

A Blueprint for Thoughtful Clinical Research

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We found ourselves, like many other psychology research labs, intrigued and excited to talk about Kurt Gray and Daniel M. Wegner’s “Six Guidelines for Interesting Research,” published in the Fall 2013 issue of *Perspectives on Psychological Science*. A simple summary could not do justice to the humor and insight this article offered — both as a love letter to psychological science as well as a kind but stern “talking to,” an offering of guidance on ways we can continue to improve and advance our field.

Gray and Wegner focused on psychological science broadly, with many relevant applications to clinical science. After a good deal of discussion of the article, our lab generated ideas for additional guidelines that may be more specific for clinical science research. Jumping off from those described in Gray and Wegner’s piece, we offer these additional guidelines to cater to issues and considerations somewhat specific to clinical research. If Gray and Wegner’s piece is the main dish of a meal, think of these additional thoughts as a (hopefully) appetizing *à la carte* addition: seven guidelines that can serve as a blueprint for thoughtful clinical research.

Choosing the right neighborhood: the benefits of interdisciplinary research. At some point in your career, you may have suffered from the “silo effect,” or a tendency to focus on a small area of research for an answer to an interesting question. This is often the case in the realm of clinical science, where, despite the best of intentions, researchers may develop a habit of focusing on a small area of psychological science to find methods that can answer their questions instead of looking towards other disciplines for ideas. Only staying in one “neighborhood” of methodological tools can have the unfortunate consequence of causing clinical scientists to miss out on other exciting paradigms that fit perfectly with the research question at hand. For example, models and paradigms previously used largely by behavioral economists have recently been employed to investigate impairments in decision making across many types of mental illness. Today more than ever, clinical and other psychological scientists are checking out other neighborhoods, turning to fields like economics and engineering to investigate basic yet poorly understood problems with the goal of improving the quality of life of those

with (and without) mental illness. The next time you find yourself searching for an answer along familiar avenues, do yourself a favor and take a trip to a new neighborhood.

A house is only as strong as its foundation: the importance of basic science research. Not all clinical research needs to have direct treatment implications to make a significant contribution to our understanding of mental illness. For example, say you read a study showing that people with bipolar disorder experience more positive emotion in their daily lives compared to people without the disorder. Although many potential treatment interventions based on this information may come to mind, this research has other, arguably equally important, implications. For example, it is important to understand the types of emotions healthy people experience in daily life, perhaps considering the contexts that are associated with particular positive or negative emotions. It is also important to understand why — and if — people with bipolar disorder experience elevated positive- emotion experiences and under what circumstances. Perhaps a future study may examine the neural mechanisms that are disrupted or different in people with bipolar disorder compared to those without it, and this study may further our knowledge of why people with bipolar disorder report elevated experiences of positive emotion. From understanding the mechanisms that underpin a disorder to improving our knowledge of the experiences of people who have that disorder, basic science is an important component of clinical research. Not only can basic science research stand alone as important clinical science research, but it is also essential as a strong foundation for supporting research focused on treatment development.

Connecting the foundation with the top floors: taking treatment implications seriously. If basic science research is an important foundation for thoughtful clinical research, treatment development is the top floor of the building that must not be neglected. Discussing the treatment implications of clinical science research is important and in fact shows up in nearly every clinical science article's discussion section. However, clinical scientists must do more than just discuss these implications; they should actually follow through and take clinical science research to the intervention level. Wouldn't we want the same team of architects who built the foundation to work on the top floor of our building as well? While it is critical to continue important basic science research, we must also test treatment implications that target the mechanism identified in this basic research sooner rather than later. Of course, there are practical obstacles, such as limited funding, that can make this type of research difficult, but by committing to taking the next step in translational research, we can start turning those hypothetical treatment implications in the discussion sections of our work into realities.

Even the most unadorned house is still a house: the significance of nonsignificance. In clinical research, as in all research, sometimes the most exciting, innovative finding is one where two groups of interest do *not* differ from one another. By showing domains where people with mental illness do not differ from a group without mental illness (with an appropriately powered sample), we are able to understand areas that are not disrupted by the illness. This can then inform the study of areas where there are differences by more clearly pointing to potential mechanisms behind these differences. For example, for decades it was thought that people with schizophrenia do not experience the same amount of pleasure as people without schizophrenia. However, research has shown that people with schizophrenia do not differ from people without this illness in their experience of pleasure. Instead, later research has pinpointed the deficit to be in the area of anticipatory emotion experiences (e.g., what someone expects to enjoy in the future). Thus, finding a nonsignificant difference helped psychological scientists broaden the research to identify where people with schizophrenia differ from those without the disorder. This in turn has helped to refine theory and methods for uncovering the mechanisms contributing to these

deficits. If these “null findings” had not been published, we would not only have a poorer understanding of deficits related to a disorder, but would also have an incomplete or inaccurate picture of what it is like to live with that disorder.

Using all the tools at your disposal to build a story: embracing more complex statistical methods.

In their article, Gray and Wegner advocated for the use of simpler statistics. In general, simple is often all that is needed, and this is also true specifically in clinical science, where many questions of interest involve a comparison between a group with a particular disorder and a demographically similar group without the disorder. This type of study design lends itself quite well to “simpler” data analytic approaches, such as Analysis of Variance (ANOVA) and linear regression. While these methods are informative with respect to potential group differences, such cross-sectional analyses at the group level fail to account for how symptoms unfold and interact over time. For example, imagine a study using a decision-making task to investigate the abilities of people with and without a particular disorder to learn from rewarding outcomes. These data could be analyzed cross-sectionally, using ANOVA to look at group differences in the number of choices resulting in rewarding outcomes. However, with this method, the richness afforded by longitudinal data is lost, as is the ability to examine how the outcome from a previous decision influences subsequent decisions using a mixed-effects regression model. Further, analysis at the group level can overlook meaningful variations at the individual level. A person-specific approach to data analysis, while more complicated, can address questions that cannot be answered with the simpler, group-level approach. For instance, a researcher interested in whether reported positive emotion predicts subsequent engagement in motivated behavior among people with depression might design a study that involves asking participants to report on their experiences each day for an entire week. Group-level analyses might yield a finding that emotion did not predict subsequent motivation. However, a person-specific analysis may identify participants for whom positive emotion *was* predictive of subsequent engagement in motivated behavior. This type of approach can point to individualized treatment targets that would not be readily apparent through group-level analyses. While the use of complicated statistics for their own sake is never a good idea — there is no need to pull out a chainsaw when you only need to cut a piece of paper — we also shouldn’t avoid interesting and important research questions if they require more complex data analyses.

Take a “minimalist” approach to writing. As clinical scientists we should try to make our research accessible not only to the science community but also to the people who are in many ways affected most by the findings — those with mental health issues and their families. While there are many sources of mental health information intended for a general audience, what better place to obtain cutting edge information than straight from the source? Scientific writings can provide validation for the experiences of ordinary people, help them develop a clearer understanding of their experiences, and point them to empirically supported treatments. For example, imagine being the parent of a child with autism spectrum disorder (ASD). You would likely want to empower yourself with the most current information on the causes, symptoms, and treatments of ASD to best help your child. By reading the academic literature you can become a savvier consumer of the (mis)information popularly available on ASD and understand what treatments have been shown to be effective based on science rather than wasting time, money, and hope on what may amount to nothing better than a “snake oil” remedy. For that reason, manuscripts should not only be written with an eye toward how the academic audience will receive the work, but also with an explicit intention to make the work accessible to the people whose lives are impacted by mental illness. To that end, articles should avoid jargon and obscure vocabulary words, unnecessary acronyms and abbreviations, and any other writing devices that serve to confuse rather than enlighten. Second, we

can make our manuscripts more accessible by providing concrete examples to illustrate how the findings might play out in people's daily lives. Writing plainly and providing real world examples will also have the added benefit of making it less likely that popular media, textbook authors, and others who might disseminate these findings warp them beyond recognition.

Listen to your homeowners when designing the house. Most clinical researchers are passionate about their work because they are committed to helping people, to understanding a disorder, and to explaining behavior. However, clinical science research can unintentionally foster and maintain stigma around mental illness due to the manner in which the research is presented. How many articles have you read where groups of people are defined by a diagnosis or symptom — “schizophrenics,” “patient group,” “bulimics”? Using a diagnosis to define a person is offensive and inaccurate. An illness, whether it's depression or diabetes, is something a person has; it doesn't define the person. Thus, clinical science researchers ought to use person-first language — such as “people with and without bulimia nervosa” — to describe groups of people. Use your role as a clinical researcher to reduce stigma, starting with the language you use, and continue your role as an advocate by keeping an open dialogue within the mental health community. When was the last time you had a conversation (*not* a research interview) with a person with the disorder or experiences you study? For example, you can share your research at a local National Alliance on Mental Illness (NAMI) chapter meeting. You may be surprised by how they interpret your results, what they say about their own experiences with mental illness, and what skills they may already be using in their daily lives to help them maintain wellness. Tap into this invaluable resource and work closely with consumers of mental health services when developing a line of research (e.g., Wellness Recovery Action Plan). The work of a clinical scientist doesn't end when results get published. In fact, the biggest impact can occur when findings are shared with the people who are touched by the disorders being studied. People with the disorders and their families are the experts on their experiences, and continued contact between them and the research community is necessary to create clinically informed and relevant research. This collaboration empowers people with mental illness to become active members of the research community and helps to reduce the division between the scientific community and the experiences we study. So keep open the door to learning from the people in your research studies. Listen to what they believe are the important issues and advocate for the mental health community by reducing stigma in scientific writing and encouraging a collaborative relationship.

We hope this list of suggestions can serve as a helpful addition to the conversation about what contributes to compelling and thoughtful clinical science research specifically and to psychological science research generally. We also hope it fits with existing approaches to research, reinforces the importance of ongoing work, and ignites a desire to take the world of clinical science in exciting new directions. We are well aware that psychological research is a labor of love, so we hope that at least one of these suggestions will resonate with our peers and enhance the journey, with the added benefit of contributing to important work that will help those with and without mental illness.

Suggested readings and resources

Gray, K. & Wegner, D. M. (2013). Six guidelines for interesting research. *Perspectives on Psychological Science*, 8, 549–553.

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Molenaar, P.C.M. & Campbell, C.G. (2009). The new person-specific paradigm in psychology. *Current Directions in Psychological Science*, 18, 112–117.

Kring, A. M. & Caponigro, J. M. (2010). Emotion in schizophrenia: Where feeling meets thinking. *Current Directions in Psychological Science*, 19, 255–259.

National Alliance on Mental Illness (NAMI): <http://www.nami.org>

Wellness Recovery Action Plan (consumer-directed mental health treatment):
<http://www.mentalhealthrecovery.com/wrap/>

Patient-Centered Outcomes Research Institute: <http://www.pcori.org>