoemmes & Conway, 2007, Polit Psychol	Antecedents of leader communication	Political affiliation and policy stances	Political	Leader tenure, personality and other situational factors	Leader integrative/conceptual complexity	Text	Human assessment approaches (manual coding)
Schroedel, Bligh, Merolla, & Gonzalez, 2013, PSQ	Antecedents of leader communication	Political affiliation and policy stances	Political (American politicians)	Partisanship, pre vs. post convention	Leader charismatic rhetoric	Text	Word count and linguistic computer measures (DICTION software)
Lee & Lim, 2016, PRR	Antecedents of leader communication	Political affiliation and policy stances	Political (Hilary Clinton, Donald Trump)	Political party (Democrat vs. Republican)	Leaders' Twitter and campaign language (e.g., feminine issues)	Text	Human assessment approaches (manual coding)
Coe, Bruce, & Ratcliff, 2017, JC	Antecedents of leader communication	Political affiliation and policy stances	Political	Political party, rhetorical context, public opinion, and other sociocultural factors	Presidential communication topics about LGBT community	Text	Human assessment approaches (manual coding)
Mee, Homapour, Chiclana, & Engel, 2021, KBS	Antecedents of leader communication	Political affiliation and policy stances	Political (UK politicians)	Politicians' voting record (in favor vs. against Brexit)	Tweet characteristics about Brexit	Text	Word count and linguistic computer measures

Appendix 2. Review Articles on Leader Communication (Continued)

Author(s) (year), journal published	*Major research category*	*Subcategory*	*Leader type*	*Main independent variable(s)*	*Main dependent variable(s)*	*Communi-cation type*	*Analysis approach for communication data*
Wang & Inbar, 2020, PS	Antecedents of leader communication	Political affiliation and policy stances	Political	Political contexts (gain vs. loss of political power)	Democrats' and Republicans' use of moral language	Text	Artificial Intelligence methods
Widmann, 2021, Polit Psychol	Antecedents of leader communication	Political affiliation and policy stances	Political	Populist vs. non-populist political leaders, communication mediums (press vs. Twitter)	Leader emotional language (negative vs. positive)	Text	Word count and linguistic computer measures
Suedfeld & Rank 1976, JPSP	Antecedents of leader communication	Contexts	Political	Pre and post successful and unsuccessful revolutions	Leader integrative/conceptual complexity	Text	Human assessment approaches (manual coding)
Suedfeld & Tetlock, 1977, JCR	Antecedents of leader communication	Contexts	Political	Type and phase of crisis	Leader integrative/conceptual complexity	Text	Human assessment approaches (manual coding)
Suedfeld, Tetlock, & Ramirez, 1977, JCR	Antecedents of leader communication	Contexts	Political	Peacetime vs. wartime	Leader integrative/conceptual complexity	Text	Human assessment approaches (manual coding)
Tetlock, 1981a, JPSP	Antecedents of leader communication	Contexts	Political	Pre vs. post elections	Leader integrative/conceptual complexity	Text	Human assessment approaches (manual coding)
Tetlock, 1985, JPSP	Antecedents of leader communication	Contexts	Political (American and Soviet politicians)	Time-related predictor variables (e.g., political interventions, elections)	Leader integrative/conceptual complexity	Text	Human assessment approaches (manual coding)
Suedfeld & Bluck, 1988, JCR	Antecedents of leader communication	Contexts	Political	Pre vs. post surprise attacks	Leader integrative/conceptual complexity	Text	Human assessment approaches (manual coding)
Suedfeld, 1994, Polit Psychol	Antecedents of leader communication	Contexts	Political (Bill Clinton)	Pre vs. post elections	Leader integrative/conceptual complexity	Text	Human assessment approaches (manual coding)
Dille & Young, 2000, Polit Psychol	Antecedents of leader communication	Contexts	Political (Jimmy Carter, Bill Clinton)	Communication type (prepared vs. spontaneous remarks) and leader (Carter vs. Clinton)	Leader conceptual complexity and other personality types	Text	Word count and linguistic computer measures

Appendix 2. Review Articles on Leader Communication (Continued)

Author(s) (year), journal published	*Major research category*	*Subcategory*	*Leader type*	*Main independent variable(s)*	*Main dependent variable(s)*	*Communi-cation type*	*Analysis approach for communication data*
Hart, Jarvis, & Lim, 2002, Polit Psychol	Antecedents of leader communication	Contexts	Political	Pre vs. post crisis of 9/11 and Clinton impeachment	How "American people" is mentioned in leader communication	Text	Word count and linguistic computer measures
Bligh, Kohles, & Meindl, 2004b, JAP	Antecedents of leader communication	Contexts	Political (George W. Bush)	Pre vs. post crisis of 9/11	Leader linguistic dimensions (e.g., optimisim, faith, aggression)	Text	Word count and linguistic computer measures (DICTION software)
Bligh, Kohles, & Meindl, 2004a, LQ	Antecedents of leader communication	Contexts	Political (George W. Bush)	Pre vs. post crisis of 9/11	Leader charismatic rhetoric, media's portrait of the leader, and his public opinion ratings	Text	Word count and linguistic computer measures (DICTION software)
Bligh & Hess, 2007, LQ	Antecedents of leader communication	Contexts	Political (Alan Greenspan)	Times of changes in the economic environment	Leader linguistic dimensions (e.g., certainty, optimism, pessimism)	Text	Word count and linguistic computer measures (DICTION software)
De Castella, McGarty, & Musgrove, 2009, Polit Psychol	Antecedents of leader communication	Contexts	Political (John Howard)	Pre vs. post crisis of 9/11 and invasion of Iraq	Leader rhetoric about terrorism	Text	Human assessment approaches (manual coding)
Davis & Gardner, 2012, LQ	Antecedents of leader communication	Contexts	Political (George W. Bush)	Pre vs. post crisis of 9/11 and Hurricane Katrina	Leader charismatic rhetoric and his approval ratings	Text	Word count and linguistic computer measures (DICTION software)
Patelli & Pedrini, 2014, JBE	Antecedents of leader communication	Contexts	Corporate (CEOs)	Industry and firm financial performance	CEO optimism language	Text	Word count and linguistic computer measures (DICTION software)
Graham, Jackson, & Broersma, 2016, NMS	Antecedents of leader communication	Contexts	Political (British and Dutch politicians)	National political environment (British vs. Dutch)	Leader tweet type, targets, functions, and topics	Text	Human assessment approaches (manual coding)
Carton & Lucas 2018, AMJ	Antecedents of leader communication	Contexts	Political, Corporate Recruited in lab	Prescription type (language-centered versus temporal projection)	Leader vision quality of communication	Text	Human assessment approaches (manual coding)

Appendix 2. Review Articles on Leader Communication (Continued)

Author(s) (year), journal published	*Major research category*	*Subcategory*	*Leader type*	*Main independent variable(s)*	*Main dependent variable(s)*	*Communi-cation type*	*Analysis approach for communication data*
Dupree & Fiske, 2019, JPSP	Antecedents of leader communication	Contexts	Political (American politicians)	Leaders' audience (presence of minority groups)	Leaders' competence downshift language	Text	Word count and linguistic computer measures
Freedman, 2019, JCR	Antecedents of leader communication	Contexts	Political (Religious leaders)	Times of military and political conflicts	Leader nationalist rhetoric	Text	Artificial Intelligence methods
Rauh, Bes, & Schoonvelde, 2020, EJPR	Antecedents of leader communication	Contexts	Political	Public opinion about euroscepticism	Politicians' rhetoric about European integration (positive vs. negative)	Text	Word count and linguistic computer measures
Bastardoz, Jacuart, & Antonakis, 2022, LQ	Antecedents of leader communication	Contexts	Political (François Holland)	Pre vs. post crisis (Charlie Hebdo, Paris, and Nice attacks)	Leader charismatic rhetoric and his approval ratings	Text	Human assessment approaches (manual coding)
Stein, 1975, JPSP	Outcomes of leader communication	Leader emergence	Fabricated	Leader verbal and nonverbal communication	Perception of leader's social rank	Text, voice, facial cues, body gestures	Experimental Studies
Winter, 1987, JPSP	Outcomes of leader communication	Leader emergence	Political (US presidents)	Motive imagery in leaders' speeches	Leader greatness rating and election outcomes	Text	Human assessment approaches (manual coding)
Davis & Gilbert, 1989, JPSP	Outcomes of leader communication	Leader emergence	Fabricated	Leader gender, expression of dominance (e.g., time talking, forceful attempts)	Leader selection (among team members)	Text, verbal cues	Human assessment approaches (manual coding)
Gregory Jr & Gallagher, 2002, SPQ	Outcomes of leader communication	Leader emergence	Political	Leader social dominance (nonverbal frequency, in Hz)	Presidential election outcome	Voice	Voice recognition tools and technologies
Horiuchi, Komatsu, & Nakaya, 2012, Polit Psychol	Outcomes of leader communication	Leader emergence	Political	Leader facial expression (smile intensity)	Leader election outcome (vote shares)	Facial cues	Facial recognition tools and technologies
Jacquart & Antonakis, 2015, AMJ	Outcomes of leader communication	Leader emergence	Political (presidential candidates) and corporate (CEOs)	Charismatic rhetoric and organizational performance	Leader selection (politicians' vote shares) and retention (of CEOs)	Text	Human assessment approaches (manual coding)

Appendix 2. Review Articles on Leader Communication (Continued)

Author(s) (year), journal published	*Major research category*	*Subcategory*	*Leader type*	*Main independent variable(s)*	*Main dependent variable(s)*	*Communi-cation type*	*Analysis approach for communication data*
Baur et al., 2016, LQ	Outcomes of leader communication	Leader emergence	Political	Configurational use of charismatic rhetoric (developed by Shamir et al (1994))	Leader influence success (votes received in elections)	Text	Word count and linguistic computer measures (DICTION software)
Gerpott, Lehmann-Willenbrock, Silvis, & Van Vugt, 2018, LQ	Outcomes of leader communication	Leader emergence	Fabricated	Leaders vs. non-leaders' communications in muted video clips	Observers' eye-fixation on emergent leaders	Eye-gazing patterns	Facial recognition tools and technologies
Truninger et al., 2020, LQ	Outcomes of leader communication	Leader emergence	Fabricated (organizational simulation)	Leader vocal delivery and competency	Leader emergence and ratings of leader effectiveness	Voice	Artificial Intelligence methods
Mutz & Reeves, 2005, AJPS	Outcomes of leader communication	Leader effectiveness	Fabricated	Level of civility in the political debate (civil vs. uncivil)	Political trust in the leader	Text	Experimental Studies
Coombs & Holladay, 2008, PRR	Outcomes of leader communication	Leader effectiveness	Fabricated	Leader crisis response strategy	Post-crisis reputation evaluations	Text	Experimental Studies
Madera & Smith, 2009, LQ	Outcomes of leader communication	Leader effectiveness	Fabricated	Leaders' emotions (anger vs. sadness)	Perceived leader competence and legitimacy	Text	Experimental Studies
Norman, Avolio, & Luthans, 2010, LQ	Outcomes of leader communication	Leader effectiveness	Fabricated	Leader positivity and communication transparency	Trust in the leader and rating of leader effectiveness	Text	Experimental Studies
Lee, 2013, JC	Outcomes of leader communication	Leader effectiveness	Fabricated in lab based on political leader (Geun-hye Park)	Leader communication medium (TV vs. Twitter)	Leadership evaluation (competence, morality, and attractiveness)	Text, facial appearance (static)	Experimental Studies
Tskhay, Xu, & Rule, 2014, LQ	Outcomes of leader communication	Leader effectiveness	Corporate (orchestra conductors)	Leader nonverbal cues (expressiveness of upper body)	Prediction accuracy about leader success	Facial cues and body gestures	Human assessment approaches (manual coding)
Shin & You, 2017, JMS	Outcomes of leader communication	Leader effectiveness	Corporate (CEOs)	CEO shareholder-value language	CEO compensation	Text	Word count and linguistic computer measures

Appendix 2. Review Articles on Leader Communication (Continued)

Author(s) (year), journal published	*Major research category*	*Subcategory*	*Leader type*	*Main independent variable(s)*	*Main dependent variable(s)*	*Communi-cation type*	*Analysis approach for communication data*
Carsten, Bligh, Kohles, & Lau, 2018, Leadership	Outcomes of leader communication	Leader effectiveness	Political (Hilary Clinton, Donald Trump)	Valence of leader rhetoric	Attribution of leader charisma and leadership effectiveness	Text	Word count and linguistic computer measures (DICTION software)
Shao, Wang, & Tse, 2018, LQ	Outcomes of leader communication	Leader effectiveness	Fabricated	Leader anger expressions	Leader effectiveness (e.g., communication skills, leadership ability)	Facial cues, voice	Experimental Studies
Costa, 2020, BJPS	Outcomes of leader communication	Leader effectiveness	Fabricated	Politician's email response and tone in emails	Perceived email response quality	Text	Experimental Studies
Dumitrescu & Ross, 2020, NMS	Outcomes of leader communication	Leader effectiveness	Political (Donald Trump)	Tweet types (paraphrasing vs. quotation vs. embedded)	Leadership evaluations and follower emotions	Text	Experimental Studies
Kershaw, Rast III, Hogg, & van Knippenberg, 2020, JASP	Outcomes of leader communication	Leader effectiveness	Fabricated	Leader identity statement (relational vs. collective vs. dual)	Leadership evaluations (e.g., trust, leadership effectiveness)	Text	Experimental Studies
Shin & You, 2020, CGIR	Outcomes of leader communication	Leader effectiveness	Corporate (CEOs)	CEO's use of shareholder- and stakeholder-oriented language	CEO dismissal	Text	Word count and linguistic computer measures
Nair, Haque, & Sauerwald, 2021, JMS	Outcomes of leader communication	Leader effectiveness	Corporate (CEOs)	CEO vocal masculinity	Early-stage CEO compensation	Voice	Voice recognition tools and technologies
Schoofs & Claeys, 2021, JBR	Outcomes of leader communication	Leader effectiveness	Fabricated	Leader emotional expression in a crisis (sadness vs. rational)	Perceived CEO competence and organizational reputation	Text, facial cues	Experimental Studies
Cohen, 1995, AJPS	Outcomes of leader communication	Leader endorsement and approval	Political	Presidential rhetoric about policy (e.g., economic, civil rights)	Public concern about the policy (in polls)	Text	Human assessment approaches (manual coding)
Whitford & Yates, 2003, JP	Outcomes of leader communication	Leader endorsement and approval	Political (Jimmy Carter, Ronald Reagan)	Emphasis on drug issues in presidential statements	Attorneys' implementation of the federal "War on Drugs" campaign	Text	Word count and linguistic computer measures

Appendix 2. Review Articles on Leader Communication (Continued)

Author(s) (year), journal published	*Major research category*	*Subcategory*	*Leader type*	*Main independent variable(s)*	*Main dependent variable(s)*	*Communi-cation type*	*Analysis approach for communication data*
Young & Perkins, 2005, JP	Outcomes of leader communication	Leader endorsement and approval	Political (US presidents)	Presidential speech topics (e.g., foreign policy, civil rights)	Public opinion (poll numbers)	Text	Human assessment approached (qualitative analysis)
Romero, Swaab, Uzzi, & Galinsky, 2015, PSPB	Outcomes of leader communication	Leader endorsement and approval	Political	Leaders' matching the linguistic style of an opponent in a two-party exchange	Reactions of third-party observers (presidential race polls)	Text	Word count and linguistic computer measures (LIWC software)
Lee & Xu, 2018, PRR	Outcomes of leader communication	Leader endorsement and approval	Political (Hilary Clinton, Donald Trump)	Leaders' campaign language and emphasized issues on Twitter	Number of retweets and favorites of the tweets	Text	Human assessment approaches (manual coding)
Brady et al., 2019, JEPG	Outcomes of leader communication	Leader endorsement and approval	Political (Hilary Clinton, Donald Trump, US politicians)	Moralized content of leaders' communication (e.g., words related to moral emotions)	The diffusion of leaders' messages through Twitter (retweets)	Text	Word count and linguistic computer measures (LIWC software)
Tur, Harstad, & Antonakis, 2021, LQ	Outcomes of leader communication	Leader endorsement and approval	Corporate and political	Leaders' verbal signals of charisma	Views of TED talks Retweets from Twitter	Text	Human assessment approaches (manual coding)
Tiedens, 2001, JPSP	Outcomes of leader communication	Attributions about the leader	Mix of political (Bill Clinton) and fabricated (in lab) leaders	Leaders' display of emotions (sadness vs. anger)	Status conferral to the leader	Text, facial cues, body gestures	Experimental Studies
Brescoll & Uhlmann, 2008, PS	Outcomes of leader communication	Attributions about the leader	Fabricated	Leader expression of anger, leader gender and occupational rank	Status conferral to the leader	Facial cues	Experimental Studies
Melwani, Mueller, & Overbeck, 2012, JAP	Outcomes of leader communication	Attributions about the leader	Fabricated	Leader emotional expression (compassion vs. contempt)	Perception of the expressor as leader-like	Facial cues, voice, body gestures	Human assessment approaches (manual coding)
Trichas & Schyns, 2012, LQ	Outcomes of leader communication	Attributions about the leader	Fabricated	Leader facial expressions (e.g., pulled-together eyebrows)	Perception of the expressor as leader-like	Facial cues	Experimental Studies
Trichas, Schyns, Lord, & Hall, 2017, LQ	Outcomes of leader communication	Attributions about the leader	Fabricated	Leader emotional expression (happy vs. nervous)	Leadership perceptions and ratings	Facial cues	Experimental Studies

Appendix 2. Review Articles on Leader Communication (Continued)

Author(s) (year), journal published	*Major research category*	*Subcategory*	*Leader type*	*Main independent variable(s)*	*Main dependent variable(s)*	*Communi-cation type*	*Analysis approach for communication data*
Witkower, Tracy, Cheng, & Henrich, 2020, JPSP	Outcomes of leader communication	Attributions about the leader	Political (Hilary Clinton, Donald Trump) and fabricated leaders (in lab)	Leader non-verbal signals (expansiveness, smiling, head-tilt)	Perceptions of the expressor's prestige and dominance	Facial cues, body gestures	Mixed methods - manual coding in field + experimental studies
Morran, Robison, & Stockton, 1985, JCP	Outcomes of leader communication	Follower attitudes and intentions	Fabricated	Feedback giver role (leader vs. non-leader) and valence (positive vs. negative)	Follower feedback acceptance	Text	Experimental Studies
Kirkpatrick & Locke, 1996, JAP	Outcomes of leader communication	Follower attitudes and intentions	Fabricated	Leader vision articulation and charismatic communication	Follower attitude, performance, and perception of leader charisma	Text, facial cues, body gestures	Experimental Studies
Shea & Howell, 1999, LQ	Outcomes of leader communication	Follower attitudes and intentions	Fabricated	Leadership styles (charismatic vs. non-charismatic) and task feedback type	Follower self-efficacy and performance quality	Text	Experimental Studies
Gaddis, Connelly, & Mumford, 2004, LQ	Outcomes of leader communication	Follower attitudes and intentions	Fabricated	Leader affect (positive vs. negative)	Follower attitudes about the leader's effectiveness and task performance	Text, voice, facial cues, body gestures	Experimental Studies
De Hoogh & Den Hartog, 2008, LQ	Outcomes of leader communication	Follower attitudes and intentions	Corporate (CEOs) in lab surveys	Leader's social responsibility language (e.g., concern for others, self-judgement)	Perceived leadership, TMT effectiveness, and subordinates' optimism	Text	Human assessment approaches (manual coding)
Mölders, Van Quaquebeke, & Paladino, 2017, Polit Psychol	Outcomes of leader communication	Follower attitudes and intentions	Fabricated in lab based on political leaders (German politicians)	Politician's disrespectful communication towards an opponent	Followers' voting intention for and social judgment of the politician	Text	Experimental Studies
Hardacre & Subasic, 2018, FP	Outcomes of leader communication	Follower attitudes and intentions	Fabricated	Leader gender and message framing on gender inequality	Followers' (men's vs. women's) support for equality	Text	Experimental Studies
Cowen & Montgomery, 2020, JAP	Outcomes of leader communication	Follower attitudes and intentions	Corporate (CEOs)	CEO gender, response to the organizational failure	Consumer purchase intent of the firm's	Text	Experimental Studies

Appendix 2. Review Articles on Leader Communication (Continued)

Author(s) (year), journal published	*Major research category*	*Subcategory*	*Leader type*	*Main independent variable(s)*	*Main dependent variable(s)*	*Communi-cation type*	*Analysis approach for communication data*
					products and perceived interactional fairness		
McHugo, Lanzetta, Sullivan, Masters, & Englis, 1985, JPSP	Outcomes of leader communication	Follower mood	Political (Ronald Reagan)	Leader expressive displays (happiness, anger, fear)	Follower emotions and attitudes	Facial cues, voice	Experimental Studies
Sullivan & Masters, 1988, AJPS	Outcomes of leader communication	Follower mood	Political	Leader emotional display (neutral vs. happy)	Follower emotional response	Facial cues	Experimental Studies
Bucy, 2000, CR	Outcomes of leader communication	Follower mood	Political (Bill Clinton)	News images and presidential reactions (valence and arousal manipulated)	Viewers' affective reactions and leader trait evaluations	Facial cues	Experimental Studies
Lewis, 2000, JOB	Outcomes of leader communication	Follower mood	Fabricated	Leaders' display of emotions (neutral vs. sadness vs. anger)	Follower affective state and assessment of the leader's effectiveness	Voice, facial cues, body gestures	Experimental Studies
Cherulnik, Donley, Wiewel, & Miller, Susan, 2001, JASP	Outcomes of leader communication	Follower mood	Fabricated and Political (George H.W. Bush, Bill Clinton)	Leader charisma (e.g., smiling, speech fluency, eye-contact)	Follower affect (e.g., number of smiles, smile intensity)	Facial cues, voice	Experimental Studies
Herold, 1977, AMJ	Outcomes of leader communication	Follower performance	Fabricated	1) Leader message (supportive vs. punitive), 2) subordinate behaviors	1) Subordinate task performance, 2) leaders' behaviors and attitudes	Text	Experimental Studies
Towler, 2003, Pers. Psychol	Outcomes of leader communication	Follower performance	Fabricated	1) Charismatic influence training, 2) leader charisma	1) Charismatic behaviors (e.g., visionary speech), 2) follower performance	Text, voice, facial cues, body gestures	Human assessment approaches (manual coding)
Damen, van Knippenberg, & van Knippenberg, 2008, JASP	Outcomes of leader communication	Follower performance	Fabricated	Leaders' emotional display (anger vs. enthusiasm)	Follower task performance and extra-role compliance	Voice, facial cues, body gestures	Experimental Studies
Purvanova & Bono, 2009, LQ	Outcomes of leader communication	Follower performance	Fabricated	1) Team context (virtual vs. face-to-face), 2) transformational	1) Perceived transformational leadership, 2) team performance	Text	Human assessment approaches (manual coding)

Appendix 2. Review Articles on Leader Communication (Continued)

Author(s) (year), journal published	*Major research category*	*Subcategory*	*Leader type*	*Main independent variable(s)*	*Main dependent variable(s)*	*Communi-cation type*	*Analysis approach for communication data*
				leadership communication			
Van Kleef et al, 2009, AMJ	Outcomes of leader communication	Follower performance	Fabricated	Leader emotional display (happiness vs. anger)	Team performance	Facial cues, voice, body gestures	Experimental Studies
Stam, van Knippenberg, & Wisse, 2010a, LQ	Outcomes of leader communication	Follower performance	Fabricated	Vision communication (follower-focused vs. no follower-focused)	Follower performance	Text	Experimental Studies
Stam, van Knippenberg, & Wisse, 2010b, JOB	Outcomes of leader communication	Follower performance	Fabricated	Vision communication (promotion- vs. prevention-focused)	Follower performance	Text	Experimental Studies
Van Kleef, Homan, Beersma, & van Knippenberg, 2010, PS	Outcomes of leader communication	Follower performance	Fabricated	Leader emotional display (happiness versus anger)	Team performance	Facial cues, voice, body gestures	Experimental Studies
Grant & Hofmann, 2011, OBHDP	Outcomes of leader communication	Follower performance	Fabricated	Ideological message content (prosocial vs. achievement), message source (leader vs. third party)	Employee performance	Text	Experimental Studies
Venus, Stam, & van Knippenberg, 2013, OBHDP	Outcomes of leader communication	Follower performance	Fabricated	Leader emotional display and vision communication	Follower task performance (proxy of vision communication effectiveness)	Text, voice, facial cues, body gestures	Experimental Studies
Visser, van Knippenberg, van Kleef, & Wisse, 2013, LQ	Outcomes of leader communication	Follower performance	Fabricated	Leader emotional display (happiness vs. sadness)	Follower creative and analytical performance, perception of leader effectiveness	Voice and facial cues	Experimental Studies
Locke & Anderson, 2015, JESP	Outcomes of leader communication	Follower performance	Fabricated	Leader confident non-verbal demeanor (e.g., eye-contact, voice loudness)	Subordinate participation and deference	Voice, facial cues, body gestures	Human assessment approaches (manual coding)
Naidoo, 2016, LQ	Outcomes of leader communication	Follower performance	Fabricated	Leader verbal framing and emotional expression	Follower creative performance	Text, facial cues, body gestures	Experimental Studies

Appendix 2. Review Articles on Leader Communication (Continued)

Author(s) (year), journal published	*Major research category*	*Subcategory*	*Leader type*	*Main independent variable(s)*	*Main dependent variable(s)*	*Communi-cation type*	*Analysis approach for communication data*
Stam et al., 2018, JOM	Outcomes of leader communication	Follower performance	Mix of political (US presidents) and fabricated leaders (in lab)	Leader communication (prevention- vs. promotion-focused)	Follower motivation, performance, leadership endorsement	Text	Mixed methods - computer word count measures in field + experimental studies
Antonakis, D'Adda, Weber, & Zehnder, 2021, MS	Outcomes of leader communication	Follower performance	Fabricated (field experiment)	Treatment (baseline vs. piece rate vs. charisma)	Employee performance	Text	Experimental Studies
Jensen et al., 2021, PsyArXiv	Outcomes of leader communication	Follower performance	Political	Leader charismatic signaling during the COVID-19 pandemic	Physical distancing (measured in field), individual distancing (measured in lab)	Text	Artificial Intelligence methods
Gubler, Kalmoe, & Wood, 2014, JBE	Outcomes of leader communication	Follower ethical behaviors	Fabricated	CEO metaphorical violent rhetoric	Employee willingness to engage in ethical violations	Text	Experimental Studies
Dang, Umphress, & Mitchell, 2017, JAP	Outcomes of leader communication	Follower ethical behaviors	Fabricated	Leaders' use of moral disengagement language	Followers' intent to ostracize the leader	Text	Experimental Studies
Weiss, Kolbe, Grote, Spahn, & Grande, 2018, LQ	Outcomes of leader communication	Follower ethical behaviors	Corporate	Leader inclusive language (implicit vs. explicit)	Follower voice behavior	Text	Word count and linguistic computer measures
Moore et al., 2019, JAP	Outcomes of leader communication	Follower ethical behaviors	Fabricated	High vs. low ethical leadership	Follower moral disengagement and unethical decisions	Text	Experimental Studies
Boulu-Reshef, Holt, Rodgers, & Thomas-Hunt, 2020, LQ	Outcomes of leader communication	Follower ethical behaviors	Fabricated	Leader communication (empowering vs. directive), leader-follower two-way communication	Follower free-riding behaviors	Text	Experimental Studies
Coe, Domke, Graham, John, & Pickard, 2004, JC	Outcomes of leader communication	Stakeholder responses to leader communication	Political (George W. Bush)	Leader binary discourse (e.g., good vs. evil, security vs. peril)	Media response (editorials from newspapers)	Text	Human assessment approaches (manual coding)
Ki & Nekmat, 2014, CHB	Outcomes of leader communication	Stakeholder responses to leader communication	Corporate	Crisis response strategies and level of interactivity with audience	Audience response tone (positive vs. negative) to the organization's message	Text	Human assessment approaches (manual coding)

Appendix 2. Review Articles on Leader Communication (Continued)

Author(s) (year), journal published	*Major research category*	*Subcategory*	*Leader type*	*Main independent variable(s)*	*Main dependent variable(s)*	*Communi-cation type*	*Analysis approach for communication data*
Jordan, Pennebaker, & Ehrig, 2018, SAGE Open	Outcomes of leader communication	Stakeholder responses to leader communication	Political (Hilary Clinton, Donald Trump)	Leaders' and followers' language (emotional tone, authenticity, analytic thinking)	Followers' tweets about the leader and their voting preference (polling numbers)	Text	Word count and linguistic computer measures (LIWC software)
Segars & Kohut, 2001, JMS	Outcomes of leader communication	Organizational strategy and performance	Corporate (CEOs)	CEO's letter effectiveness (e.g., credibility, efficacy)	Firm financial performance	Text	Human assessment approaches (manual coding)
Fanelli, Misangyi, & Tosi, 2009, Organ. Sci	Outcomes of leader communication	Organizational strategy and performance	Corporate leaders (CEOs)	CEO charismatic visions	Analyst recommendations and forecast errors	Text	Human assessment approaches (manual coding)
Wong, Ormiston, & Tetlock, 2011, AMJ	Outcomes of leader communication	Organizational strategy and performance	Corporate	TMT integrative complexity and decentralization of decision making	Corporate social performance	Text	Human assessment approaches (manual coding)
Carton, Murphy, & Clark, 2014, AMJ	Outcomes of leader communication	Organizational strategy and performance	Corporate	Leader communication of visions and values	Organizational and team performance quality	Text	Mixed methods - manual coding in field + experimental studies
Patelli & Pedrini, 2015, JBE	Outcomes of leader communication	Organizational strategy and performance	Corporate (CEOs)	Ethical leadership traits (resolute, complex, and not engaging language)	Financial reporting aggressiveness (e.g., likelihood of accounting restatements)	Text	Word count and linguistic computer measures (DICTION software)
Crilly, Hansen, & Zollo, 2016, AMJ	Outcomes of leader communication	Organizational strategy and performance	Corporate	1) Implementing firms vs. decoupling firms, 2) firm communication	1) Linguistic properties of firms' communication, 2) stakeholders' assessment of the firms	Text	Word count and linguistic computer measures (LIWC software)
Crilly, 2017, SMJ	Outcomes of leader communication	Organizational strategy and performance	Corporate	Executives' time-moving language (ego-moving frame versus time-moving frame)	Intertemoral choice in the context of a strategic decision (long- vs. short-term)	Text	Mixed methods - qualitative analysis in field + experimental studies
Guo, Yu, & Gimeno, 2017, AMJ	Outcomes of leader communication	Organizational strategy and performance	Corporate	1) Threat of entry, 2) vagueness in corporate communication	1) Vagueness in corporate communication, 2) competitive entry	Text	Word count and linguistic computer measures

Appendix 2. Review Articles on Leader Communication (Continued)

Author(s) (year), journal published	*Major research category*	*Subcategory*	*Leader type*	*Main independent variable(s)*	*Main dependent variable(s)*	*Communi-cation type*	*Analysis approach for communication data*
Chen, Demers, & Lev, 2018, MS	Outcomes of leader communication	Organizational strategy and performance	Corporate	1) Times during a day (morning vs. afternoon), 2) executive negative tone	1) Analysts' and executives' moods (positivity and negativity), 2) stock mispricing	Text	Word count and linguistic computer measures
König et al., 2018, AMJ	Outcomes of leader communication	Organizational strategy and performance	Corporate (CEOs)	CEO's use of metaphorical communication	Journalists' and analysts' statements and evaluations of the CEO's firm	Text	Human assessment approaches (manual coding)
Pan et al., 2018, SMJ	Outcomes of leader communication	Organizational strategy and performance	Corporate	Language concreteness in top managers' communication	Investor reactions (abnormal return)	Text	Word count and linguistic computer measures (LIWC software)
Choudhury, Wang, Carlson, & Khanna, 2019, SMJ	Outcomes of leader communication	Organizational strategy and performance	Corporate (CEOs)	CEO verbal communication and facial expressions	Firm M&A outcomes	Text, facial cues	Artificial Intelligence methods
Fabrizio & Kim, 2019, Organ. Sci	Outcomes of leader communication	Organizational strategy and performance	Corporate	1) Firm negative environmental information, 2) managers' obfuscating language	1) Managers' obfuscating language, 2) firm environmental performance rating	Text	Word count and linguistic computer measures
Shi, Zhang, & Hoskisson, 2019, AMJ	Outcomes of leader communication	Organizational strategy and performance	Corporate	CEO– CFO language style matching	CFO compensation and firm M&A actions	Text	Word count and linguistic computer measures (LIWC software)
Guo, Sengul, & Yu, 2020, AMJ	Outcomes of leader communication	Organizational strategy and performance	Corporate	Rival firm's negative earnings surprise and use of complex and vague language	Focal firm's competitive actions	Text	Word count and linguistic computer measures
Li, Shi, & Dasborough, 2021, HRM	Outcomes of leader communication	Organizational strategy and performance	Corporate (CEOs)	CEO's positive framing (use of positive words)	Firm's level of employee ownership	Text	Word count and linguistic computer measures
Sanchez-Ruiz, Wood, & Long-Ruboyianes, 2021, JBV	Outcomes of leader communication	Organizational strategy and performance	Corporate (entrepreneurs)	Ingratiation rhetoric (e.g., flattery, self-depreciation)	Investor funding amount	Text	Human assessment approaches (manual coding)

Appendix 2. Review Articles on Leader Communication (Continued)

Author(s) (year), journal published	*Major research category*	*Subcategory*	*Leader type*	*Main independent variable(s)*	*Main dependent variable(s)*	*Communi-cation type*	*Analysis approach for communication data*
Sergent & Stajkovic, 2020, JAP	Outcomes of leader communication	Nation- and state-level performance	Political	Leader gender and use of language (empathy and confidence)	COVID-19 deaths	Text	Word count and linguistic computer measures (LIWC software)
Afanasyev, Fedorova, & Ledyaeva, 2021, JEBO	Outcomes of leader communication	Nation- and state-level performance	Political (Donald Trump)	President's tweet towards Russia	Ruble's exchange rate	Text	Word count and linguistic computer measures
Medeiros, Crayne, Griffith, Hardy, & Damadzic, 2021, PID	Outcomes of leader communication	Nation- and state-level performance	Political	Leader COVID-19 statements (pragmatic vs. charismatic sensemaking)	Country infection rate of COVID-19	Text	Human assessment approaches (manual coding)

Notes. Journal published: AME-Academy of Management Executive, AMJ-Academy of Management Journal, AMLE- Academy of Management Learning & Education, ASQ-Administrative Science Quarterly, AJPS-American Journal of Political Science, AP-American Psychologist, ASR-American Sociological Review, BJM-British Journal of Management, BJPS-British Journal of Political Science, BH-Business Horizons, CR-Communication Research, CT-Communication Theory, CHB-Computers in Human Behavior, CGIR-Corporate Governance: An International Review, EJPR-European Journal of Political Research, EMJ-European Management Journal, FP-Frontier in Psychology, HR-Human Relations, HRM-Human Resource Management, IM-Information & Management, IJIM-International Journal of Information Management, ISQ-International Studies Quarterly, JAP-Journal of Applied Psychology, JBE-Journal of Business Ethics, JBR-Journal of Business Research, JBV-Journal of Business Venturing, JC-Journal of Communication, JCR-Journal of Conflict Resolution, JCP-Journal of Counseling Psychology, JEBO-Journal of Economic Behavior & Organization, JEPG-Journal of Experimental Psychology: General, JESP-Journal of Experimental Social Psychology, JITP-Journal of Information Technology and Politics, JIM-Journal of International Marketing, JOM-Journal of Management, JMS-Journal of Management Studies, JOB-Journal of Organizational Behavior, JPSP-Journal of Personality and Social Psychology, JPIM-Journal of Product Innovation Management, JQL-Journal of Quantitative Linguistics, JRP-Journal of Research in Personality, JASIST-Journal of the American Society for Information Science and Technology, JV-Journal of Voice, KBS- Knowledge-Based Systems, MCQ-Management Communication Quarterly, MS-Management Science, NMS-New Media and Society, Organ. Sci-Organization Science, Organ. Stud -Organization Studies, OBHDP-Organizational Behavior and Human Decision Processes, PID-Personality and Individual Differences, PSPB- Personality and Social Psychology Bulletin, Pers. Psychol-Personnel Psychology, Polit Psychol-Political Psychology, PS-Psychological Science, PSQ-Presidential Studies Quarterly, PRR-Public Relations Review, SPQ- Social Psychology Quarterly, SMJ-Strategic Management Journal, JP-Journal of Politics, LQ-The Leadership Quarterly.