

LeaderPerfect Newsletter

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What Neuroscience Is Teaching Us about Leadership

by Dr. Mike Armour

After thousands of years of human experience with leadership, you might think that there's not much new to learn about it. But the last decade has given us a perspective on leadership that was never before available.

When I started teaching leadership over 40 years ago, the principles that I tried to impart were based on personal experience — what I had observed as working or not working in leadership settings.

And I was not alone in this approach. Most books on leadership are based on conclusions which the author has reached after observing great leaders in action or doing social research on high-performance organizations.

New Science, New Insights

On most major topics related to leadership these authors and I reached similar points of view about what constitutes healthy leadership styles. But our evidence has always been somewhat anecdotal.

Now, all of that is changing. Research in neuroscience is allowing us to see the actual firings in the brain. And this cutting edge research is scientifically confirming we have long taught about the impact of various leadership styles.

This all became possible with the emergence of fMRI technology, which stands for Functional Magnetic Resonance Imaging. Basically it amounts to generating a detailed image of the brain as people perform various functions. And because of the advances in this technology, we can now see the actual firing of neurons in the brain.

This research now demonstrates that **what we have long described as "good leadership styles" fire off entirely different portions of the brain from the ones which excite when poor leadership styles are in play.** What's more, these firings release a different set of chemicals with altogether different effects in the body.

Reflex and Reflection

For purposes of this article, let's think of the brain as having two functions: a *reflexive* function and a *reflective* function. These functions reside in different regions of the brain.

The reflexive function includes such things as conditioned responses, habits, and instincts. It gives us our "reflex reactions," and thus its name.

The reflective function, performed primarily in an area called the prefrontal cortex, allows us to process concepts, develop wisdom, make informed decisions, create strategies, and form our worldview.

The reflective part of the brain is sometimes called "the executive brain," because it has the ability to override and counter promptings from the brain's reflexive layers. To cite an example, if the reflexive part of the brain responds to a provocation with anger, the executive brain has the potential to resist the impulse to strike back, hold the impulse in check, and devise an even-tempered response.

The executive brain is thus the seat of moral reasoning and principled behavior. It is where we learn self-discipline. It helps us act heroically in the face of overwhelming threats to our own survival and well-being.

Self-Protection

The reflexive portion of the brain is biased toward self-protection. In the face of a threat, real or perceived, it springs into action. It instantly sends a signal to the region of the brain housing the amygdala. This tiny structure (actually a pair of tiny structures) has a huge impact on our emotions.

Sitting near the base of the brain, the amygdala attaches emotion to events and memories. When the amygdala is highly excited, the synapses in the brain open widely to receive and store information.

This is why memories of events filled with emotion tend to be more detailed than memories about more routine events. At the time that these memories were formed, the excitement of the amygdala meant that the brain was forming synaptic connections (and hence memorizing details) at an accelerated pace.

Responses to Leadership

The amygdala communicates constantly with the hypothalamus, another small structure at the base of the brain. Among its functions the hypothalamus controls the release of hormones. And this is where neuroscience starts tying into leadership.

Leadership style has a direct bearing on the types of hormones which are released into the bodies of those they lead. When a leadership style relies on fears, threats, and intimidation, it regularly activates the lower layers of the brain, the reflexive part responsible for self-protection.

Thus, when a manager berates, belittles, or humiliates an employee, a chain reaction occurs. The employee feels threatened, both by the verbal content of the manager's words and the non-verbal messages which accompany them. The reflexive brain kicks in. The amygdala becomes highly stimulated. It fires off feelings of fear and instantly alerts the hypothalamus that a threat is present.

In response, the hypothalamus releases a chemical signal which starts closing down the executive brain. Emotion, not reason, is starting to take over. As the threat (real or perceived) increases, the amygdala elevates the level of fear that the employee feels. The hypothalamus then shuts down even more of the executive brain.

Hijacking the Executive Brain

The executive brain, you will recall, is responsible for reflective activity. Thus, the more that the executive brain is disabled, the fewer options the employee is able to generate. Tunnel vision sets in. Conditioned responses and self-protection take over. This is why arguments so easily escalate into violent language or worse, violent action. The "regulatory function" of the executive brain has been diminished.

Psychologists have a word for this shutdown of the executive brain. They call it an "amygdala hijack." When a complete amygdala hijack occurs, the executive brain is no longer running the show.

Now, remember that when the amygdala is highly excited, the synapses are energized and start storing memories rapidly. And these memories carry the emotions which prevail at that moment.

If a manager's words or behavior trigger pronounced fear, embarrassment, or resentment in the employee, not only will the employee have a pronounced and persistent memory of this event. The memory will also be laced with the emotions felt during the event.

Later, when the leader berates the employee again, this previous memory and its attendant emotion are reactivated. Now the remembered fear amplifies the additional fear that is associated with the current moment, with a corresponding reduction in the executive brain's influence.

Bad Chemistry, Good Chemistry

And in the midst of this, something else is occurring which has a profound and lasting effect. At the same time that the hypothalamus begins to lessen the executive brain's influence, it signals the hormonal system to release a neuro-chemical called cortisol.

Cortisol plays a host of functions in our bodies, some of them quite beneficial. But when released in conjunction with a fear-inducing event, it makes us hypervigilant and supersensitized to other threatening events.

Moreover, the cortisol released in the face of fear remains in the body for as much as 27 hours. And if other emotionally-laden threats occur in this time frame, cortisol's duration in the body may be extended.

One side effect of frequent and prolonged releases of cortisol is that it diminishes the body's immune system. Being habitually exposed to a sense of threat therefore makes us more disease prone. This probably accounts in part for the fact that worker absenteeism is typically higher in hostile work environments.

But the amygdala is not the only portion of the brain that can signal the hypothalamus to release hormones. The executive brain has this capacity too, as do other regions of the brain.

Among other things, the executive brain can trigger the release of oxytocin and dopamine, two neurochemicals that make us feel good. Their lifespan in the body is a matter of minutes rather than hours, as with cortisol. But their effect on mood can be intense. And what causes the executive brain to fire off these "good feeling" chemicals? Things like a sense of being respected, valued, connected with others, or accepted as a partner. Trust is particularly powerful at triggering oxytocin and dopamine releases.

Distrust, on the other hand, engenders fear, which fires off cortisol. Distrust can arise from multiple sources in the brain. The prefrontal cortex can conclude that an individual or situation is not to be trusted. Or the reflexive brain can react to someone's physical appearance, attire, or behavior with a conditioned response that triggers distrust.

The Fruit of High Trust

People are more prone to trust their leaders and their colleagues in settings free of perceived hostility. In my book *Leadership and the Power of Trust*, I described an atmosphere conducive to trust as one in which people feel safe, informed, respected, valued, and understood.

Years ago, when I began teaching this concept, I was basing my conclusion on personal observation. Neuroscience now confirms that my conclusion was right on target.

Brain research also explains the "why" behind something else that we have long known, namely, that innovation and creativity are much greater in settings of high trust. By showing us how distrust, fear, and uncertainty diminish the executive brain's influence, neuroscience now lets us see why people are less capable of creative and "out-of-the-box" thinking in settings where trust is in low supply.

A critical goal of leadership, therefore, is to create a culture which keeps everyone's executive brain as fully engaged as possible, which means avoiding opportunities for an amygdala hijack. This process starts with the leader. To the degree that a leader's behavior is boorish, overbearing, threatening, or demeaning, team members are being invited to engage their reflexive brain, not their reflective one.

For the first time we are looking at leadership through the lens of neuroscience. And what we are seeing is the profound difference it makes when a leader inspires instead of intimidates, focuses on promise and potential rather than failure, is more likely to praise than to criticize, and is approachable rather than autocratic.

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