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Neuroscience of Creativity

Edited by Oshin Vartanian, Adam S. Bristol, & James C. Kaufman

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2013, 272 pp., $45.00 List Price (Hardcover)

Neuroscience of creativity is a multi-authored volume intended to "provide an up-to-date review of empirical and theoretical approaches to the neurobiological bases of creativity" *(p. xi).* Each of the thirteen chapters focuses on different, sometimes overlapping and often inconsistent theories and aspects of creativity. At times, opposing positions on the neuroscience of creativity are presented (nature/nurture, the psychopathology of creativity, the impact of dementia, etc.), and in many cases the same empirical data is used by different contributors to support diametric sides of an argument. The unfortunate result is that both sides of the argument sacrifice credibility.

The creative brain: brain correlates underlying the creation of original ideas, by *Andreas Fink and Mathias Benedek* is a well researched and interesting contribution. They cite empirical data that suggest that the generation of creative ideas occurs in synchronicity with an increase in alpha wave activity in the parietal lobe. Meanwhile, they also assert that "the view of the frontal cortex as key brain region in creative cognition" (p213) is correct. This is consistent with other research that offers evidence that meditation enhances creativity. Additionally, they explore the role that both gender and intelligence may have upon creativity. However, more important to the cognitive behavioral therapist, they explore research that suggests that "some facets of creative cognition can be trained… and that the effects of such interventions are also observable at the level of the brain" (p. 223).

This conclusion leads us back to what is, for the cognitive behavioral therapist, the most interesting and pertinent chapter of the book: *There is room for conditioning in the creative process: associative learning and the control of behavioral variability. W. David Stahlman, Kenneth J. Leising, Dennis Garlick, and Aaron P. Blaisdel.* Creativity, as defined by W. David Stahlman et al. is "the tendency to generate new ideas or behaviors that may be useful in solving problems." The authors assert that "creativity is not the sole domain of Mankind" (p. 45). Moreover they acknowledge that historically, this opinion has not been shared by many leading behaviorists (nor is it shared by all of the scholars that have contributed to this volume). They reference B.F. Skinner and radical behaviorism which supposes that all behavior is instinctual or learned and dismisses all creative behavior as happening "by 'chance' or random 'mutations' (p. 48). They acknowledge Thorndike's law of effect which also cannot account for novel and useful behaviors. Then, by citing behavioral study after behavioral study, they mount evidence that demonstrates that not only are animals, from pigeons to porpoises, capable of being creative, creativity can be induced by instrumental conditioning. The referenced studies are confirmable, replicable and fun to read about. We have long known how to reinforce a desired, repetitive, conditioned response. However, these studies are titillating and impelling as they clearly indicate that novel, variable and useful behaviors (i.e., creativity) can also be increased through the use of operant reinforcement. In fact, when creativity is elicited and reinforced, animals can be so inventive that it can "become functionally impossible to keep track of [their creative responses]" (p. 59).

At first it may seem a paradox to think that creativity can be engendered by operant conditioning. However, before this chapter concludes not only is one convinced that this phenomenon occurs; upon reflection it becomes apparent that this is exactly what the skilled

cognitive therapist does with clients who present behavioral issues. Techniques such as reinforcement, reframing, challenging cognitive distortions, etc. are not intended to recondition the patient so that a repetitive, therapist-defined response occurs. Instead, the competent clinician assists and reinforces the client in her search for creative (novel and valuable) variable responses and solutions to situations which previously triggered patterned maladaptive responses.

As noted often in the book, creativity is a fluid and associative process. Regarding the neurobiology of the brain, the authors cite evidence that repetitive behaviors lead to stereotypic cognitive functioning. Loads of other data substantiate this. Neural pathways become neural ruts. If alternative neural pathways are not explored, depression often ensues (a hypothesis consistent with research cited throughout the text). The writers suggest that individuals with chronic depressive symptoms are "more likely than the general population to be involved in creative work" (p. 57), because even though they may not know the science behind it, experience has taught them that the creative process is an antidote for depression. This chapter adds scientific support to what the adept CBT clinician already knows; that by facilitating and reinforcing the patient in his or her pursuit of new and useful solutions to old problems, problems get solved, the patient's sense of self-efficacy improves, and depression is ameliorated.

The penultimate chapter of the book; Fostering *creativity: insights from neuroscience*, is written by the lead editor, *Oshin Vartanian*. Vartanian's thesis emphasizes that creativity can be cultivated, and that it is a transferable skill, which is consistent with the behavioral experiments described in the chapter reviewed above. After reading this book, I could not help but wonder whether each of the editors had read all of the included chapters, or if the editing, like the writing, was an additive endeavor. Owing to the often opposing opinions of the contributing authors, and a final chapter on neuroesthetics that seemed as relevant as feathers on a fish, the suspicion that this book had been conceived as a platform for Oshin Vartanian to gain wider distribution of his intriguing essay seemed more plausible than the idea that he honestly believes he has compiled the "summation of current theoretic and empirical approaches [to the neurobiological bases of creativity]) …" *(p. xi).* Regardless of the motivation of the editors, the thoughtful reader may find this book to be useful fodder for the imagination, as well as an opportunity to practice the discipline of creative scientific skepticism.

References

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