Neural correlates of inspirational mentoring

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Bridging Applied Psychology and Social Cognitive Neuroscience

Recent years have seen considerable advances in social cognitive neuroscience and neuroeconomics. Most of these studies have used artificial games in order to control the psychological processes involved. Relatively few studies have attempted to relate our growing understanding of the neural processes underlying social cognition to real-world phenomena. Coaching occurs in multiple settings of everyday lives, and coaching theory has been a growing field within both organizational psychology and a wide variety of other fields of applied psychology. However little is known about the neural mechanisms involved. This study aims to identify the neural circuitry engaged when students interact with someone who is inspiring them, as opposed to someone who deflates them. It is hypothesized that the more inspiring coach will engage cortical and the limbic regions associated with reward such as the nucleus accumbens (NAAC; Kenner et al., 2005). In contrast, it is expected that the compliance coach will produce a more self-conscious, defensive response, with greater markers of cognitive conflicts in the anterior cingulate (Kerns et al., 2004) and fear/anxiety related activity in the amygdala (Doros, 1992).

What is Inspirational Mentoring?

Coaching with compliant students produces negative emotional states, whereas coaching with inspiring students produces positive Emotional Attraction. This is done through invoking thoughts and feelings about the person’s ideal future, talents, and dreams. It is expected that this augments the PNS sympathetic activity and future goals (Ivan & Huang, 2005).

Participants 

Participants were undergraduate students at the University of Miami (N = 105 per group; 45.5 yrs). Each individual was randomly assigned to one of two experimental groups: coaching with inspiring (N = 60) or coaching with compliant (N = 45) coaches. Participants were told they would be interviewed by two researchers regarding their major experiences and future goals. Each participant had an initial 30-minute interview, followed by one of two scripts: a coaching script, which comprised six questions regarding the inspiring coach, and a research script, which comprised the same questions regarding the compliant coach. The final interview contained questions regarding the inspiring coach. All questions were randomly ordered, to be matched in opposing conditions. The contrast, which is more typical in academic and work settings is coaching for compliance. This pulls toward the Neutral Attractor and the likely arousals of the Symphatic Nervous System and corresponding neural systems.

The timeline of individual events is a route shown to the right. Each trial begins with a video statement, in one of the four video formats — inspiring (N = 45) or compliant (N = 60) — with either positive (N = 30) or negative (N = 30) emotional content. Each group saw a total of 40 videos over 10 trials, with 30 trials per group. Participants were randomly assigned to the positive (N = 60) or negative (N = 45) conditions. The order of events was blocked to maintain the Robert-see-coach condition.

Experimental Design

Above the arrow the stimulus condition was the self-consciousness is greater in the compliant condition than in the inspiring condition. To the right the average BOLD signal for the posterior cingulate cortex (PCC) was higher in the inspiring than in the compliant condition. The following text describes the experimental paradigm used in the inspiring condition.

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Conclusion

The contrast of NEA with PEA questions showed differences in a number of regions which have been implicated in prior cognitive neuroscience studies. Many of the observed differences fit well with prior theory about the role of emotional structure in coaching. This study demonstrates that the methods of cognitive neuroscience can be used to shed light in this area of research. This research is significant because it is known that PEA coaching is more effective at achieving change in behavior than NEA coaching, however the mechanisms of this effect are not known. A better understanding of the mechanisms involved may feed back into improved methods and theories in coaching.

It is noted that there was greater activity in the orbitofrontal cortex of socially based regions, including nucleus accumbens, during the PEA. Activation of this reward circuitry may be important to motivating change. Future studies might examine the hypothesis that activation of this area serves as a marker for positive change.