Six Guidelines for Interesting Research

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Abstract

There are many guides on *proper* psychology, but far fewer on *interesting* psychology. This paper 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 second 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.

Six Guidelines for Interesting Research

"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 voila!—you're a maestro. Admittedly, there are rules regarding keys, time signatures and chord progressions, but once 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, measure, run 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 non-replicability. 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, or solve the mysteries of love, or 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 help fuel re-ignition.

The first section of this paper 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, 1994a), the illusion of conscious will (Wegner, 2002), and the structure of mind perception (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 others,[1] 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

One: Phenomena First.

Try not to think of a white bear. First said by a young Dostoyevsky, this admonition captures a powerful psychological experience—the inability to control your own mind. The

[1] most notably by Murray Davis (1971) in his article "That's Interesting!"—required reading in the Wegner lab.

inability to suppress thoughts grew eventually into multiple studies (Wegner, Schneider, Carter, & White, 1987) and a review paper (Wegner, 1994b), but it started first with a simple phenomenon: the maddening persistence of a white bear. Studies and theories only matter 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 as how people are influenced by others (Allport, 1954), we echo the definition provided by Wegner and Gilbert (2000), that social psychology is 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.

Two: Be Surprising.

Human experience is varied, and only some makes for interesting psychology. Interesting phenomenon 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 can generally be formalized as "phenomenon seems like X, but is actually the opposite of X

(Davis, 1971)!" Examples of this opposition include reality vs. illusion (free will seems real but is illusory; Wegner, 2002), unity vs. pluralism (mind perception seems singular but is two dimensional; Gray et al., 2007), good vs. bad (self-deception seems bad but is beneficial; Taylor, 1989), and similar vs. 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. Counter-intuitiveness has a limit, however. To be understood, even anti-intuitions must be somewhat intuitive, explaining 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.

Three: Grandmothers, Not Scientists.

Exhortations of counter-intuitiveness 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 best generate 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, 1962). The importance of cognition seemed revolutionary during the era of behaviorism, but 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 sub-fields in which many researchers study a few specific topics. Sub-fields 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 sub-field. 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 counter-intuitive 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.

Four: 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 first-hand; 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. (p. 377, Milgram, 1963)"

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 footsies to study secret relationships (Wegner, Lane, & Dimitri, 1994), creepy humanoid robots to study mind perception (Gray & Wegner, 2012), pornography and torture to study moral typecasting (Gray, Knobe, Sheskin, Bloom, & Barrett, 2011; Gray & Wegner, 2010), and massage chairs and electric shocks to study dyadic completion (Gray & Wegner, 2008; Gray, 2012). 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 not only make for engaged readers, but also for more valid results (Aronson, Wilson, & Brewer, 1998).

Five: Simple Statistics.

The last few decades have seen huge advances in statistics and technology. 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 x 2 factorial ANOVAs. If a more complicated analysis is needed, think about redesigning the study; 4-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.

Even complex data can remain clear and intuitive with the right figure, however. 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 (Gray, Jenkins, Heberlein, & Wegner, 2011). Like statistics, figures should also strive for simplicity and optimize the "inter-ocular 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.

Six: Powerful Beginnings.

With writing as with life, first impressions matter; when you write up your research, the first paragraph is supremely important. It should summarize the entire paper in everyday language and invite the reader to consider what it is like being human. Consistent with the guidelines reviewed above, the first paragraph should highlight the phenomenon—its experience, counter-intuitiveness, 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 rather a grander statement, one that ideally takes the reader back to the first paragraph or the opening quote, or 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 paper with a tinge of giddiness and awe. And between the first and the last paragraph? 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., p. 49, Wegner, 2009). 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 (p. 119, 2005) 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.

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