

The brain exists for our survival. It is constantly scanning the environment to identify and respond to threats and opportunities. The brain seeks to minimize threats and maximize rewards, and understanding how the brain's threat and reward networks cause us to move toward some things and away from others is key to applying neuroscience to talent development. In this blog posting we'll summarize key things to know about the neuroscience of reward and threat. In future blog postings, we'll apply them to distinct talent management practices.

Maxims for the Neuroscience of Reward and Threat

- Our survival depends on our ability to make predictions, and a primary goal of the brain is to predict where and how we can avoid threats and encounter rewards. Because the brain seeks to make accurate predictions, it has an aversion to uncertainty. The brain dislikes ambiguity.
- Because the brain seeks certainty, it values autonomy, a sense of being in control of circumstances and our destiny. Stress occurs when the brain perceives a threat or potentially threatening circumstances that we are not able to control.
- Humans are social animals, and our ability to survive depends on our ability to live and work effectively with other humans. Social rewards and threats can be very powerful. The brain perceives threats to status and social standing – social injury – similarly to the way it perceives physical injury and pain.
- When the brain perceives a threat, the sympathetic nervous system is activated to initiate what is often referred to as a “fight or flight” response. Cortisol is released, a hormone that increases blood sugar and suppresses the immune system so energy can be redirected to address the perceived threat. Other hormones are also released, notably adrenaline (epinephrine), which increase heart rate, dilate the bronchial passages, and restrict blood vessels – all this to increase oxygen to the lungs and blood flow to muscles. When you're stressed and feel your mouth go dry and your palms become sweaty, you're experiencing the sympathetic nervous system at work.
- Threats aren't limited to physical threats. Social acceptance and status are beneficial to our survival and health, and the brain recognizes that by viewing a wide variety of psychological and social states as threatening. Examples include ambiguity and a loss of control, loss of social standing and exclusion from one's in-group, and actions taken by others that create a personal disadvantage.
- Conversely, the brain perceives other things as rewards. There are physical requirements for survival – air, food, water, sex, shelter – and these are obvious rewards. Not so obvious are psychological and social factors such as predictability, social acceptance, a sense of being right or knowing the answer, opportunities for advancement of social standing, mastery of skills, novelty, and many, many more.
- Responses to opportunities and threats are emotional in nature, and emotional responses are centered in the limbic system. The job of the amygdala, part of the limbic system, is to assess stimuli, especially threats, and initiate an appropriate response. We normally think about stimuli coming from our external environment, but internal stimuli, a memory or a change in body chemistry, for instance, can also generate

emotion. There's a huge variety of emotional responses that can be triggered. Just a few examples: we might flinch, wince, scream, run, jump, frown, smile, or lash out verbally. Again, many of these emotional responses are initiated instantaneously, perhaps a quarter of a second or more before signals reach the prefrontal cortex where they rise to the level of consciousness. When the prefrontal cortex is engaged, we have an opportunity to take executive action to moderate our response.

- Signals are also sent from the amygdala to the hippocampus where memories are encoded and associated with the emotion we're feeling. Memories with a strong emotional content are more likely to be stored in long-term memory.
- Like threats, rewards also start with a stimulus which might be from something external to the body (e.g., the aroma of baking bread) or internal to the body (e.g., a drop in blood sugar). The amygdala and limbic system react to the stimulus by creating a desire which is acted upon in the prefrontal cortex when a decision is made, to eat a slice of fresh-baked bread, for instance. When the reward is achieved, the limbic system and basal ganglia, particularly the nucleus accumbens, come into play by releasing neurotransmitters that raise dopamine levels and lead to feelings of satisfaction and pleasure. And this reinforcement for our behavior increases the likelihood that we'll repeat the behavior.

Minimizing Threat and Maximizing Reward

- Become familiar with the wide range of potential psychological and social threats that create avoidance behaviors in others. Learn to spot threats early. Become sensitive to them so you're less likely to unintentionally create threats that demotivate others.
- Practice self-reflection to understand yourself and the source of your emotions. Learn to recognize your emotional responses and what causes them so you can better manage them. This is the essence of emotional intelligence, an important enabler of leadership success. Lack of emotional intelligence is also a primary cause for derailment.
- Get to know, on a personal level, the people you lead and with whom you work so you better understand what they find rewarding and threatening. For instance, asking someone to make a public presentation may be seen as rewarding by one person but as threatening by another. Treat people as individuals. Equal treatment isn't necessarily fair treatment.
- Learn how to lighten the mood when things become tense and stressful. Start by learning to relax. Your tension can be contagious. Likewise, your comfort. So don't take yourself too seriously.
- Guard against sending messages that will create a social threat for others. Be inclusive and help others to feel they are part of the team.

In the next blog posting, we'll consider how the brain's reward and threat networks tremendously affect performance management practices.

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