

To the editors:

We are writing in response to October's Special Issue on "The Biomedical Model of Psychological Problems." As members of the Executive Steering Committee for ABCT's Neurocognitive Therapies/Translational Research Special Interest Group (SIG), we congratulate the editors and authors for highlighting some of the controversies in what has become the dominant perspective in the field. This issue helps to start a long overdue dialog within the ABCT community on the role of neuroscience and biomedical research overall.

In embracing neuroscience, we note that many of the sentiments expressed in the Special Issue are essential. First and foremost, that reductionism of any kind (biological or otherwise) is not helpful for understanding the complexities of psychological dysfunction and human suffering. Of course, we hope that our colleagues—in particular, students and trainees at an early career stage—who have an interest in integrative research utilizing neurocognitive and biological methods will understand that reductionism is not embraced by the many in our society who actually do this work. Rather, like our colleagues who wrote this issue, we are interested in integrative formulations in which no scientifically supported perspective is excluded. A reader new to this discussion could take from the issue the perspective that neuroscience (or biomedical research overall) is not such a discipline, and for those readers, we will spend a few moments on the view from the trenches.

A refrain in the Special Issue is the notion that a biomedical model, emphasizing the brain and other biological mechanisms *in isolation from* psychological constructs, has come to dominate the mental health landscape. While it is easy to see how biological

reductionism can be inferred from widely circulated language (for example, the language contained in NIMH's current Strategic Plan, in which mental disorders are described as "brain disorders"), it is noteworthy that from the perspective of those who do some of this work, eliminative biological reductionism is almost always a mischaracterization of the point of view being expressed when "brain disorders" are invoked. In particular, there is a danger of conflating a "biomedical model" (and relevant brain measures) with psychopharmacological approaches. Pharmacological approaches are historically rooted in biological models and their intersection with psychology has often been tangential. However, this communication is improving and is not representative of current biopsychosocial models pervading both the pharmacological and cognitive neuroscience communities. Advances in both psychology and psychiatry have allowed us to move away from an either-or, "biologically-based psychiatry versus psychology" approach. Indeed, the emphasis in today's translational research environment is on integration of information obtained across multiple levels of analysis, from molecules and genes, to brain networks, to the thoughts, feelings, and experiences that uniquely define human experience (Mohlman, Deckersbach, & Weissman, 2015). Thus, we feel that our best hope of understanding and ameliorating psychological distress—the mission that all of ABCT is committed to—is to attend to the 'big picture' in all its complexity, including neurobiology.

The Special Issue also highlights that neuroimaging and other neuroscience methods widely applied to psychological disorders are correlational and therefore limited in their ability to reveal causal mechanisms of psychopathology. Neuroimaging studies are indeed correlational (as is much of clinical psychology research), but because they

reveal insights about an organ system whose organization is fairly well preserved across species, they allow for unprecedented translation to animal studies, where causal hypotheses are readily tested through experimental manipulation, and where a more fine-grained analysis of molecular and cellular structures is possible. In addition, neuroimaging findings generate causal hypotheses that can be tested in humans. For example, cognitive neuroscience is beginning to utilize experimental tools including “neurofeedback” (a form of biofeedback that provides operant conditioning of brain function), cognitive training paradigms to modulate or remediate brain function through practice, and neuromodulation approaches such as transcranial direct current stimulation (tDCS), transcranial magnetic stimulation (TMS), and deep brain stimulation (DBS). Such approaches not only enable experimental manipulation of brain function in humans to test causal hypotheses, they open up new potential avenues for treatment development, including both behavioral and somatic/pharmacological options.

Our own research, and that of many of our colleagues, shows the integrative potential of combining neuroscience with traditional methods in order to optimize psychological treatments like CBT, creating synergistic treatment combinations and personalization of treatment prescriptions. Specific examples include: fine-tuning the timing of exposure work to take advantage of memory consolidation and reconsolidation mechanisms, revealed through animal neuroscience research, in order to harness more durable forms of fear extinction (Rothbaum et al., 2012; Schiller, Kanen, LeDoux, Monfils, & Phelps, 2013); use of pharmacological agents such as D-cycloserine in conjunction with exposure to enhance extinction learning mechanisms (Ressler et al., 2004); understanding how cognitive biases work in a way that leads to novel

interventions that combine cognitive interventions with non-invasive brain stimulation (De Raedt, Vanderhasselt, & Baeken, 2015); and use of neuroimaging biomarkers to achieve unprecedented levels of precision in predicting individual patient outcomes following CBT (Doehrmann et al., 2013; Siegle et al., 2012). These are just a few examples of an ongoing and iterative process of discovery in which neuroscience and clinical psychological science inform one another and create avenues for continuing to improve on the valuable tools psychologists already have at their disposal.

We enthusiastically welcome any of the contributors to the Special Issue, as well as any readers who find the topic engaging, to attend our SIG meeting which occurs annually at the ABCT convention. The meeting will serve as a useful launching point for ABCT members from all backgrounds to learn more about the possibilities our SIG members envision for translational and neurocognitive research and to engage in an open dialogue around these issues. We hope and expect that ABCT will continue to be a place where individuals utilizing diverse methodologies can learn from one another, united in the goal of relieving the suffering caused by psychological conditions.

Sincerely,

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