MAGIC WORDS

What to Say to Get Your Way

JONAH BERGER

HARPER
BUSINESS
An Imprint of HarperCollins*Publishers*

FIRST EDITION

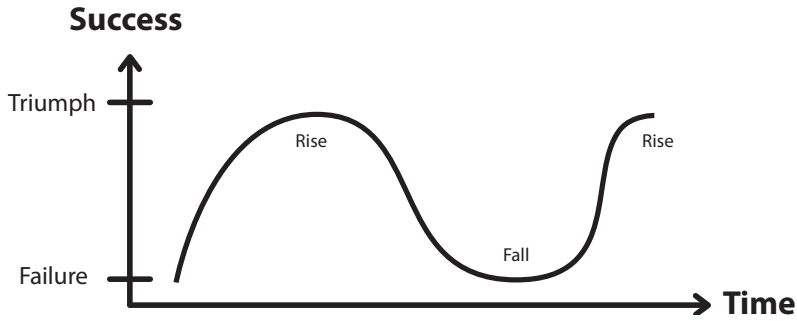
Library of Congress Cataloging-in-Publication Data
Names: Berger, Jonah, author.
Title: Magic words : what to say to get your way / Jonah Berger.
Description: First edition. | New York, NY : HarperCollins Publishers, [2023] | Includes bibliographical references and index. | Summary: "A book about how to use words in a way that is most persuasive"—Identifiers: LCCN 2022023797 (print) | LCCN 2022023798 (ebook) | ISBN 9780063204935 (hardcover) | ISBN 9780063204959 (ebook)
Subjects: LCSH: Persuasion (Psychology) | Communication.
Classification: LCC BF637.P4 B37 2023 (print) | LCC BF637.P4 (ebook) | DDC 153.8/52--dc23/eng/20220716
LC record available at https://lccn.loc.gov/2022023797
LC ebook record available at https://lccn.loc.gov/2022023798

ScoutAutomatedPrintCode

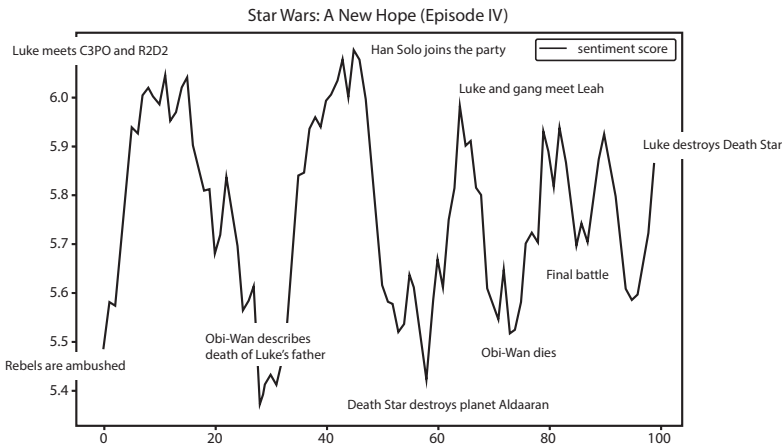
Examples of Definites		
Definitely	Guaranteed	Unambiguous
Clearly	Irrefutable	Unquestionable
Obviously	Absolutely	Essential
Undeniable	Everyone	Every time

Less Concrete		More Concrete
Pants	➡	Jeans
Refund	➡	Money back
Furniture	➡	Table
That	➡	T-shirt
Really	➡	Mouthwateringly
Nicely	➡	Warmly
Go	➡	Walk
Solve	➡	Fix

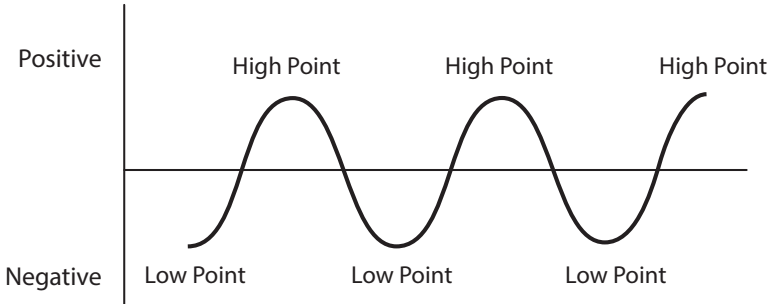
Vonnegut might have drawn the shape of Cinderella's story to be something like this:



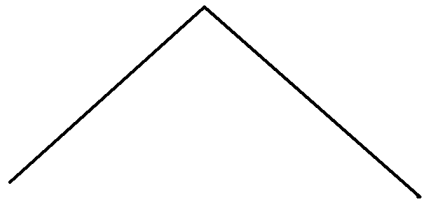
To get a sense of what this looks like, here is the emotional trajectory of the original Star Wars.



In these and similar examples, the emotional trajectory seems to follow a wavelike pattern. Like a mountain range, long climbs up to high points followed by long descents down to low points. Then back up again.



Story 1

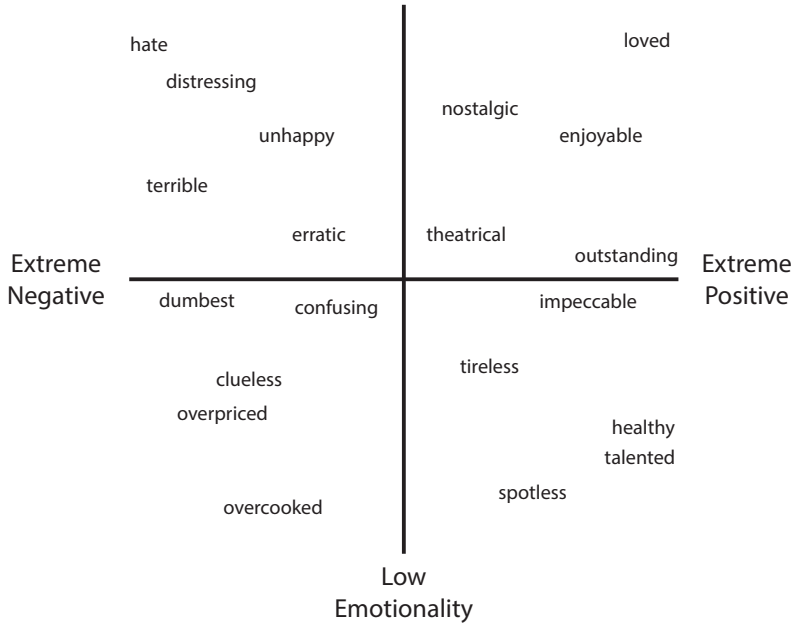


Story 2

The highs and lows are the same, but the emotional trajectories are quite distinct. In Story 1, the ride is smooth. Moments are increasingly positive until the apex when things turn around. The ride might be steep, but it's consistent.

Story 2, however, is a lot bumpier. The peak is the same, but rather than continuously increasing and then decreasing, the trajectory is more jagged. Things move in a positive direction but then get more negative before turning positive again.

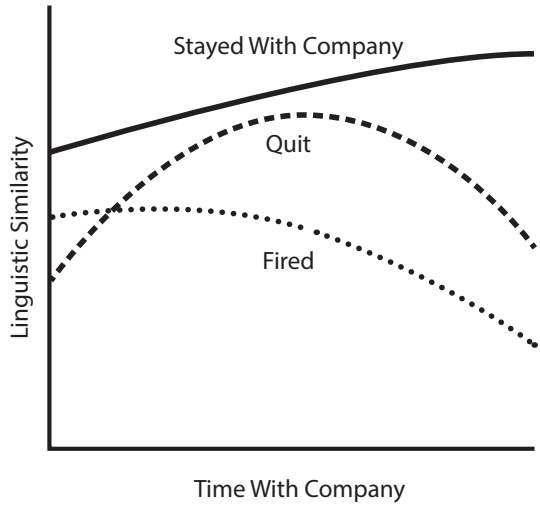
Which is better, a smooth ride or bumpy one?


hate
distressing
unhappy
terrible
erratic
dumbest
confusing
clueless
overpriced
overcooked
loved
nostalgic
enjoyable
theatrical
outstanding
impeccable
tireless
healthy
talented
spotless
Extreme Negative
Extreme Positive
Low Emotionality

Positive emotions also have different degrees of certainty. Pride is relatively certain, for example, while hope is often uncertain.

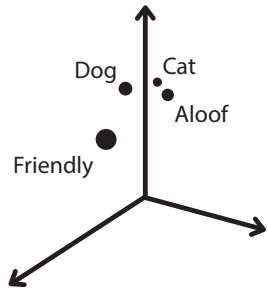
	Positive	Negative
Certain	Happiness Pride Excitement	Anger Disgust
Uncertain	Surprise Hope	Anxiety Surprise

Linguistic similarity even helped distinguish between employees who stayed at the firm and those who left to pursue better options. Not because they got fired, but because they were offered something better elsewhere. These folks assimilated early on, but at some point, their lan-guage started to diverge. While clearly capable of adapting, eventually they stopped trying, foreshadowing their intention to quit.



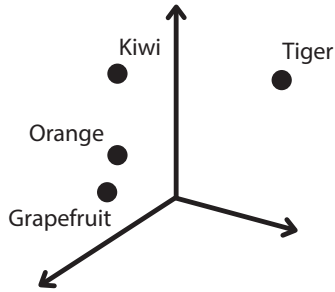
Topic	Example topic words
Anger and violence	bad, dead, hate, kill, slay
Body movement	body, bounce, clap, jump, shake
Dance moves	bop, dab, mash, nae, twerk
Family	American, boy, daddy, mamma, whoa
Fiery love	burn, feel, fire, heart, love
Girls and cars	car, drive, girl, kiss, road
Positivity	feel, like, mmm, oh, yeah
Spiritual	believe, grace, lord, one, soul
Street cred	ass, bitch, dope, rich, street
Uncertain love	ain't, can't, love, need, never

Word embedding does something similar with words: the more related words are to one another, the closer together they are positioned. The words "dog" and "cat" are probably pretty close together, for example, because they are both animals and pets. But based on their associations, the word "dog" might be closer to the word "friendly," whereas the word "cat" would be closer to the word "aloof."



Rather than using just two or three dimensions, this technique often uses hundreds of dimensions.

And because related words appear closer together, the similarity between words can be measured by the distance between them. The word "grapefruit," for example, is closer to the word "orange" than it is to "kiwi," indicating that they are more similar. And all of these fruit words, not surprisingly, are pretty far from the word "tiger."



Appendix

Reference Guide for Using and Applying Natural Language Processing

For the most part, this book has focused on individuals and how by understanding the new science of language, we can increase our influence and be more successful, in both our personal and professional lives.

But the same tools outlined here are equally useful for companies and organizations. Here are just a couple of examples of how they are being deployed.

CUSTOMER ANALYTICS

One place many companies are using natural language processing is in customer analytics. Using what customers, or potential customers, write or say to help predict their future behavior or encourage desired actions.

Take segmentation, for example. Some number of customers may have issues or complaints, but how do we know which ones to route where? By using their words, we can get a better sense of what they are looking for and whom to connect them to. We can even use machine learning to figure out who might be more likely to cancel their service, and try to intervene.

The same ideas can be applied to potential customers. Social media data provides a wealth of information about who someone is and what they care about. Companies use such information to target their ads, figuring out who to show which message based on the likelihood of conversion. Look-alike targeting, for example, finds people who are as similar as possible to existing customers on observable attributes and uses that to determine which potential customers might be most interested in a product or service.

Companies can also use language to learn about products to launch or problems to address. An approach called "social listening" combs social media data to understand how people are talking about a product, service, or idea. A hotel might learn that many consumers are complaining about the beds, for example, and use that to make a change. A drug maker might learn about emerging side effects or customer concerns.

Alternatively, the same data can be used in new-product development. By understanding what consumers are unhappy with about existing products and services, companies can determine how to best roll out new ones. Similarly, internet search data can be used to understand where opportunities are in a market or where interest is high.

LEGAL CASES

Language can also be used in interesting ways in legal cases. Say a detergent brand is being accused of greenwashing. The allegations suggest that the brand has been falsely marketing themselves as eco-friendly when they're really not. The standard approach might be to ask experts to opine on what they think is going on. An expert for the plaintiff could highlight a particular advertisement, for example, and argue that because it shows a picture of trees, or the earth, it must mean that the brand is marketing itself as eco-friendly.

But while this is a fine opinion, and may even be correct, the problem is it's just that. An opinion. It's pretty subjective.

A defense expert could look at the exact same advertisement and generate a completely different opinion based on the side they're supporting. The ad also talks about cleaning effectiveness, for example, so they could use that as indication that the brand isn't actually arguing they're eco-friendly.

So which is it?

Rather than one expert making a guesstimate, and the other side doing something similar, text analysis can provide a more realistic picture of what happened. By aggregating language from a large number of advertisements (or social media posts made by the brand), we can get a more accurate sense of what is going on.

A simple place to start would just count individual words. Take a list of environmental words (e.g., earth, environment, and eco-friendly), and count the number of times they appear. What percentage of ads, or social media posts, use at least one of these words? Further, is this language prevalent over time, or just a few ads that show up in a particular geography?

More complex techniques can shed even more light. By comparing

the language used by the detergent brand, and comparing it to the language used by other brands either known to be eco-friendly (e.g., Seventh Generation or Tide purclean) or not (e.g., Gain or regular Tide), one can get a more objective answer.

Using data from thousands of ads or posts by dozens of other brands known to pitch themselves as eco-friendly or not, one can train a machine-learning classifier to identify the degree to which a particular ad or post is pitching a brand as eco-friendly. Then, by running all the at-issue brand's ads and posts through the classifier, we can get a sense of whether, on average, the detergent brand is actually marketing themselves as eco-friendly.

One could use similar techniques to measure whether an alcohol brand's advertising is youth targeting, or a politician is talking more like a Democrat or a Republican.

Automated text analysis is particularly useful in these and similar examples because it allows us to travel back in time.

Say a technology company is being accused of false advertising. It claimed that its laptop was as "light as a feather" in a couple of its ads, and a lawsuit alleges that consumers bought the laptop based on that false claim.

One standard approach would be to use surveys. Take a set of consumers, show them the ad, and see whether they are more interested in buying the laptop than consumers who didn't see the ad.

Unfortunately, that still doesn't resolve the issue, because although the survey results suggest what consumers' reaction is to seeing the ad *today*, it says less about what their reaction was, or would have been, if they had seen the ad when it ran a couple years ago. Context changes; a

particular claim may have had one effect two years ago but have a completely different effect today.

Consequently, unless we can invent a time machine, it's almost impossible to know how people felt two years ago.

But text analysis can do just that.

By analyzing social media posts or product reviews, we can get a better sense of whether people picked up on that claim and whether it shaped their attitude toward the laptop. By examining posts consumers wrote about the product before and after the ads ran, for example, we can get a sense of whether they changed how positively they felt about it. Similarly, by delving deeper into the content of those posts, we can see not only whether consumers said more positive things but whether they actually mentioned attributes such as the laptop's weight when doing so.

Mass media language can also be useful. By analyzing the words used in newspaper articles about the product, we can see whether or not the media actually picked up on the claims made by the brand.

Time travel is still impossible, but text analysis enables a new type of archaeology. Like fossils from an ancient civilization or an insect preserved in amber, decades-old thoughts, opinions, and attitudes are hidden in digitized language. And automated text analysis provides the tools to unlock the insights hidden within.

SOME EASILY ACCESSIBLE TOOLS

This book has focused on the insights gained from language, but some people may be interested in applying some of the tools mentioned. Here are two that are easy to play around with.

- https://liwc.app/: A great resource for scoring texts on a variety of psychological dimensions
- http://textanalyzer.org/: A useful tool for scoring other dimenions and extracting basic topics or themes

If you're interested in more complex tools or how they can be used in a variety of settings, here are two recent review papers that discuss various methodologies:

- Jonah Berger and Grant Packard, "Using natural language processing to understand people and culture." *American Psychologist*, *77*(4), 525–537.
- Jonah Berger, Ashlee Humphreys, Stephen Ludwig, Wendy Moe, Oded Netzer, and David Schweidel, "Uniting the Tribes: Using Text for Marketing Insight," *Journal of Marketing* 84, no. 1 (2020): 1–25.

Acknowledgments

This book would not have been possible without Grant Packard, a collaborator, colleague, and friend who taught me basically everything I know about language. I hope we have many more years of successful collaborations. Thanks to Hollis Heimbouch and James Neidhardt for useful feedback along the way, to Jim Levine for ever-consistent guidance and support, and to Noah Katz for help with figures and references. Thanks to Maria and Jamie, for introducing me to a world of new language puzzles, to Jamie Pennebaker for all his amazing work in this space, and to Lilly and Caroline, for loving books. Finally, thanks to Jordan, Jasper, Jesse, and Zoe for making every day magical.

Notes

Introduction

1. Matthias R. Mehl et al., "Are Women Really More Talkative than Men?," *Science* 317, no. 5834 (2007): 82, doi.org/10.1126/science.1139940.
2. Ellen J. Langer, Arthur Blank, and Benzion Chanowitz, "The Mindlessness of Ostensibly Thoughtful Action: The Role of 'Placebic' Information in Interpersonal Interaction," *Journal of Personality and Social Psychology* 36, no. 6 (1978): 635.

Chapter 1: Activate Identity and Agency

1. Christopher J. Bryan, Allison Master, and Gregory M. Walton, "'Helping' Versus 'Being a Helper': Invoking the Self to Increase Helping in Young Children," *Child Development* 85, no. 5 (2014): 1836–42, https://doi.org/10.1111/cdev.12244.
2. Susan A. Gelman and Gail D. Heyman, "Carrot-Eaters and Creature-Believers: The Effects of Lexicalization on Children's Inferences About Social Categories," *Psychological Science* 10, no. 6 (1999): 489–93, https://doi.org/10.1111/1467-9280.00194.
3. Gregory M. Walton and Mahzarin R. Banaji, "Being What You Say: The Effect of Essentialist Linguistic Labels on Preferences," *Social Cognition* 22, no. 2 (2004): 193–213, https://doi.org/10.1521/soco.22.2.193.35463.
4. Christopher J. Bryan et al., "Motivating Voter Turnout by Invoking the Self," *Proceedings*

of the National Academy of Sciences of the United States of America 108, no. 31 (2011): 12653–56, https://doi.org/10.1073/pnas.1103343108.

5. Christopher J. Bryan, Gabrielle S. Adams, and Benoit Monin, "When Cheating Would Make You a Cheater: Implicating the Self Prevents Unethical Behavior," *Journal of Experimental Psychology: General* 142, no. 4 (2013): 1001, https://doi.org/10.1037/a0030655.
6. Vanessa M. Patrick, and Henrik Hagtvedt, "'I don't' Versus 'I can't': When Empowered Refusal Motivates Goal-Directed Behavior," *Journal of Consumer Research* 39, no. 2 (2012): 371–81, https://doi.org/10.1086/663212. Also see Vanessa Patrick's amazing book *The Power of Saying No: The New Science of How to Say No that Puts You in Charge of Your Life*. Sourcebooks.
7. Ting Zhang, Francesca Gino, and Joshua D. Margolis, "Does 'Could' Lead to Good? On the Road to Moral Insight," *Academy of Management Journal* 61, no. 3 (2018): 857–95, https://doi.org/10.5465/amj.2014.0839.
8. Ellen J. Langer and Alison I. Piper, "The Prevention of Mindlessness," *Journal of Personality and Social Psychology* 53, no. 2 (1857): 280, https://doi.org/10.1037/0022-3514.53.2.280.
9. Ethan Kross has done some great work in this space; see his book *Chatter: The Voice in Our Head, Why it Matters, and How to Harness It* (New York: Crown, 2021).
10. Ethan Kross et al., "Third-Person Self-Talk Reduces Ebola Worry and Risk Perception by Enhancing Rational Thinking," *Applied Psychology: Health and Well-Being* 9, no. 3 (2017): 387–409, https://doi.org/10.1111/aphw.12103; Celina R. Furman, Ethan Kross, and Ashley N. Gearhardt, "Distanced Self-Talk Enhances Goal Pursuit to Eat Healthier," *Clinical Psychological Science* 8, no. 2 (2020): 366–73, https://doi.org/10.1177/2167702619896366.
11. Antonis Hatzigeorgiadis et al., "Self-Talk and Sports Performance: A Meta-analysis," *Perspectives on Psychological Science* 6, no. 4 (2011): 348–56, https://doi.org/10.1177/1745691611413136.
12. Ryan E. Cruz, James M. Leonhardt, and Todd Pezzuti, "Second Person Pronouns Enhance Consumer Involvement and Brand Attitude," *Journal of Interactive Marketing* 39 (2017): 104–16, https://10.1016/j.intmar.2017.05.001.
13. Grant Packard, Sarah G. Moore, and Brent McFerran, "(I'm) Happy to Help (You): The Impact of Personal Pronoun Use in Customer-Firm Interactions," *Journal of Marketing Research* 55, no. 5 (2018): 541–55, https://doi.org/10.1509/jmr.16.0118.

Chapter 2: Convey Confidence

1. William M. O'Barr, *Linguistic Evidence: Language, Power, and Strategy in the Courtroom* (New York: Academic Press, 2014).
2. Bonnie E. Erickson et al., "Speech Style and Impression Formation in a Court Setting: The Effects of "'Powerful' and 'Powerless' Speech," *Journal of Experimental Social Psychology* 14, no. 3 (1978): 266–79, https://doi.org/10.1016/0022-1031(78)90015-X.
3. Some examples of this work include: Mark Adkins and Dale E. Brashers, "The Power of Language in Computer-Mediated Groups," *Management Communication Quarterly* 8, no. 3 (1995): 289–322, https://doi.org/10.1177/0893318995008003002; Lawrence

A. Hosman, "The Evaluative Consequences of Hedges, Hesitations, and Intensifies: Powerful and Powerless Speech Styles," *Human Communication Research* 15, no. 3 (1989): 383–406, https://doi.org/10.1111/j.1468-2958.1989.tb00190.x; Nancy A. Burell and Randal J. Koper, "The Efficacy of Powerful/Powerless Language on Attitudes and Source Credibility," in *Persuasion: Advances Through Meta-analysis*, edited by Michael Allen and Raymond W Preiss (Creskill, NJ: Hamapton Press, 1988): 203–15; Charles S. Areni and John R. Sparks, "Language Power and Persuasion," *Psychology & Marketing* 22, no. 6 (2005): 507–25, https://doi.org/10.1002/mar.20071; John R. Sparks, Charles S. Areni, and K. Chris Cox, "An Investigation of the Effects of Language Style and Communication Modality on Persuasion," *Communications Monographs* 65, no. 2 (1998): 108–25, https://doi.org/10.1080/03637759809376440.

4. Paul C. Price and Eric R. Stone, "Intuitive Evaluation of Likelihood Judgment Producers: Evidence for a Confidence Heuristic," *Journal of Behavioral Decision Making* 17, no. 1 (2004): 39–57, https://doi.org/10.1002/bdm.460.
5. Indeed, researchers whose grant proposals use less tentative language and more certain language get more funding from the National Science Foundation. See David M. Markowitz, "What Words Are Worth: National Science Foundation Grant Abstracts Indicate Award Funding," *Journal of Language and Social Psychology* 38, no. 3 (2019): 264–82, https://doi.org/10.1177/0261927X18824859.
6. Lawrence A. Hosman, "The Evaluative Consequences of Hedges, Hesitations, and Intensifiers: Powerful and Powerless Speech Styles," *Human Communication Research* 15, no. 3 (1989): 383–406; James J. Bradac and Anthony Mulac, "A Molecular View of Powerful and Powerless Speech Styles: Attributional Consequences of Specific Language Features and Communicator Intentions," *Communications Monographs* 51, no. 4 (1984): 307–19, https://doi.org/10.1080/03637758409390204.
7. Laurie L. Haleta, "Student Perceptions of Teachers' Use of Language: The Effects of Powerful and Powerless Language on Impression Formation and Uncertainty," *Communication Education* 45, no. 1 (1996): 16–28, https://doi.org/10.1080/03634529609379029.
8. David Hagmann and George Loewenstein, "Persuasion with Motivated Beliefs," in *Opinion Dynamics & Collective Decisions Workshop* (2017).
9. Mohamed A. Hussein and Zakary L. Tormala, "Undermining Your Case to Enhance Your Impact: A Framework for Understanding the Effects of Acts of Receptiveness in Persuasion," *Personality and Social Psychology Review* 25, no. 3 (2021): 229–50, https://doi.org/10.1177/10888683211001269.
10. Jakob D. Jensen, "Scientific Uncertainty in News Coverage of Cancer Research: Effects of Hedging on Scientists' and Journalists' Credibility," *Human Communication Research* 34, no. 3 (2008): 347–69, https://doi.org/10.1111/j.1468-2958.2008.00324.x.

Chapter 3: Ask the Right Questions

1. Alison Wood Brooks, Francesca Gino, and Maurice E. Schweitzer, "Smart People Ask for (My) Advice: Seeking Advice Boosts Perceptions of Competence," *Management Science* 61, no. 6 (2015): 1421–35, https://doi.org/10.1287/mnsc.2014.2054.
2. Daniel A. McFarland, Dan Jurafsky, and Craig Rawlings, "Making the Connection:

Social Bonding in Courtship Situations," *American Journal of Sociology* 118, no. 6 (2013): 1596–1649.

3. Karen Huang et al., "It Doesn't Hurt to Ask: Question-Asking Increases Liking," *Journal of Personality and Social Psychology* 113, no. 3 (2017): 430, https://doi.org/10.1037/pspi0000097.
4. Klea D. Bertakis, Debra Roter, and Samuel M. Putnam, "The Relationship of Physician Medical Interview Style to Patient Satisfaction," *Journal of Family Practice* 32, no. 2 (1991): 175–81.
5. Bradford T. Bitterly and Maurice E. Schweitzer, "The Economic and Interpersonal Consequences of Deflecting Direct Questions," *Journal of Personality and Social Psychology* 118, no. 5 (2020): 945, https://doi.org/10.1037/pspi0000200.
6. Julia A. Minson et al., "Eliciting the Truth, the Whole Truth, and Nothing but the Truth: The Effect of Question Phrasing on Deception," *Organizational Behavior and Human Decision Processes* 147 (2018): 76–93, https://doi.org/10.1016/j.obhdp.2018.05.006.
7. Arthur Aron et al., "The Experimental Generation of Interpersonal Closeness: A Procedure and Some Preliminary Findings," *Personality and Social Psychology Bulletin* 23, no. 4 (1997): 363–77.
8. Elizabeth Page-Gould, Rodolfo Mendoza-Denton, and Linda R. Tropp, "With a Little Help from My Cross-Group Friend: Reducing Anxiety in Intergroup Contexts Through Cross-Group Friendship," *Journal of Personality and Social Psychology* 95, no. 5 (2008): 1080, https://doi.org/10.1037/0022-3514.95.5.1080.

Chapter 4: Leverage Concreteness

1. Grant Packard and Jonah Berger, "How Concrete Language Shapes Customer Satisfaction," *Journal of Consumer Research* 47, no. 5 (2021): 787–806, https://10.1093/jcr/ucaa038.
2. Nooshin L. Warren et al., "Marketing Ideas: How to Write Research Articles That Readers Understand and Cite," *Journal of Marketing* 85, no. 5 (2021): 42–57, https://doi.org/10.1177/00222429211003560.
3. Ian Begg, "Recall of Meaningful Phrases," *Journal of Verbal Learning and Verbal Behavior* 11, no. 4 (1972): 431–39, https://doi.org/10.1016/S0022-5371(72)80024-0.
4. Jonah Berger, Wendy Moe, and David Schweidel, "Linguistic Drivers of Content Consumption," working paper, 2022; Yoon Koh et al., "Successful Restaurant Crowdfunding: The Role of Linguistic Style," *International Journal of Contemporary Hospitality Management* 32, no. 10 (2020): 3051–66, https://doi.org/10.1108/IJCHM-02-2020-0159.
5. Colin Camerer, George Loewenstein, and Martin Weber, "The Curse of Knowledge in Economic Settings: An Experimental Analysis," *Journal of Political Economy* 97, no. 5 (1989): 1232–54. See also Chip Heath and Dan Heath, *Made to Stick: Why Some Ideas Survive and Others Die* (New York: Random House, 2007).
6. Laura Huang et al., "Sizing Up Entrepreneurial Potential: Gender Differences in Communication and Investor Perceptions of Long-Term Growth and Scalability," *Academy of Management Journal* 64, no. 3 (2021): 716–40, https://doi.org/10.5465/amj.2018.1417.
7. Cheryl J. Wakslak, Pamela K. Smith, and Albert Han, "Using Abstract Language Signals

Power," *Journal of Personality and Social Psychology* 107, no. 1 (2014): 41, https://doi.org/10.1037/a0036626.

Chapter 5: Employ Emotion

1. Elliot Aronson et al., "The Effect of a Pratfall on Increasing Interpersonal Attractiveness," *Psychonomic Science* 4, no. 6 (1966): 227–28, https://doi.org/10.3758/BF03342263.
2. See also Andrew J. Reagan et al., "The Emotional Arcs of Stories Dominated by Six Basic Shapes," *EPJ Data Science* 5, no. 1 (2016): 1–12, https://doi.org/10.1140/epjds/s13688-016-0093-1.
3. Peter Sheridan Dodds et al., "Temporal Patterns of Happiness and Information in a Global Social Network: Hedonometrics and Twitter," *PLOS ONE*, December 7, 2011, https://doi.org/10.1371/journal.pone.0026752.
4. Erik Lindqvist, Robert Ostling, and David Cesarini, "Long-Run Effects of Lottery Wealth on Psychological Well-Being," *Review of Economic Studies* 87, no. 6 (2020): 2703–26, https://doi.org/10.1093/restud/rdaa006.
5. Shane Fredrick and George Loewenstein, in *Well-Being: The Foundations of Hedonic Psychology*, edited by D. Kahneman, E. Diener, and N. Schwarz (New York: Russell Sage, 1999), 302–29.
6. Leif D. Nelson, Tom Meyvis, and Jeff Galak, "Enhancing the Television-Viewing Experience Through Commercial Interruption," *Journal of Consumer Research* 36, no. 2 (2009): 160–72, https://doi.org/10.1086/597030.
7. Bart De Langhe, Philip M. Fernbach, and Donald R. Lichtenstein, "Navigating by the Stars: Investigating the Actual and Perceived Validity of Online User Ratings," *Journal of Consumer Research* 42, no. 6 (2016): 817–33, https://doi.org/10.1093/jcr/ucv047.
8. Matthew D. Rocklage, Derek D. Rucker, and Loran F. Nordgren, "Mass-Scale Emotionality Reveals Human Behaviour and Marketplace Success," *Nature Human Behavior* 5 (2021): 1323–29, https://doi.org/10.1038/s41562-021-01098-5.
9. For more examples of words that vary on these different dimensions, see The Evaluative Lexicon (http://www.evaluativelexicon.com/) and Matthew D. Rocklage, Derek D. Rucker, and Loren F. Nordgren, "The Evaluative Lexicon 2.0: The Measurement of Emotionality, Extremity, and Valence in Language," *Behavior Research Methods* 50, no. 4 (2018): 1327–44, https://doi.org/10.3758/s13428-017-0975-6.
10. Rocklage et al., "Mass-Scale Emotionality Reveals Human Behaviour and Marketplace Success."
11. Jonah Berger, Matthew D. Rocklage, and Grant Packard , "Expression Modalities: How Speaking Versus Writing Shapes Word of Mouth," *Journal of Consumer Research*, December 25, 2021, https://doi.org/10.1093/jcr/ucab076.
12. Matthew D. Rocklage and Russell H. Fazio, "The Enhancing Versus Backfiring Effects of Positive Emotion in Consumer Reviews," *Journal of Marketing Research* 57, no. 2 (2020): 332–52, https://doi.org/10.1177/0022243719892594.
13. Li, Yang, Grant Packard, and Jonah Berger, "When Employee Language Matters?" Working Paper.

Chapter 6: Harness Similarity (and Difference)

1. Amir Goldberg et al., "Enculturation Trajectories and Individual Attainment: An Interactional Language Use Model of Cultural Dynamics in Organizations," in Wharton People Analytics Conference, Philadelphia, PA, 2016.
2. James W. Pennebaker et al., "When Small Words Foretell Academic Success: The Case of College Admissions Essays," *PLOS ONE*, December 31, 2014: e115844, https://doi.org/10.1371/journal.pone.0115844.
3. See, e.g., Molly E. Ireland et al., "Language Style Matching Predicts Relationship Initiation and Stability," *Psychological Science* 22, no. 1 (2011): 39–44, https://doi.org/10.1177/0956797610392928; Balazs Kovacs and Adam M. Kleinbaum, "Language-Style Similarity and Social Networks," *Psychological Science* 31, no. 2 (2020): 202–13, https://doi.org/10.1177/0956797619894557.
4. Jonah Berger and Grant Packard, "Are Atypical Things More Popular?," *Psychological Science* 29, no. 7 (2018): 1178–84, https://doi.org/10.1177/0956797618759465.
5. David M. Blei, Andrew Y. Ng, and Michael I. Jordan, "Latent Dirichlet Allocation," *Journal of Machine Learning Research* 3 (2003): 993–1022, https://www.jmlr.org/papers/volume3/blei03a/blei03a.pdf.
6. Ireland et al., "Language Style Matching Predicts Relationship Initiation and Stability"; Paul J. Taylor and Sally Thomas, "Linguistic Style Matching and Negotiation Outcome," *Negotiation and Conflict Management Research* 1, no. 3 (2008): 263–81, https://doi.org/10.1111/j.1750-4716.2008.00016.x.
7. Kurt Gray et al., "'Forward Flow': A New Measure to Quantify Free Thought and Predict Creativity," *American Psychologist* 74, no. 5 (2019): 539, https://doi.org/10.1037/amp0000391; Cristian Danescu-Niulescu-Mizil et al., "You Had Me at Hello: How Phrasing Affects Memorability," *Proceedings of the ACL*, 2012.
8. Olivier Toubia, Jonah Berger, and Jehoshua Eliashberg, "How Quantifying the Shape of Stories Predicts Their Success," *Proceedings of the National Academy of Sciences of the United States of America* 118, no. 26 (2021): e2011695118, https://doi.org/10.1073/pnas.2011695118.
9. Henrique L. Dos Santos and Jonah Berger, "The Speed of Stories: Semantic Progression and Narrative Success," *Journal of Experimental Psychology: General*. (2022) 151(8):1833-1842 - https://pubmed.ncbi.nlm.nih.gov/35786955/

Chapter 7: What Language Reveals

1. Ryan L. Boyd and James W. Pennebaker, "Did Shakespeare Write *Double Falsehood*? Identifying Individuals by Creating Psychological Signatures with Text Analysis," *Psychological Science* 26, no. 5 (2015): 570–82, https://doi.org/10.1177/0956797614566658.
2. Language use differs by gender (Mehl & Pennebaker 2003; Welch, Perez-Rosas, Kummerfeld, & Mihalcea 2019), for example, age (Pennebaker & Stone 2002; Morgan-Lopez et al., 2017; Sap et al., 2014), race (Preotiuc-Pietro & Ungar, 2018), and political affiliation (Preotiuc-Pietro et al., 2017; Sterling, Jost, & Bonneau, 2020).
3. James W. Pennebaker et al., "When Small Words Foretell Academic Success: The Case

of College Admissions Essays," *PLOS ONE*, December 31, 2014, e115844, https://doi.org/10.1371/journal.pone.0115844; Matthew L. Newman et al., "Lying Words: Predicting Deception from Linguistic Styles," *Personality and Social Psychology Bulletin* 29, no. 5 (2003): 665–75, https://doi.org/10.1177/0146167203251529.

4. The use of language is also associated with a host of health outcomes (see Sinnenberg et al., 2017 for a review), including mental health (de Choudhury, Gamin, Counts, and Horvitz, 2013; Eichstaedt et al., 2018; Guntuku et al., 2017; see Chancellor and De Choudhury 2020 for a review), ADHD (Guntuku et al., 2019), and heart disease (Eichstaedt et al., 2015), often predicting these outcomes better than self-report or SES measures.
5. Sarah Seraj, Kate G. Blackburn, and James W. Pennebaker, "Language Left Behind on Social Media Exposes the Emotional and Cognitive Costs of a Romantic Breakup," *Proceedings of the National Academy of Sciences of the United States of America* 118, no. 7 (2021): e2017154118, https://doi.org/10.1073/pnas.2017154118.
6. Oded Netzer, Alain Lemaire, and Michal Herzenstein, "When Words Sweat: Identifying Signals for Loan Default in the Text of Loan Applications," *Journal of Marketing Research* 56, no. 6 (2019): 960–80, https://doi.org/10.1177/0022243719852959.
7. Reihane Boghrati, "Quantifying 50 Years of Misogyny in Music," Risk Management and Decision Processes Center, April 27, 2021, https://riskcenter.wharton.upenn.edu/lab-notes/quantifying-50-years-of-misogyny-in-music/#:~:text=To percent20look per cent20at percent20misogyny percent20in,is percent20portrayed percent20implicitly percent20in percent20lyrics.
8. Jahna Otterbacher, Jo Bates, and Paul Clough, "Competent Men and Warm Women: Gender Stereotypes and Backlash in Image Search Results," *CHI 17: Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems*, May 2017, 6620–31, https://doi.org/10.1145/3025453.3025727.
9. Janice McCabe et al., "Gender in Twentieth-Century Children's Books: Patterns of Disparity in Titles and Central Characters," *Gender & Society* 25, no. 2 (2011): 197–226, https://doi.org/10.1177/0891243211398358; Mykol C. Hamilton et al., "Gender Stereotyping and Under-representation of Female Characters in 200 Popular Children's Picture Books: A Twenty-First Century Update," *Sex Roles* 55, no. 11 (2006): 757–65, https://doi.org/10.1007/s11199-006-9128-6.
10. Rae Lesser Blumberg, "The Invisible Obstacle to Educational Equality: Gender Bias in Textbooks," *Prospects* 38, no. 3 (2008): 345–61, https://doi.org/10.1007/s11125-009-9086-1; Betsey Stevenson and Hanna Zlotnik, "Representations of Men and Women in Introductory Economics Textbooks," *AEA Papers and Proceedings* 108 (May 2018): 180–85, https://doi.org/10.1257/pandp.20181102; Lesley Symons, "Only 11 Percent of Top Business School Case Studies Have a Female Protagonist," *Harvard Business Review*, March 9, 2016, https://hbr.org/2016/03/only-11-of-top-business-school-case-studies-have-a-female-protagonist.
11. Nikhil Garg et al., "Word Embeddings Quantify 100 Years of Gender and Ethnic Stereotypes," *Proceedings of the National Academy of Sciences of the United States of America* 115, no. 16 (2018): E3635–44, https://doi.org/10.1073/pnas.1720347115; Anil Ramakrishna et al., "Linguistic analysis of differences in portrayal of movie characters," *Proceedings of the 55th Annual Meeting of the Association for Computational Linguistics* 1 (2017): 1669–78, https://doi.org/10.18653/v1/P17-1153; Liye Fu, Cristian Danescu-Niculescu-Mizil, and Lillian Lee, "Tie-Breaker: Using Language

Models to Quantify Gender Bias in Sports Journalism," July 13, 2016, arXiv, https://doi.org/10.48550/arXiv.1607.03895.
12. "Racial Divide in Attitudes Towards the Police," The Opportunity Agenda, https://www.opportunityagenda.org/explore/resources-publications/new-sensibility/part-iv.
13. Perry Bacon, Jr. "How the Police See Issues of Race and Policing," FiveThirtyEight, https://fivethirtyeight.com/features/how-the-police-see-issues-of-race-and-policing/.
14. Rob Voigt et al., "Language from Police Body Camera Footage Shows Racial Cisparities in Officer Respect," *Proceedings of the National Academy of Sciences of the United States of America* 114, no. 25 (2017): 6521–26, https://doi.org/10.1073/pnas.1702413114.

Epilogue

1. Claudia M. Mueller and Carol S. Dweck, "Praise for Intelligence Can Undermine Children's Motivation and Performance," *Journal of Personality and Social Psychology* 75, no. 1 (1998): 33, https://doi.org/10.1037/0022-3514.75.1.33.