

Depleted Executive Functioning After Interracial Interaction

Richeson JA, Trawalter S. Why do interracial interactions impair executive function? A resource depletion account. *J Pers Soc Psychol*. 2005;88:934-947. Richeson JA, Trawalter S, Shelton JN. African Americans' racial attitudes and the depletion of executive function after interracial interactions. *Soc Cogn*. 2005;23:336-352.

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How does the brain perform diagnoses? Physicians know that the diagnostic process requires mentally categorizing information, planning next steps, making judgments, problem-solving, and maintaining attention. For example, for a differential diagnosis physicians often create clusters or categories about a symptom or organ system. Physicians then factor in new information (including test results) and weigh the probability that one diagnosis is more likely than another. These processes require the brain to:

- Categorize and re-categorize information;
- Engage in problem-solving and decision-making;
- Plan next steps;
- Prioritize tasks;
- Maintain attention; and
- Make judgments.

These precise brain processes are collectively known as “executive functioning.” Executive functioning uses a complex circuit of neurophysiologic functions, including the dorsolateral prefrontal cortex (dlPFC) and the anterior cingulate cortex (ACC).

A recent study demonstrated that the dlPFC and the ACC were significantly depleted in White subjects when they interacted with African Americans. The study concluded that executive functioning was significantly impaired by unconscious or implicit racial bias. The study used functional magnetic resonance imaging (fMRI) to scan the brain and detect the level of dlPFC and ACC depletion.

First, the participants in the study took the Race Implicit Association Test (IAT). Next, one group of participants was placed in a room where they interacted with an African American person. Another group of participants was placed in a room where they interacted with a White person. After the interaction, the participants were then required to use their executive functioning by performing a well-known cognitive test called the Stroop Test. To complete the Stroop Test, subjects must do the following: match colors and words, be able to pay attention to and follow rules that are sometimes counterintuitive, make decisions and properly categorize

information. In other words, the Stroop Test required the participants to use their executive functioning.

The study found three key results:

1. The participants who interacted with the African American person made more mistakes on and took more time to complete the Stroop Test;
2. The fMRIs showed that those who interacted with the African American person showed diminished activation in their dlPFC and ACC; and
3. The people with more mistakes on the Stroop Test and with diminished dlPFC and ACC activation had the highest levels of unconscious racial bias, as shown on the Race IAT.

On the basis of large data samples among those who have taken the Race IAT, 87% of the White population in the United States has an unconscious bias against African Americans. Educational levels do not seem to lower unconscious or implicit bias. For instance, the percentage of White judges nationwide who demonstrate unconscious bias against African Americans on the race Race IAT is nearly identical to the general White population. (That is, 87% of the general population and 88% of judges demonstrate this bias.)

If unconscious racial bias diminishes executive functioning, will this affect the quality and accuracy of the diagnostic process? If the dlPFC is impaired when a physician walks into the examination room, the process of mentally categorizing information may also be significantly impaired. For example, judgment may be impaired as the physician creates clusters about symptoms or organ systems, factors in new information (including test results), and weighs the probability that one diagnosis is more probable than another.