

SBSI Brown Bag

Wednesday, October 30, 2019

12:00pm - 1:15pm

Solomon B50

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Neural processing of decision costs and aversive events

ABSTRACT: The ability to engage in avoidance behaviors is vital to adaptively navigating different environments, especially if these environments are unpredictable or hostile. Despite considerable advances in understanding the neural mechanisms that give rise to avoidance, some component processes remain controversial. This talk focuses on two such components, namely the neural mechanisms of cost and valence computations. In the first study we examined the neural representations of delay, effort, and probability costs, which have all been shown to devalue rewards, thereby making the reward pursuit less likely. We used a computational meta-analysis to analyze the brain activations associated with the three types of costs reported neuroimaging literature over the past 15 years. We found that all 3 costs consistently engage dorsal striatum and anterior insula. We also found that delay and probability, but not effort costs, consistently engage prefrontal regions (BA46) associated with top-down control. Next, we examined the neural correlates of negative valence across emotionally and physically aversive sounds. We found that negative valence modulated activity in areas primarily associated with sensory processing in addition to areas classically associated with emotion, supporting the theory of modality-specific affect. Last, we investigated the role of emotion regulation in the processing of nociceptive pain stimuli. We found that trait emotion regulation ability did not modify subjective pain experience. However, we found that people with lower trait emotional regulatory capacity showed less preparatory activity during pain anticipation and show greater activity in dorsolateral prefrontal cortex during pain experience. Our results suggest that people who experience difficulties in emotion regulation may be more likely to rely reactive emotion regulation strategies when managing acute pain.

The presentation will begin at 12:00pm. Food and drinks will be provided.

