

Six Guidelines for Interesting Research

Kurt Gray¹ and Daniel M. Wegner^{2†}

¹University of North Carolina, Chapel Hill and ²Harvard University

Perspectives on Psychological Science
8(5) 549–553

© The Author(s) 2013

Reprints and permissions:

sagepub.com/journalsPermissions.nav

DOI: 10.1177/1745691613497967

pps.sagepub.com



Abstract

There are many guides on *proper* psychology, but far fewer on *interesting* psychology. This article presents six guidelines for interesting research. The first three—Phenomena First, Be Surprising, and Grandmothers, Not Scientists—suggest how to choose your research question; the last three—Be The Participant, Simple Statistics, and Powerful Beginnings—suggest how to answer your research question and offer perspectives on experimental design, statistical analysis, and effective communication. These guidelines serve as reminders that replicability is necessary but not sufficient for compelling psychological science. Interesting research considers subjective experience; it listens to the music of the human condition.

Keywords

creativity, imagination, social cognition, research design, data analysis

“We know the truth not only by reason, but by the heart.” (#282, Pascal, 1670)

Composing music isn’t hard. Just sit down at a keyboard, press a few white and black keys, and voilà!—you’re a maestro. Admittedly, there are rules regarding keys, time signatures, and chord progressions, but once these are learned, composing legitimate music is a snap. Of course, there is a great leap from *legitimate* music to *compelling* music, from obeying rules to moving an audience to tears. Likewise, doing psychological research isn’t hard. Pick a research question, randomly assign participants, collect data, compute statistics, and then write it up, making sure to follow rules of reliability and validity. Indeed, thousands of research articles are published every year that feature legitimate scientific research—but how many of them are *interesting*? Interesting research not only contains words of scientific truth but also sets them to music; with its rise and fall, it speaks of the grandness of human experience to both our minds and our hearts. Like compelling music, interesting research may seem ephemeral and difficult to capture, but here we offer six guidelines.

These guidelines are meant to accompany the many articles on conducting proper research—articles that sketch out rules regarding sufficient statistical power, double-blind experimenters, and appropriate analysis techniques; that give suggestions regarding construct operationalization, questionnaire development, and debriefing; and that warn about external generalizability, the limits of self-report, and

the dangers of nonreplicability. These guides are immensely helpful, but most of us aspire to do more than simply proper research. We became psychologists to explore the true nature of the self, solve the mysteries of love, find the seeds of evil, or address similarly deep and important questions about humanity. Unfortunately, the vicissitudes of peer review, job markets, tenure races, and grant panels can dim this spark, turning the seductive and stirring into the safe and suitable. We write this article to reignite the fire.

The first section of this article covers how to choose an interesting research question, and the second section covers how to answer it. Each guideline is illustrated by examples from social psychological research, both classic and modern, from our labs and those of others. These guidelines have been learned through a career that includes discovering the slippery definition of action (Vallacher & Wegner, 1987), the distributive nature of memory (Wegner, Erber, & Raymond, 1991), the intractability of thought (Wegner, 1994b), the illusion of

Corresponding Author:

Kurt Gray, Department of Psychology, University of North Carolina, Chapel Hill, Chapel Hill, NC 27599

E-mail: kurtgray@unc.edu

†APS notes with sadness the passing of our friend and colleague Dan Wegner on July 5, 2013, just as this manuscript went into production. His memory will live on, not just in the creativity and breadth of his contribution to psychological science, but also in the obvious joy he took from his research, as imparted to his students, and in his writing, as illustrated in this piece.

conscious will (Wegner, 2002), and the structure of mind perception (H. M. Gray, Gray, & Wegner, 2007). They have been imparted from the second author to his students—including the first author—and will soon be presented for your reading pleasure. We must acknowledge that many of these guidelines have been said before by others¹ and that many researchers need no help being interesting. It is also important to assert that the interesting should never eclipse the true; truth is the highest goal of science, with no exceptions. On the road to truth, however, there are often forks that force you to choose between two or more potential research questions, study designs, or analysis techniques. We hope to nudge you down the more interesting path.

Choosing Your Research Question

1. Phenomena first

“Try not to think of a polar bear, and you will see that the cursed thing will come to mind every minute.” First written by a young Dostoyevsky (1863/2009, p. 49), this admonition captures a powerful psychological experience—the inability to control your own mind. The inability to suppress thoughts grew eventually into multiple studies (Wegner, Schneider, Carter, & White, 1987) and a review article (Wegner, 1994a), but it started first with a simple phenomenon: the maddening persistence of a white bear. Studies and theories matter only if they are grounded in a compelling human experience with clear qualia—the more powerful the better. The experienced reality of both conscious will (Wegner, 2002) and the self (Wegner, 2008) are so indelible that they persist even in the face of falsification.

Nagel (1974) famously wondered “What is it like to be a bat?” whereas we wonder “What is it like to be a person?” Shunning the classic definition of social psychology (how people are influenced by others; Allport, 1954), we echo the definition provided by Wegner and Gilbert (2000): “the understanding of subjective experience” (p. 1). Studying human experience means that often “research ideas are better gathered from life than from the *Journal of Personality and Social Psychology*” (p. 670, Wegner, 2011). The longevity of the work of Milgram, Asch, and Zimbardo stems not from their theories but from the psychological weight of obedience, conformity, and cruelty. Of course, there may be nothing as practical as a good theory (Lewin, 1951), but its importance is proportional to the importance and vividness of the phenomenon it explains. Anything can be cocooned by studies and theories, but something beautiful emerges only if there lies, in its center, something alive.

2. Be surprising

Human experience is varied, and only some of it makes for interesting psychology. Interesting phenomena are typically those that counter intuitions, a fact that has long been recognized (and debated) in the field. Phenomena can oppose intuitions in different ways, but this can generally be formalized as “phenomenon seems like X, but is actually the opposite of X” (Davis, 1971)! Examples of this opposition include reality versus illusion (free will seems real but is illusory; Wegner, 2002), unity versus pluralism (mind perception seems singular but has two dimensions; H. M. Gray et al., 2007), good versus bad (self-deception seems bad but is beneficial; Taylor, 1989), and similar versus different (men and women seem different but are similar; Mehl, Vazire, Ramírez-Esparza, Slatcher, & Pennebaker, 2007). Indeed, any antonym pairing can capture attention—consider the endurance of Orwell’s (1949) paradoxes “war is peace,” “ignorance is strength,” and “freedom is slavery.”

One concrete test for evaluating ideas is to imagine the most surprising outcome possible (i.e., the best case scenario). If results were exactly as predicted, would they be interesting? If not, you should dream bigger when hypothesizing or perhaps consider the opposite of your hypothesis—if one way is intuitive, the opposite may be surprising. Counterintuitiveness has a limit, however. To be understood, even counterintuitions must be somewhat intuitive, which explains why the most enduring folktales and religions are only minimally counterintuitive (Norenzayan, Atran, Faulkner, & Schaller, 2006)—it is easier to imagine reality as a deity’s dream than as *n*-dimensional vibrating strings.

3. Grandmothers, not scientists

Exhortations of counterintuitiveness suggest a natural question: whose intuitions? Psychological research can oppose the intuitions of scientists or laypeople, each for different kinds of impact (Davis, 1971). Countering scientists’ intuitions may generate the greatest short-term impact (and citations) because it most directly engages the scientific literature. Conversely, countering laypeople’s intuitions may yield fewer immediate citations, especially if the research does not easily fit into established scientific paradigms. Such work may maximize long-term impact, however, because the intuitions of laypeople are reasonably stable, whereas those of scientists depend upon changeable paradigms (Kuhn, 2012/1962). The importance of cognition seemed revolutionary during the era of behaviorism, but it now seems obvious. On the other hand, laypeople may never accept that

someone can be made to administer lethal shocks with only polite insistence (Milgram, 1963).

Ideally, research should counter both scientists' and laypeople's intuitions, but we emphasize the latter—not only for its universal and lasting appeal but also because it minimizes intellectual crowding and the chance of getting scooped. Science naturally clusters into subfields in which many researchers study a few specific topics. Subfields are useful because questions are clearly defined and progress easily measured, but they can sometimes lead to both myopia and “toe-stepping.” As soon as you find yourself surrounded by others, consider seeking out the dangerous freedom of the unexamined. Usually—but not always—this risk is rewarded and can help lay the foundation for a new subfield. Like an architect, design and construct new buildings, but try not to dwell in them.

Answering Your Research Question

You have a clever phenomenon with counterintuitive predictions that put both fellow scientists and your grandmother's bridge group into a frenzy. How do you test these predictions? What studies and analyses should be used? And how do you begin writing up your results? Here are three more tips.

4. *Be the participant*

Imagine two ways to test conformity. In the first, participants press a computer key after seeing words on a computer screen. In the second, participants blatantly lie, sabotaging performance on a trivially easy task to answer similarly to others (Asch, 1963). Although both methods are scientifically valid, there is a reason the second is immortalized in textbooks. It makes participants experience the phenomenon firsthand; it compels subjective experience. Experimental paradigms with powerful participant experiences also make for good journal articles, because they provide an immersive narrative for the reader. It is impossible not to empathize with Milgram's participant, who “at one point, pushed his fist into his forehead and muttered: ‘Oh God, let's stop it.’ And yet he continued to respond to every word of the experiment and obeyed to the end” (Milgram, 1963, p. 377).

Beyond evoking the experience associated with a phenomenon, don't be afraid to make experiments generally curious, bizarre, and outlandish. Like the ideas behind the experiments, we try to make our experiments themselves interesting, using Ouija boards and self-injuring smock-weary assistants to study free will (Wegner, Sparrow, & Winerman, 2004; Wegner & Wheatley, 1999), putters and pendulums to study mental control (Wegner, Ansfield, & Pilloff, 1998), games of footsie to study secret relationships (Wegner, Lane, & Dimitri, 1994), creepy

humanoid robots to study mind perception (K. Gray & Wegner, 2012), pornography and torture to study moral typecasting (K. Gray, Knobe, Sheskin, Bloom, & Barrett, 2011; K. Gray & Wegner, 2010), and massage chairs and electric shocks to study dyadic completion (K. Gray, 2012; K. Gray & Wegner, 2008). Even if these paradigms had failed to reveal scientific truths, they would have succeeded at being engaging for participants. Compelling studies are more difficult to orchestrate, of course, but are usually worth the cost: engaged participants make not only for engaged readers but also for more valid results (Aronson, Wilson, & Brewer, 1998).

5. *Simple statistics*

The last few decades have seen huge advances in statistics and technology. Analyses of variance (ANOVAs) once took months to calculate, whereas structural equation modeling now takes seconds. Unfortunately, sophisticated analyses can obscure phenomena and make psychology less interesting. We suggest that simpler statistics are better, and that the all-time best statistic is a single number: in Milgram's (1963) obedience study, 65% of people went all the way. Beyond a simple mean, we recommend first using *t* tests, then one-way ANOVAs, and then 2×2 factorial ANOVAs. If a more complicated analysis is needed, think about redesigning the study; four-way interactions can be explained, but would anyone care enough to listen? Some of the most elegant psychological science on the planet will never be used simply because it is too complicated to understand.

However, even complex data can remain clear and intuitive with the right figure. Complicated gestalt principles are readily apparent when looking at dots and lines. Thousands of mind-perception comparisons and three kinds of psychopathology are simplified with cartoon characters, two axes, and colored arrows (K. Gray, Jenkins, Heberlein, & Wegner, 2011). Like statistics, figures should also strive for simplicity and optimize the “interocular trauma test”—they should hit readers right between the eyes. To paraphrase Edward Tufte (1983), a pioneer of data visualization, figures should be made to conserve as much ink as possible, with every line and dot reflecting a conscious choice. Like the study it represents, a figure should tell its own story; it should stand alone, worthy of its value of a thousand words.

6. *Powerful beginnings*

With writing, as with life, first impressions matter; when you write about your research, the first paragraph is supremely important. It should summarize the entire article in everyday language and invite the reader to consider what it is like to be human. Consistent with the

guidelines reviewed earlier, the first paragraph should highlight the phenomenon—its experience, counterintuitiveness, and importance to the layperson—and perhaps outline your cunning and elegant research design. It should almost never contain a reference. This doesn't mean withholding appropriate credit but instead writing truths that are so compelling and universal that they need no external validation. The first paragraph should take note of the opening quote by Blaise Pascal, and connect the science to the heart. This may be a tall order for one paragraph, but you should spend hours and hours to make these first few sentences sing.

Echoing the first paragraph, the last paragraph should sew everything back into the tapestry of human experience. The conclusion should not be a restatement of the results but instead a grander statement, one that ideally takes the reader back to the first paragraph or the opening quote or one that links the findings to some famous idea. It may be a new twist on what was found or a different way of seeing it that puts it into a bigger context. People have a powerful memory for endings (Kahneman, Fredrickson, Schreiber, & Redelmeier, 1993), and so you want the reader to remember your article with a tinge of giddiness and awe. And between the first and the last paragraphs? You should be clear, concise, and direct, and never take yourself so seriously that you can't use a cheap gag or two (e.g., Wegner, 2009, p. 49). Most importantly, you should *never* emphasize the cleverness of your own research, and *never ever* have the hubris to offer guidelines on how to be interesting.

Truths and Deep Truths

Without question, the highest aim of science is to discover truth, but some truths are deeper than others. For compelling psychological research, truth is necessary but not sufficient; there are many scientific truths that are banal and forgettable. Replicable research is important (Open Science Collaboration, 2012), but also essential is that others care enough to replicate it—even large bodies of data need beating hearts to keep them alive. These six guidelines serve as our reminder that psychological science thrives when research speaks to both the mind and the heart—when science becomes art, and art becomes science.

These suggestions are not the first or final word in interesting research, and the reader is free to disagree with any or all of them. Disagreement is desired, actually, because it means that the guidelines themselves are interesting. In his guide to writing, Orwell (2005, p. 119) encouraged readers to “break any of these rules sooner than say anything outright barbarous.” We encourage the reader to break any of our rules if the result is more

interesting psychology. If you can address the enduring mysteries of the human condition with key presses, complex designs, and sophisticated statistics, then kudos. The real test is whether, when your articles are read in the cold silence of a bright office, the reader cannot help but hear the melody of human experience.

Acknowledgments

We thank all our colleagues, coauthors, mentors, and students who inspire us through their interest in the interesting.

Declaration of Conflicting Interests

The authors declared that they had no conflicts of interest with respect to their authorship or the publication of this article.

Note

1. Most notably by Murray Davis (1971) in his article “That's Interesting!”—required reading in the Wegner lab.

References

- Allport, G. (1954). *Handbook of social psychology*. New York, NY: Addison-Wesley.
- Aronson, E., Wilson, T. D., & Brewer, M. B. (1998). Experimentation in social psychology. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (4th ed., Vol. 2, pp. 99–124). New York, NY: Oxford University Press.
- Asch, S. E. (1963). Effects of group pressure upon the modification and distortion of judgments. In H. S. Guetzkow (Ed.), *Groups, leadership and men: Research in human relations. Reports on research sponsored by the Human Relations and Morale Branch of the Office of Naval Research 1945–1950* (pp. 177–190). New York, NY: Russell & Russell.
- Davis, M. S. (1971). That's interesting!: Towards a phenomenology of sociology and a sociology of phenomenology. *Philosophy of the Social Sciences*, *1*, 309–344. doi:10.1177/004839317100100211
- Dostoyevsky, F. (2009). *Winter notes on summer impressions* (FitzLyon, K., Trans.). Richmond, England: Oneworld Classics. (Original work published 1863)
- Gray, H. M., Gray, K., & Wegner, D. M. (2007). Dimensions of mind perception. *Science*, *315*, 619.
- Gray, K. (2012). The power of good intentions: Perceived benevolence soothes pain, increases pleasure, and improves taste. *Social Psychological and Personality Science*, *3*, 639–645.
- Gray, K., Jenkins, A. C., Heberlein, A. S., & Wegner, D. M. (2011). Distortions of mind perception in psychopathology. *Proceedings of the National Academy of Sciences, USA*, *108*, 477–479. doi:10.1073/pnas.1015493108
- Gray, K., Knobe, J., Sheskin, M., Bloom, P., & Barrett, L. F. (2011). More than a body: Mind perception and objectification. *Journal of Personality and Social Psychology*, *101*, 1207–1220.
- Gray, K., & Wegner, D. M. (2008). The sting of intentional pain. *Psychological Science*, *19*, 1260–1262. doi:10.1111/j.1467-9280.2008.02208.x

- Gray, K., & Wegner, D. M. (2010). Torture and judgments of guilt. *Journal of Experimental Social Psychology, 46*, 233–235. doi:10.1016/j.jesp.2009.10.003
- Gray, K., & Wegner, D. M. (2012). Feeling robots and human zombies: Mind perception and the uncanny valley. *Cognition, 125*, 125–130. doi:10.1016/j.cognition.2012.06.007
- Kahneman, D., Fredrickson, B. L., Schreiber, C. A., & Redelmeier, D. A. (1993). When more pain is preferred to less: Adding a better end. *Psychological Science, 4*, 401–405. doi:10.1111/j.1467-9280.1993.tb00589.x
- Kuhn, T. S. (2012). *The structure of scientific revolutions*: 50th anniversary edition. Chicago, IL: University of Chicago Press. (Original work published 1962) Retrieved from http://books.google.com/books?hl=en&lr=&id=3eP5Y_OOuzwC
- Lewin, K. (1951). Problems of research in social psychology. In D. Cartwright (Ed.), *Field theory in social science: Selected theoretical papers* (pp. 155–169). New York, NY: Harper & Row.
- Mehl, M. R., Vazire, S., Ramírez-Esparza, N., Slatcher, R. B., & Pennebaker, J. W. (2007). Are women really more talkative than men? *Science, 317*, 82. doi:10.1126/science.1139940
- Milgram, S. (1963). Behavioral study of obedience. *Journal of Abnormal and Social Psychology, 67*, 317–378.
- Nagel, T. (1974). What is it like to be a bat? *The Philosophical Review, 83*, 435–450. doi:10.2307/2183914
- Norenzayan, A., Atran, S., Faulkner, J., & Schaller, M. (2006). Memory and mystery: The cultural selection of minimally counterintuitive narratives. *Cognitive Science, 30*, 531–553. doi:10.1207/s15516709cog0000_68
- Open Science Collaboration. (2012). An open, large-scale, collaborative effort to estimate the reproducibility of psychological science. *Perspectives on Psychological Science, 7*, 657–660.
- Orwell, G. (1949). *Nineteen eighty-four*. London, England: Secker and Warburg.
- Orwell, G. (2005). *Why I write*. New York, NY: Penguin Books.
- Pascal, B. (1670). *Pensees*. Paris, France: Guillaume Desprez.
- Taylor, S. E. (1989). *Positive illusions: Creative self-deception and the healthy mind*. New York, NY: Basic Books.
- Tufte, E. (1983). *The visual display of quantitative information*. Cheshire, CT: Graphics Press.
- Vallacher, R. R., & Wegner, D. M. (1987). What do people think they're doing? Action identification and human behavior. *Psychological Review, 94*, 3–15. doi:10.1037/0033-295X.94.1.3
- Wegner, D. M. (1994a). Ironic processes of mental control. *Psychological Review, 101*, 34–52.
- Wegner, D. M. (1994b). *White bears and other unwanted thoughts: Suppression, obsession, and the psychology of mental control* (Reprint). New York, NY: The Guilford Press.
- Wegner, D. M. (2002). *The illusion of conscious will*. Cambridge, MA: MIT Press.
- Wegner, D. M. (2008). Self is magic. In J. Baer, J. C. Kaufman, & R. F. Baumeister (Eds.), *Are we free? Psychology and free will* (pp. 226–247). New York, NY: Oxford University Press.
- Wegner, D. M. (2009). How to think, say, or do precisely the worst thing for any occasion. *Science, 325*, 48–50. doi:10.1126/science.1167346
- Wegner, D. M. (2011). Setting free the bears: Escape from thought suppression. *The American Psychologist, 66*, 671–680. doi:10.1037/a0024985
- Wegner, D. M., Ansfield, M., & Pilloff, D. (1998). The putt and the pendulum: Ironic effects of the mental control of action. *Psychological Science, 9*, 196–199.
- Wegner, D. M., Erber, R., & Raymond, P. (1991). Transactive memory in close relationships. *Journal of Personality and Social Psychology, 61*, 923–929. doi:10.1037/0022-3514.61.6.923
- Wegner, D. M., & Gilbert, D. T. (2000). Social psychology—The science of human experience. In H. Bless & J. P. Forgas (Eds.), *Subjective experience in social cognition and behavior* (pp. 1–9). Philadelphia, PA: Psychology Press.
- Wegner, D. M., Lane, J. D., & Dimitri, S. (1994). The allure of secret relationships. *Journal of Personality and Social Psychology, 66*, 287–300.
- Wegner, D. M., Schneider, D. J., Carter, S. R., & White, T. L. (1987). Paradoxical effects of thought suppression. *Journal of Personality and Social Psychology, 53*, 5–13. doi:10.1037/0022-3514.53.1.5
- Wegner, D. M., Sparrow, B., & Winerman, L. (2004). Vicarious agency: Experiencing control over the movements of others. *Journal of Personality and Social Psychology, 86*, 838–848. doi:10.1037/0022-3514.86.6.838
- Wegner, D. M., & Wheatley, T. (1999). Apparent mental causation: Sources of the experience of will. *American Psychologist, 54*, 480–492. doi:10.1037/0003-066X.54.7.480