

Evolutionary Psychology

www.epjournal.net – 2012. 10(2): 338-341

Book Review

The World is Not Black or White: The Gray Matters in Naturally Selected Automatic Cognition

A review of David DiSalvo, *What Makes Your Brain Happy and Why You Should Do the Opposite*. Prometheus Books: New York, 2011, 309 pp., US\$19.00, ISBN # 978-1-61614-483-488 (paperback).

Robert D. Mather, Department of Psychology, University of Central Oklahoma, Edmond, OK. Email: rmather@uco.edu (Corresponding author).

Erin McReynolds, Department of Psychology, University of Central Oklahoma, Edmond, OK.

The need for closure (Kruglanski, 2002) is an individual's motivation to find an answer to a question and the degree to which they can tolerate the uncertainty of not knowing an answer to the question. People high in need for closure see the world as black or white, and strive for quick resolutions to problems. They are fearful of not knowing. People low in the need for closure are more tolerant of uncertainty, though all humans have a basic need for certainty and predictability.

One of the major themes to David DiSalvo's "What Makes Your Brain Happy and Why You Should Do the Opposite" is that although our brain craves certainty, oftentimes things are not as they seem. He advocates taking more time and being aware of our evolutionarily hard-wired cognitive processes and their strengths and limitations.

People have the basic need to feel that they are right, or certain, in their evaluation of the environment. This certainty can be accomplished by seeking out information in only a small segment of the environment; this tendency is called the selectivity bias. Rather than considering all the available information, people pick and choose to what they attend. When we selectively attend to information that confirms what we already believe, we fall prey to the confirmation bias. If information that could potentially discredit a belief is ignored, the person can maintain that their beliefs are correct.

DiSalvo illustrates the resiliency of the confirmation bias with an example from the martial arts world. Some martial arts sects teach what they call the "touchless attack". These martial artists, called "Kiai masters", claim that they can defeat opponents by using swift and precise hand movements that never make direct contact with the opponent's physical body. Unsurprisingly, people doubt the validity of this technique. In an attempt to quiet the doubters, a Kiai master, Ryukerin, offered a \$5,000 reward to anyone who could withstand his attack. He lost, decidedly, to a mixed martial artist; but his students and

followers did not disappear. They continued to believe in the power of the touchless attack. That is the power of the confirmation bias; even in the face of substantial disconfirming evidence, firmly held beliefs will not budge.

DiSalvo next discusses the appeal of cause-effect relationships and why random events make us uncomfortable. As pattern-seeking creatures, humans are prone to see causation where none exists. Our desire for every event to have an agent or a purpose is tied to our need for closure. It is easier to accept outcomes when we believe that it "happened for a reason". When we cannot find an outside agent, we sometimes label ourselves as the agent and harbor an illusion of control over the situation. This cognitive trap explains why many people play the same lottery numbers over and over again; they believe that their numbers stand a better chance of winning the jackpot than the randomly machine-generated numbers. Then when they do not, they blame themselves, because *they* are responsible for the loss and not random chance.

We live in the present. We may think that we are future-oriented but the research on discounting the future tells otherwise. Humans evolved to desire immediate awards and avoid immediate threats, so it can be difficult to place ourselves into the future and determine what our lives will be like then. DiSalvo offers an example that most people are quite familiar with (buying a car) and shows how we may discount the future in this situation. When you successfully "negotiate" the salesperson to a lower monthly payment for a longer period of time, it feels like you won. You may not focus on the duration of the commitment because the lower, more immediate, monthly cost is more palatable.

It is generally believed that people who are high in the need for achievement will perform better or longer on a task when compared with people who are low in the need for achievement. However this generalization does not take into account the effect of motivation and reward. People are motivated by different things; DiSalvo discusses an experiment in which participants were primed with high-achievement words and then completed a word search that the researchers described as "fun". Participants who were high in the need for achievement performed significantly worse than the participants who were low in the need for achievement. These results seem to indicate that high need participants were not motivated to perform well because they did not believe that the test was an accurate measure of achievement because it was "fun". DiSalvo makes the argument that in order to persevere and maintain motivation, the individual must determine for him- or herself what is rewarding. People who are low in the need for achievement need not feel like failures; they merely have to be creative in their personal reward system.

In the search for certainty and closure, we may outsource our decisions and beliefs to other people, namely people whom we see as experts. DiSalvo presents a study which used functional magnetic resonance imaging (fMRI) to show that both brain activity and behavioral measures were affected by the presence of an expert. The scans indicated that the participants' brains did not work as hard to make a decision when an expert was there to advise. Because we are motivated to feel right and conserve cognitive resources, we often assume an expert's advice is credible and correct, and may not think for ourselves. However, the people advising do not have to be experts; as far back as the 1950s with Solomon Asch's research on conformity (Asch, 1956), we have known that people will often conform to the majority opinion.

Along the same vein as conformity, especially in ambiguous situations, is the appearance of psychosocial contagions, or the spreading of emotion through a group. In

ambiguous situations where we are not sure how to respond, we often look to other people to see how they are reacting; therefore, if people are reacting with anxiety, we may "catch" their anxiety. However emotional contagion is not always bad; empathy can also be contagious. DiSalvo says that happy brains have difficulty differentiating between seeing an action and actually participating in the action. DiSalvo's example of contagious empathy showed that participants who observed other people practicing self-control had their own self-control reservoir depleted. The participants had empathized with the other people so much that when it came time for them to practice self-control, they were unable to do it because their self-control had already gone.

A relatively new area of psychology states that the things we use and our ways of interacting with them influence the way we think. This area is called embodied cognition. Some researchers believe that our tools, like a pencil, become part of us because it allows us to express ourselves. Our bodily sensations such as cold or warmth can affect our perceptions of other people and can affect our moods. For instance, DiSalvo discusses a study in which participants holding a warm beverage felt emotionally closer to another person compared to participants holding a cold beverage. Our language to describe feelings or situations also draws upon this idea that our entire body and all of our senses play a part in cognition and emotion. For instance, a person who is sad is said to have a "heavy heart", relaying the idea that weight portrays seriousness.

In the final part of DiSalvo's book, he discusses memory and how what we recall is often not reality. The two main types of memory are explicit and implicit. Explicit memory is where we store facts and events. Implicit memory is responsible for motor skills, things we do not have to consciously think about to do. Memory is also divided into temporal categories, short-term and long-term. Short-term memory is what we are thinking about right now. Long-term memory is what most people think of when they think of memory - events that happened in the past. While we like to believe that what we remember is what happened, this is often not the case. Memories can be relatively easy to alter, or even invent. One study demonstrated that memories could be changed by exposing people to photographs of completed actions such as a broken walnut or an opened envelope repeatedly. Even though participants did not perform any of these actions, they recalled having done so because they had seen these pictures. In another experiment, altering videotapes of participants to make it appear that they had done something incorrectly was enough to convince them of their guilt. The catch here was that this effect occurred even when the participant was only told that such a tape existed showing their mistake. Both authority statements and altered video changed the memories of these participants. Memory is flexible and susceptible to change through a variety of methods; sometimes it is cognitively easier to just go along with what you are shown rather than drawing on memories, which are probably wrong anyway.

DiSalvo is an excellent writer and translates a large volume of current research in psychological science into a digestible form. Indeed, his work is on par with the writing of Wray Herbert, who wrote the foreword to the current book. Herbert's "On Second Thought" has been reviewed previously (Mather & Boggess, 2011), and many of the same good ideas are applicable here, such as hard-wired processes of the brain being adaptive, and forensic applications of such work. However, DiSalvo's work is almost like a sequel to Herbert's in that Herbert's focused more on the implicit, automatic processes of cognition, while DiSalvo's focuses slightly more on the more controlled elements involved in dealing

with the outcomes of automatic processing. Additionally, DiSalvo makes great suggestions, rooted in psychological research, on how to implement solutions to cognitive issues in Chapter 15 “Minding the Gap”. It is a fascinating and well-written blend of psychological science and appropriate behavioral prescriptions. The world is not black or white. We can teach ourselves to learn how and why the gray matters.

References

- Asch, S. E. (1956). Studies of independence and conformity: 1. A minority of one against a unanimous majority. *Psychological Monographs*, 70, 1-70.
- Kruglanski, A. W. (2002). When similarity breeds content: Need for closure and the allure of homogeneous and self-resembling groups. *Journal of Personality and Social Psychology*, 83, 648-662.
- Mather, R. D. & Boggess, A. L. (2011). The implications of automaticity for evolutionary forensic psychology. Review of *On second thought: Outsmarting your mind's hard-wired habits*. *Evolutionary Psychology*, 9, 204-206.

White matter refers to areas of the central nervous system (CNS) that are mainly made up of myelinated axons, also called tracts. Long thought to be passive tissue, white matter affects learning and brain functions, modulating the distribution of action potentials, acting as a relay and coordinating communication between different brain regions. White matter is named for its relatively light appearance resulting from the lipid content of myelin. However, the tissue of the freshly cut brain appears white. Unlike white matter, gray matter contains few myelinated axons. An integral part of the CNS, gray matter is made up of neurons, glial cells, neuronal cell bodies, capillaries, and synapses. Color. The most noticeable difference between the white and the gray matter is their color. Since it aids in processing and transmitting nerve signals between the different regions of the brain, white matter is mainly responsible for learning and cognition. Gray matter, by comparison, occupies parts of the brain involved in sensory perception, muscle control, self-control, decision-making, memory, and data processing. Did this article help you? Yes. Location of the Gray Matter. Gray Matter and White Matter. Gray matter is mainly located on the surface of the cerebral cortex, and on surface of the cerebellum. It is also found in the deeper parts of the cerebrum, and hippocampus. Grey matter is present in the brain as well as in the spinal cord. The gray matter includes regions of the brain involved in muscle control, and sensory perception such as seeing and hearing, memory, emotions, speech, decision making, and self-control. While 20% of all oxygen taken in by the body goes to the brain, 95% of that goes specifically into the grey matter. The Impacts of Video Games on Cognition (and How the Government Can Guide the Industry). Policy Insights from the Behavioral and Brain Sciences, 2015; 2 (1).