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Poster

TITLE

Catalytic Leadership: How a President's Language Influences National Outcomes

SHORTENED TITLE

Catalytic Leadership: Language Affecting Outcomes

ABSTRACT

This study investigated the extent to which potential-focused leader language (inclusive, future-focused, and honest) is catalytic. An analysis of US presidential speeches found language was related to historian ratings, unskilled worker wages, and an enduring legacy (internet and book references), but unrelated to social (e.g., patents) and societal (e.g., prison population) outcomes.

PRESS PARAGRAPH

Is potential-focused, catalytic leadership language related to complex adaptive system outcomes? In this study, the language of US presidential addresses was coded to assess the extent to which it was predictive of national outcomes; specifically, we evaluated level of inclusion, future-focused optimism, and honesty. Results indicate that inclusiveness and future focused-optimism was related to historian ratings, lower class economic progress, and enduring legacy (internet and book references), but unrelated to broad economic progress (e.g., GDP), social innovation (e.g., patents) and societal outcomes (e.g., prison population). Future implications and research are discussed.

WORD COUNT

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Catalytic Leadership: How a President's Language Influences National Outcomes

The velocity of business and society has increased and continues to evolve to become more dynamic and networked (Johansen, 2009; Snowden & Boone, 2007). In today's complex adaptive systems (CAS; Uhl-Bien, Marion & McKelvey, 2007), leadership models are needed that move beyond hierarchical, individualistic, one-directional, static, and decontextualized ones (DeRue, 2011) to models that capture leadership as a shared process that is upward, sideways, downward and boundaryless (Carter, DeChurch, Braun, & Contractor, 2015; DeRue, 2011). However, we have only begun to explore what leaders can do to create positive change in environments characterized by fluidity and uncertainty (Lowell, 2016).

Leading as a Catalytic Process

CAS theory suggests that the key levers in a dynamic system are not necessarily the people (i.e., the nodes in a system), but the *processes* that affect how the elements of the system interact with one another (Lichtenstein, et al., 2006; Schneider & Somers, 2006). Thus, leaders who want to affect complex systems might have the most impact by introducing new interactive processes into the system to create coordination patterns which connects individual level interactions to team level and organizational level outcomes (Casti, 1994; Weick & Quinn, 1999). Likewise, symbols, language, norms, and values in the culture can impact how people behave toward one another because they impact what people see, how they interpret the information, and what they remember (DiMaggio, 1997; Schein, 2010). These can become the microfoundations, that is, leaders may be able to impact complex systems by introducing symbolic language that acts as catalysts into the larger system (Teece, 2007).

One role where symbolic leadership has been presumed to be important is in the US presidency. Given the balance of powers, persuasion and language becomes a particularly

powerful lever for change, what Teddy Roosevelt referred to as the bully pulpit. To create change, US presidents must persuade Congress, which may or may not be from the same party and who represent highly divergent state interests. Furthermore, even these changes are only effective if they reverberate through other systems such as business, community groups, and local politics to name a few.

The position of President of the United States (US) specifically is fraught with unique challenges and opportunities that can benefit from a catalytic leadership perspective. Large scale events such as wars, economic downturns, and technological advances bring forth the opportunity for the acting president to steer the country towards an emergent state. Catalytic leadership language can be one such way to evoke positive social change. The language used by presidents can influence public opinion on national matters (Brader, 2006). Furthermore, this use of public leadership and persuasion can influence groups, both small and large, to work to achieve the objectives mentioned within the speech (Kernell, 2007; Tedin, Rottinghaus, & Rodgers, 2011).

Levers of Change

We predict that some language is more likely to serve as a catalyst. Specifically, we predict that language that is inclusive, future-focused optimistic, and honest can affect how a complex adaptive system operates. If picked up and adopted broadly, the three elements can create energy in the system that causes it to expand economically, entrepreneurially, and socially. Furthermore, the leaders who adopt these stances will be recognized as having a long-term, enduring impact. In the following section, the three catalyst constructs are defined and discussed followed by a review of the five societal impacts (historian effectiveness ratings, economic progress, social progress, societal innovation, and enduring impact).

Catalytic Leadership Language

Catalytic, potential-focused leadership language is likely to be both a reflection of the person's worldview and an intentional behavior that is used to influence listeners. We hypothesize that three language dimensions will be particularly powerful.

Inclusiveness

The act of evoking a collective identity from a senior leader should both bring a group together and energize it (Shamir, Arthur, & House, 1993) and should influence follower motivation, collective action, and shared outcomes (House, Woycke, & Fodor, 1988). Historically, presidents focus on inclusion of the entire electorate especially after crises and encourage all to feel a part of something greater than themselves (Bass, 1990).

Future-focused Optimism

Leaders who cast an optimistic vision of the future can instigate positive emotional contagion (Barsade, 2002) and impact larger system outcomes (Kelloway & Barling, 2000). This may be for direct reports, but also entails the ability to rally the larger public to drive progress as well (Bligh, Kohles, & Meindl, 2004).

Honesty

Research suggests that integrity and honesty are important leadership character traits (Gardner, Coglisser, Davis, & Dickens, 2011). Three language dimensions are indicators that the leader is not trying to deceive the listeners: (a) higher number of self-references (b) less negative emotion words, and (c) more markers of cognitive complexity (Pennebaker, 2011; 2017). Individuals who are self-aware or more "honest" with themselves use more *self-references*. Secondly, lies tend to cause discomfort and guilt, hence they tend to increase *negative emotional words*. Finally, honesty requires a lower cognitive load. People can more easily tell of what they

did and did not do and make the distinction in their story as to what happened and what did not. This is reflected in a greater complexity in the words themselves since there is more availability in the cognitive space.

Catalytic Leadership Outcomes

Leadership outcomes of interest are always contextualized (Yukl, 2013). For US Presidents, five categories were identified as indicators of presidential effectiveness: historian presidential ratings, economic progress, social progress, societal innovation, and enduring impact.

Historian perceptions of presidential effectiveness. A variety of sources have relied on historian ratings to evaluate presidential effectiveness (Nichols, 2012). Historian ratings are desirable because historians retrospectively assess the long-term impact of the president's policies while also considering the historical context. When used, historians are asked to assess a variety of dimensions including leadership, crisis management, social justice, and international relations among others (Brinkley, Medford, Smith, & Browning, 2017; Nichols, 2012).

Economic progress. Economic progress has long been accepted in the US as an indicator of the capital and resources available within the society and is one of the more salient indicators of the productivity and prosperity of a society (Adler, 2016). Specific indicators that economists assess over time include the country's overall GDP, GDP per capita, and different segments of the income spectrum (e.g., top vs. bottom) to create an overall picture of the economic condition.

Social progress. However, economic progress is not the only measure of a society's success (Adler, 2016; Handy, 2002). Additional measures are needed to assess the social progress of a system including educational levels, citizen lifespan, and crime.

Societal innovation. Innovation within a system is also critical for ongoing adaptation and research suggests that leaders can directly and indirectly affect this (Hunter & Cushenbery, 2011). At the national level, the number of patents issued is one indicator of innovation. The number of immigrants may also be an indicator of the amount of innovation a society is willing to accept as a source of future diversity and innovation.

Enduring impact. Catalytic leaders should have a longer enduring impact because they create a sense of optimism and societal potential. Therefore, we propose that catalytic presidents' names will be more likely to be endure in the general population in the culture in general (e.g., internet hits) and in literature.

Hypotheses

We hypothesize that the three catalytic leadership language dimensions will be related to each of the national outcomes with particularly strong relationships for a select group. For example, we would expect optimistic future-focused language should be more strongly related to social rather than economic outcomes. Thus, we hypothesize the following (see summary in Figure 1):

Hypothesis 1: Catalytic leadership language indicating inclusiveness will be positively related to historian ratings, economic progress, and social progress.

Hypothesis 2: Catalytic leadership language indicating optimism will be positively related to historian ratings, societal innovation, and enduring impact.

Hypothesis 3: Catalytic leadership language indicating honesty will be positively related to historian ratings and enduring impact.

Method

Measures

Inaugural and State of the Union addresses of US presidents were downloaded and analyzed using Linguistic Inquiry and Word Count software (LIWC; Pennebaker, Francis, & Booth, 2001). LIWC dictionaries have been built that assess a variety of psychological and linguistic constructs (Pennebaker et al., 2001). For this study, similar LIWC constructs were selected and, if needed, were modified (e.g., to separate positive and negative words) using Pennebaker's established process to create the dictionaries (Pennebaker, Boyd, Jordan & Blackburn, 2015). Three raters independently sorted words into the targeted constructs. If two or more agreed on a word's inclusion, it was kept, otherwise it was dropped. Word dictionaries were created for sub-dimensions and a total score for three language dimensions: Inclusiveness, Future-focused optimism, and Honesty (See Table 1).

Inclusiveness. Categories in this dimension included words related to positive vs. negative affiliation, inclusive vs. exclusive prepositions, and first- vs. third-person pronouns. An overall score and sub-dimension scores were computed that represented the percent of inclusive vs. exclusive words were used within the presidential speeches.

Future-focused optimism. Words related to three sub-dimensions were combined to assess the extent to which the speeches were optimistic and future-focused: references to positive vs. negative rewards, positive vs. negative risk, and future-focused language.

Honesty. As noted earlier, studies suggest that honest people in comparison to people attempting to deceive tend to be self-referential (using first-person pronouns), do not express negative emotions, and engage in more complex cognitive language.

US National Outcomes

The outcomes assessed in the study included five dimensions: Historian ratings, Economic Progress, Social Progress, Societal Innovation, and the Presidents' Enduring Impact. Specific measures within each general dimension were chosen based on three criteria: the measures available for the majority of presidents, were sensitivity to catalytic leadership, and drawn from reliable sources (See Table 2 for a summary of data sources).

Historian ratings. Historians ($n = 93$) were surveyed (Brinkley et al., 2017) to assess presidents on a 10-point scale across ten dimensions (e.g., leadership, crisis management, international relations). Dimension ratings were averaged across historians and these scores were added together to create a total effectiveness score for each president.

Economic progress. Specific indicators such as real GDP, GDP per capita, and minimum wage may be influenced by the style of the leadership of the presidents. Specific indicators included Real GDP (GDP corrected for inflation), Real GDP per capita (GDP divided by population size), and the average salary of unskilled laborers as a proxy for individuals at the lower end of the economic ladder. To standardize data across presidents, change scores were calculated and included a one-year lag to model the likely delay of the impact of presidential action. This procedure was done for all multi-year measures.

Social progress. Education was measured as percent of the population that graduated from high school. Prison population was assessed based on state and federal prison populations.

Societal innovation. Two indicators of societal innovation were collected: Patents and Immigration rates. As noted earlier, both indicate innovation and diversity in the larger society.

Enduring impact. Presidential name use in the larger culture was assessed by capturing the number of web references (via Google) when the president's name was entered in

parentheses in combination with the word president. Middle initials were used when presidents had similar names. Presidential book references were also assessed (via Amazon) to assess the president's enduring impact in the culture. Total book references were computed by searching the president's first and last name and the word *president* within the Books section of Amazon. Additionally, the first 20 books were coded as positive or negative references. Autobiographies by the president or collections of president's writings or speeches were not included. All searches were conducted on the same day and were rounded.

Results

Prior to analysis, outliers were identified as scores beyond two standard deviations and were trimmed to the score equivalent to two standard deviations (Hastings, Mosteller, Tukey, & Winsor, 1947). Descriptive statistics are reported in Tables 3 and 4.

The predictive relationships between the language dimensions and historian ratings are summarized in Table 5 and the other dimensions in Table 6.

Hypothesis 1. As predicted, *Inclusiveness* was significantly correlated with Total Score of Historian Ratings, $r(42) = .32, p < .05$. Subdimensions such as Less Than Prepositions and Exclusive Prepositions, indicators of those note including others to the dialogue, were negatively correlated with how Historians rated on Pursuit of Equal Justice (Less Than, $r(42) = -.44, p < .001$; Exclusive, $r(42) = -.25, p < .05$). One correlation of note is the significant relationship between Inclusiveness and a key marker of Economic Progress, the wage of unskilled workers, $r(39) = .50, p < .05$. Conversely, Inclusiveness was positively correlated with prison population, $r(29) = .42, p < .05$ (Although subsequent analyses suggest this was driven by post-1970 presidents who tended to use more inclusive language and significantly increased prison ranks compared to any previous decades).

Hypothesis 2. *Future-Focused Optimism* also showed are several significant correlations within the outcomes of Historian Ratings and Enduring Impact (see Tables 3 and 4). Future-Focused Optimism overall had a significantly positive correlation with the number of Google mentions, $r(42) = .26, p < .05$). Specifically, the sub-dimension specifically showing a focus on the future shows a significant positive correlation with three key historian ratings (Total Score, $r(42) = .38, p < .01$; Crisis Leadership, $r(42) = .40, p < .01$, and Vision/Setting an Agenda, $r(42) = .40, p < .01$). Further, the positive depiction of reward words also showed significant relationships with several Historian Ratings, as hypothesized (Total Score, $r(42) = .37, p < .01$; Crisis Leadership, $r(42) = .36, p < .01$, and Vision/Setting an Agenda, $r(42) = .30, p < .05$). However, contrary to hypotheses, it was unrelated to Societal Innovation or its subdimensions.

Hypothesis 3. Lastly, *Honesty* was positively related to Total Book References of a president ($r(42) = .25, p < .05$), but unrelated to historian ratings or other measures of enduring impact. One subdimension within Honesty was correlated with several outcomes: Negative Emotion. As analyzed Negative Emotion was significantly correlated with the Total Score as rated by a historian ($r(42) = .27, p < .05$) and all outcomes showing the Enduring Impact of the President.

Discussion

Within this study, we explored the extent to which catalytic leadership language focused on inclusiveness, future-focused optimism, and honesty, as spoken by US presidents was related to national outcomes and personal legacy. Results indicated that inclusiveness and future-focused optimism was related to several national outcomes, primarily those related to the president's enduring legacy (e.g., book references, web search mentions). Furthermore, these dimensions were also related to the retrospective assessment of the perceived effectiveness of leaders (e.g.,

ratings by historians). However, results did not suggest a relationship to economic progress (e.g., GDP) nor Societal Innovation (e.g., immigration rates), although a positive relation as found with wages of unskilled labor workers and all three dimensions. Overall, the results suggest that presidential catalytic, potential-focused language is likely to affect the leader's legacy, but the relationship with immediate national outcomes tend to be limited.

Limitations

Given the correlational nature of this study, further research is needed in order to assess directionality of the relationships between leadership language and outcomes, potentially in a smaller systems (e.g., teams). Future research might also expand the lag time of the outcomes to see if societal outcomes, despite future presidential priorities and actions, have long-term implications. The multiple relationships with historian reflections would suggest this is a possibility.

Regarding the catalytic language dimensions, further work may be required to capture language over the 200-year period to ensure the language elements are similar over time and not interpreted through a 20th century lens (e.g., the changing attitudes toward the phrase Manifest Destiny). In addition, a review of the scatterplots suggest that some relationships may have been nonlinear (e.g., prison population), especially a problem with a smaller low sample size (e.g., 45 presidents).

Practical Implications

The results demonstrate the potential power of catalytic leadership language, even within the large and complex environment of the United States. The ability to use language that predicts one's enduring legacy and promote growth for overlooked groups (e.g., unskilled laborers in the current study) offers a potential lever to promote positive change in complex systems. Inclusive

language appears to be particularly powerful. Based on this study, leaders should avoid exclusionary and negatively valenced propositions such as “against” or “without.” To help drive inclusion, speeches can be filled with affiliative and group-oriented words. For example, a leader can emphasize “we” over “you,” and focus on mentioning “allies” and “teams.”

Similarly, the results suggest a connection between language demonstrating future-focused optimism. Specifically, leaders should consider focusing on the potential for rewards, rather than highlighting the risk of a certain action or movement. Leaders can achieve a future-focused optimism by discussing optimistic language “bonus, profit” with a focus on the future “will, soon.” Through providing a vision of a brighter future, leaders can not only increase follower perceptions in their current following but provide a view that people will remember historically.

Theoretical Implications

Theoretically, the research suggests that language, especially process-focused language; that is, how the nodes of the system operate with each other, can impact how the effectiveness of the leader is judged. Further research is needed however to tease out if leader attributes drive language (e.g., Pennebaker, 2011) or if language can be used as a rhetorical tool. In this study, honesty language indicators were unrelated to most outcomes. Future research may need to evaluate intentional vs. unintentional dishonesty and the extent to which honesty may interact with other dimensions.

Conclusion

By focusing on catalytic leadership language within a complex adaptive system, this research suggests that leaders may benefit greatly by looking beyond their team, and maybe even

beyond the boundaries of its organization, creating processes within the system that facilitate how the entities interact with one another.

References

- Adler, P. S. (2016). Alternative economic futures: A research agenda for progressive management scholarship. *Academy of Management Perspectives, 30*, 123-128.
- Barsade, S. G. (2002). The ripple effect: Emotional contagion and its influence on group behavior. *Administrative Science Quarterly, 47*, 644-675.
- Bass, B. M. (1990). *Bass & Stogdill's handbook of leadership: Theory, research, and managerial applications* (3rd ed.). New York, NY: Free Press.
- Bligh, M. C., Kohles, J. C., & Meindl, J. R. (2004). Charting the language of leadership: A methodological investigation of President Bush and the crisis of 9/11. *Journal of Applied Psychology, 89*, 562-574.
- Brader, T. (2006). *Campaigning for hearts and minds: How emotional appeals in political ads work*. Chicago, IL: University of Chicago.
- Brinkley, D. G., Medford, E.G., Smith, R.N., & Browning, R. X. (2017). *C-SPAN 2017 survey of presidential leadership*. Retrieved from <https://www.c-span.org/presidentsurvey2017/presidential-leadership>.
- Bureau of Justice Statistics. (2018). *Prisoners in 2016*. Retrieved from <https://www.bjs.gov/content/pub/pdf/p16.pdf>
- Cahalan, M. W. (1986). *Historical correction statistics in the United States, 1850–1984*. Washington, DC: U.S. Department of Justice, Bureau of Justice Statistics.
- Carter, D. R., DeChurch, L. A., Braun, M. T., & Contractor, N. S. (2015). Social network approaches to leadership: An integrative conceptual review. *Journal of Applied Psychology, 100*, 597-622.
- Casti, J. L. (1994). *Complexification: Explaining a paradoxical world through the science of surprise*. New York, NY: HarperCollins Publishers.

- DeRue, D. S. (2011). Adaptive leadership theory: Leading and following as a complex adaptive process. *Research in Organizational Behavior*, 31, 125-150.
- DiMaggio, P. (1997). Culture and cognition. *Annual Review of Sociology*, 23, 263-287.
- Gapminder (2014). "Life expectancy at birth in Gapminder World: data, metadata and notes." Retrieved from <https://www.gapminder.org/data/documentation/gd004/>
- Gardner, W. L., Coglisier, C. C., Davis, K. M., & Dickens, M. P. (2011). Authentic leadership: A review of the literature and research agenda. *The Leadership Quarterly*, 22, 1120-1145.
- Hastings Jr., C., Mosteller, F., Tukey, J. W., & Winsor, C. P. (1947). Low moments for small samples: A comparative study of order statistics. *Annals of Mathematical Statistics*, 18, 413-426.
- Handy, C. (2002, December). What's a business for? *Harvard Business Review*, 80(12), 49-56.
- House, R. J., Woycke, J., & Fodor, E. M. (1988). Charismatic and non charismatic leaders: Differences in behavior and effectiveness. In J. A. Conger & R. N. Kanungo (Eds.), *The Jossey-Bass management series. Charismatic leadership: The elusive factor in organizational effectiveness* (pp. 98-121). San Francisco, CA: Jossey-Bass.
- Hunter, S. T., & Cushenbery, L. (2011). Leading for innovation: Direct and indirect influences. *Advances in Developing Human Resources*, 13, 248-265.
- Johnston, L., & Williamson, S. H. (2018). *What was the U.S. GDP then?* Retrieved from <https://www.measuringworth.com/usgdp/>
- Kelloway, E. K., & Barling, J. (2000). What we have learned about developing transformational leaders. *Leadership & Organization Development Journal*, 21, 355-362.
- Kernell, S. (2007). *Going public: New strategies of presidential leadership*. Washington, DC: CQ Press.

Johansen, B. (2009). *Leaders make the future: Ten new leadership skills for an uncertain world*. San Francisco, CA: Berrett-Koehler Publishers.

Lichtenstein, B. B., Uhl-Bien, M., Marion, R., Seers, A., Orton, J. D., and Schreiber, C. (2006). Complexity leadership theory: An interactive perspective on leading in complex adaptive systems. *Emergence: Complexity and Organization*, 8(4), 2-12.

Lowell, K. R. (2016). An application of complexity theory for guiding organizational change. *The Psychologist-Manager Journal*, 19, 148-181.

Migration Policy Institute. (2018). *Legal immigration to the United States, 1820-Present*. Retrieved from <https://www.migrationpolicy.org/programs/data-hub/charts/Annual-Number-of-US-Legal-Permanent-Residents?width=850&height=850&iframe=true>

Nichols, C. (2012). The presidential ranking game: Critical review and some new discoveries. *Presidential Studies Quarterly*, 42, 275-299.

Officer, L. H., & Williamson, S. H. (2018). *Annual wages in the United States, 1774-Present*. Retrieved from <https://www.measuringworth.com/uswage/>

Pennebaker, J. W. (2011). *The secret life of pronouns: What our words say about us*. New York, NY: Bloomsburg Press.

Pennebaker, J. W. (2017). Mind mapping: Using everyday language to explore social & psychological processes. *Procedia Computer Science*, 118, 100-107.

Pennebaker, J. W., Boyd, R. L., Jordan, K., & Blackburn, K. (2015). *The development and psychometric properties of LIWC2015*. Austin, TX: University of Texas at Austin.

Pennebaker, J. W., Francis, M. E., & Booth, R. J. (2001). *Linguistic inquiry and word count: LIWC2001*. Mahwah, NJ: Erlbaum.

- Roser, M. (2018). *Economic growth*. Retrieved from <https://ourworldindata.org/grapher/gdp-per-capita-USA-over-the-long-run-MaddisonAndWorldBank>
- Schein, E. H. (2010). *Culture and leadership (4th ed.)*. San Francisco, CA: Wiley & Sons.
- Schneider, M., & Somers, M. (2006). Organizations as complex adaptive systems: Implications of complexity theory for leadership research. *The Leadership Quarterly*, 17, 351-365.
- Shamir, B., House, R. J., & Arthur, M. B. (1993). The motivational effects of charismatic leadership: A self-concept theory. *Organization Science*, 4, 577-594.
- Snowden, D. J., & Boone, M. E. (2007). A leader's framework for decision making. *Harvard Business Review*, 85(11), 68-76.
- Snyder, T. D. (Ed.) (1993). *120 years of American education: A statistical portrait*. Washington, DC: National Center for Education Statistics.
- Tedin, K., Rottinghaus, B., & Rodgers, H. (2011). When the president goes public: The consequences of communication mode for opinion change across issue types and groups. *Political Research Quarterly*, 64, 506-519.
- Teece, D. J. (2007). Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, 28, 1319-1350.
- Uhl-Bien, M., Marion, R., & McKelvey, B. (2007). Complexity leadership theory: Shifting leadership from the industrial age to the knowledge era. *The Leadership Quarterly*, 18, 298-318.
- United States Census Bureau. (2017). *Percent of people 25 years and over who have completed high school or college, by race, Hispanic origin and sex: Selected years 1940 to 2017*. Retrieved from <https://www.census.gov/data/tables/time-series/demo/educational-attainment/cps-historical-time-series.html>

United States Patent and Trademark Office, Patent Technology Monitoring Team. (2018). *U.S. patent activity: Calendar years 1790 to the present*. Retrieved

from https://www.uspto.gov/web/offices/ac/ido/oeip/taf/h_counts.htm

Weick, K. E., & Quinn, R. E. (1999). Organizational change and development. *Annual Review of Psychology*, *50*, 361-386.

Yukl, G. (2013). *Leadership in organizations* (8th ed.). Upper Saddle River, NJ: Prentice Hall.

Figure 1. Summary of Hypotheses

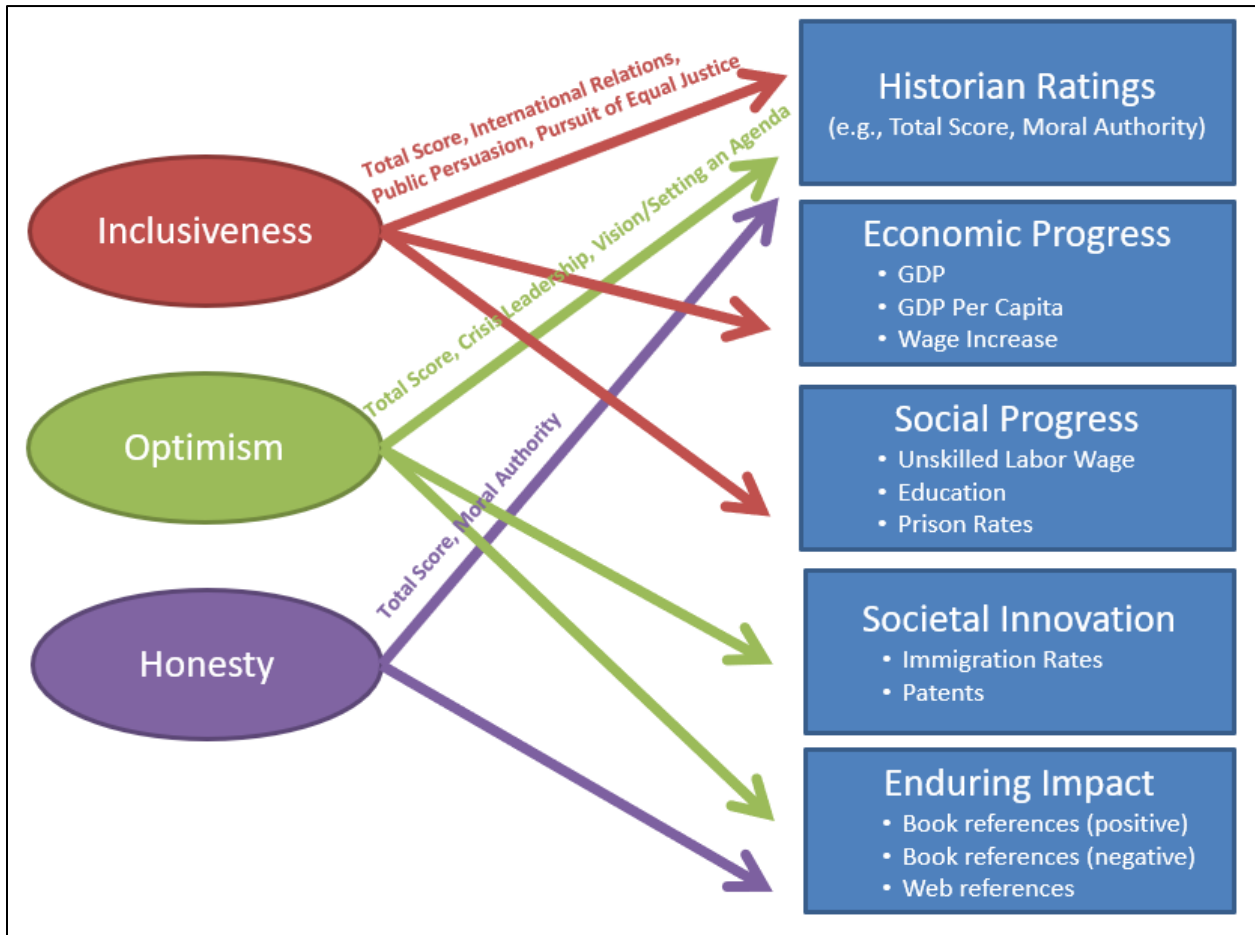


Table 1
Catalytic Leadership Language Dimensions, Associated Dictionaries, and Score Calculation

Construct	Associated Dictionaries	Overall Score Calculation
Inclusiveness	Affiliation ^a Friend ^a Interrogatives Question Marks First Person Plural (We) Third Person Singular (She / He) Third Person Plural (They) Exclusive Prepositions ^b Inclusive Prepositions ^b Equal to Prepositions ^b More Than Prepositions ^b Less Than Prepositions ^b Prepositions With	<i>Inclusiveness</i> = (We + Friend + Positive Affiliation + Inclusive Prepositions + Equal to Prepositions + Interrogatives + Question Marks) – (She / He + They + Greater Than Prepositions + Less Than Prepositions + Exclusive Prepositions)
Future-focused Optimism	Positive Emotion Negative Emotion Future Focus Reward ^a Risk ^a	<i>Optimism</i> = (Positive Risk + Positive Reward + Future Focus + Positive Emotion) - (Negative Risk + Negative Reward + Negative Emotion)
Honesty	Cause Certain Cognitive Processing Dictionary Differentiation Discrepancies Positive emotion Negative Emotion Impersonal pronouns Insight Prepositions Tentativeness Words Longer than Six Letters First Person Singular (I) First Person Plural (We) Second Person (You) Third Person Singular (She He) Third Person Plural (They)	<i>Honesty</i> = (Six Letter Words + Dictionary + I + We + She / He + You + They + Impersonal Pronouns + Prepositions + Cognitive Processing + Insight + Cause + Discrepancies + Tentativeness + Certainty + Differentiation + Positive Emotion) – Negative Emotion

Note. (a) both standard and custom dictionaries were used in analyses. (b) a custom dictionary was created to analyze the proposed facets.

Table 2

National Outcomes Measures, Subdimensions, Data Availability, and Data Sources

Dimension	Subdimension	Years Data Available	Source
Economic progress	Real GDP	1790 – 2017	Johnston & Williamson, 2018
	Per capita income	1800 – 2017	Roser, 2018
	Unskilled labor wage	1774 – 2017	Officer, L. H., & Williamson, S. H. (2018)
Social progress	Life span	1800 – 2017	Gapminder, 2014
	Graduation rates	1870 – 2017	Snyder, 1993
		1940 – 2017	US Census Bureau, 2017
	Prison population	1850 – 1980 1980 – 2016	Cahalan, 1986 Bureau of Justice Statistics, 2018
Societal innovation	Patents	1790 – 2017	US Patent and Trademark Office, 2018
	Immigration rates	1820 – 2016	Migration Policy Institute, 2018
Enduring impact	Internet hits	Conducted 01/20/2018	Google
	Book reference hits	Conducted 01/20/2018	Amazon

Table 3

Catalytic Leadership Language Dimensions Descriptive Statistics

Dimensions	Sample Words	Mean	SD	Range	
				Low	High
Inclusiveness		3.59	1.74	1.16	6.74
Positive Affiliation	ally, friend, team	2.99	1.74	1.10	6.38
Negative Affiliation	gang, consort, accomplice	.002	.01	.00	.04
Inclusive Prepositions	plus, toward, beside	.93	.16	.67	1.30
Exclusive Prepositions	except, against, without	.22	.05	.14	.35
First Person Plural (We)	we, us, out	2.13	1.39	.54	4.91
Third Person Singular (She/He)	she, her, him	.31	.16	.00	.69
Third Person Plural (They)	they, their, they'd	.99	.30	.44	1.63
Optimism		4.12	.83	2.71	5.80
Positive Reward	adventure, confident, add	.87	.17	.53	1.23
Negative Reward	steal, took, greed	.16	.07	.03	.30
Positive Risk	safe, trust, secure	.19	.07	.08	.35
Negative Risk	danger, doubt, warn	.47	.09	.28	.66
Future Focus	may, will, soon	1.46	.36	.90	2.18
Honesty		159.14	3.877	151.37	168.46
Cognitive Processing	cause, know, ought	9.69	.98	7.74	11.77
Negative Emotion	hurt, nasty, ugly	1.62	.40	.94	2.55
First Person Singular (I)	I, me, mine	.82	.35	.27	1.63

Table 4

National Outcome Descriptive Statistics

Variable	Dimensions	Mean	SD	Range	
				Low	High
Historian	Total Score	563.50	156.92	245.00	907.00
Ratings	Moral Authority	57.78	19.14	20.50	96.21
	International Relations	59.65	15.75	32.10	89.70
	Public Persuasion	58.65	19.76	23.90	96.80
	Pursuit of Equal Justice for All	49.03	17.14	22.60	85.14
	Crisis Leadership	57.29	19.48	18.15	96.45
	Vision and Setting an Agenda	58.21	19.35	26.20	94.00
	Administrative Skills	57.53	13.81	28.50	85.60
	Relations with Congress	54.27	17.1	83.0	14.05
	Economic Management	54.21	14.45	28.4	84.1
	Performance within Context of the Times	58.62	17.69	26.30	97.70
Economic	Real GDP	4.33	2.65	-.13	9.97
Progress	Real GDP per Capita	1.72	2.04	-2.71	6.13
	Wage of Unskilled Laborers	3.15	3.77	-2.73	10.88
Social	Life Expectancy	0.37	0.59	-1.40	2.11
Progress	Prison Population	2.85	2.66	-1.61	8.72
Societal	Patents	10.64	23.44	-22.80	95.26
Innovation	Immigration	10.29	22.68	-21.95	66.48
Enduring	Total Book References	516.62	436.77	96.00	1715.39
Impact	Book Positive References	1.90	1.84	.00	5.77
	Book Negative References	.68	1.23	.00	3.99
	Web References	531971.27	507587.44	16500	1713678.65

Table 5

Correlations of Catalytic Leadership Language Dimensions and Historian Ratings

Dimension	Total Ratings	Moral Authority	International Relations	Public Persuasion	Pursuit of Equal Justice for All	Crisis Leadership	Vision / Setting an Agenda	Administrative Skills	Relations with Congress	Economic Management	Performance Within Context of the Times
Inclusiveness (Total)	.32*	.14	.24	.32*	.52**	.30*	.27*	.16	.21	.33*	0.24
Positive Affiliation	.28*	.08	.18	.30*	.52**	.27*	.24	.12	.19	.29*	0.20
Negative Affiliation	-.18	-.36**	-.25	-.06	-.08	-.16	-.14	-.17	-.13	-.03	-0.17
Inclusive Propositions	.13	.23	.13	.09	-.12	.08	.19	.17	.13	.12	0.17
Exclusive Propositions	-.09	-.08	-.08	-.05	-.25*	-.06	.00	-.08	-.03	-.05	0.20
First Person Plural (We)	.30*	.32*	.20	.33*	.51**	.29*	.27*	.15	.20	.32*	0.23
Third Person Singular (She/He)	-.19	-.25	-.18	-.07	-.36**	-.12	-.05	-.23	-.21	-.09	-0.13
Third Person Plural (They)	.16	.14	.07	.25	-.09	.14	.30*	.15	.12	.18	0.19
Future-Focused Optimism (Total)	.28*	.25	.28*	.23	.25*	.28*	.22	.14	.19	.27*	0.24
Positive Reward	.37**	.25	.33*	.31*	.47**	.36**	.30*	.26*	.20	.37**	.31*
Negative Reward	.37**	.20	.27*	.37**	.52**	.35*	.32*	.24	.29*	.36**	.33*
Positive Risk	.17	.26*	.00	.18	.28*	.13	.11	.07	.15	.11	0.14
Negative Risk	.03	.05	-.05	.11	.06	.03	.18	-.04	.07	-.06	-0.01
Future Focus	.38**	.28*	.30*	.35*	.31*	.40**	.40**	.22	.36**	.34*	.36**
Honesty (Total)	.20	.16	.16	.27*	.01	.19	.24	.15	.16	.19	0.20
Cognitive Processing	.12	.06	.09	.25	-.02	.13	.18	.08	.11	.16	0.14
Negative Emotion	.27*	.18	.13	.30*	.30*	.28*	.26*	.14	.29*	.22	0.24
First Person Singular (I)	.15	.05	.05	.15	.32*	.15	0.10	.07	.11	.16	0.12

Note. * $p < .05$. ** $p < .01$. Correlations shaded in gray indicate a hypothesized relationship.

Table 6
Correlations of Catalytic Leadership Language Dimensions and National Outcomes

	Economic Progress			Social Progress		Societal Innovation		Enduring Impact			
	GDP	GDP per capita	Unskilled Labor Wage Increase	Lifespan	Prison Population	Patents Issued	Immigration Rates	Total Book References	Book Positive References	Book Negative References	Web References
Inclusiveness (Total)	-.06	.25	.50**	-.09	.42**	-.19	-.07	.35**	.34*	.55**	.62**
Positive Affiliation	-.09	.24	.47**	-.14	.37*	-.24	-.10	.32*	.33*	.59**	.61**
Negative Affiliation	-.09	-.08	-.03	-.16	.07	-.07	-.11	-.06	-.30*	.45**	-.21
Inclusive Prepositions	.25	-.15	-.25	-.17	-.20	.41**	.24	.13	-.10	-.21	-.25
Exclusive Prepositions	.19	.01	-.04	-.17	-.43**	.10	.08	.04	-.17	-.04	-.24
First Person Plural (We)	-.08	.25	.49**	-.13	.36*	-.24	-.09	.33*	.34*	.59**	.61**
Third Person Singular (She/He)	.24	.03	-.37**	-.35*	-.18	.07	-.02	-.15	-.27*	.01	-.25
Third Person Plural (They)	.07	-.20	-.06	-.28*	-.22	.29*	.01	.22	-.09	-.07	-.12
Future-Focused Optimism (Total)	-.01	.04	.26*	-.11	.42**	.15	-.04	.24	.23	.13	.26*
Positive Reward	-.10	.09	.35*	-.08	.17	-.12	-.08	.32*	.34*	.41**	.49**
Negative Reward	-.23	.14	.45**	.11	.36*	-.17	-.11	.32*	.47**	.45**	.64**
Positive Risk	-.18	-.13	.17	-.06	.23	.10	-.10	.24	.28*	.14	.24
Negative Risk	.13	.22	.25	-.10	.06	-.11	.03	.26*	.12	.24	.22
Future Focus	.10	.17	.44**	-.20	.25	.12	.01	.45**	.28*	.23	.40**
Honesty (Total)	.12	.06	.35*	-.30*	.06	.08	-.02	.25*	.06	.10	.11
Cognitive Processing	.03	.09	.28*	-.08	-.12	-.02	.02	.24	.03	.06	.13
Negative Emotion	.03	.24	.45**	-.14	.04	-.16	.05	.40**	.26*	.37**	.45**
First Person Singular (I)	.05	.20	.48**	-.04	.26	-.03	-.19	.22	.15	.28*	.35**

Note. * $p < .05$. ** $p < .01$. Correlations shaded in gray indicate a hypothesized relationship.