Western **Psychology Colloquia 2015-2016**

Adam K. Anderson

Cornell University
Department of Human Development and Human Neuroscience Institute

Neural representations of external events and their internal affect

Abstract
Over a century ago W. Wundt proposed the construct of affect—the way sensory events "affect" us—as a unique dimension of perceptual experience. It remains unclear how the brain represents external objective sensory events alongside our internal subjective impressions of them. We employ representational mapping of multivoxel activity patterns evoked by complex scenes and basic tastes to uncover a neural code supporting a continuous axis of pleasant-to-unpleasant valence. Valence information was encoded both within modality specific primary and secondary gustatory and visual cortices. This visual valence code was distinct from low-level physical and high-level object property representations. The gustatory valence code was distinct from representations of basic taste qualities (e.g., sour, salty). In contrast to the ventral temporal and anterior insular cortices that supported valence codes specific to vision and taste, the medial and lateral orbitofrontal cortices maintained a valence code independent of sensory origin. Only the OFC code could classify experienced affect across participants. These results demonstrate the entire valence spectrum is represented as a collective pattern of regional neural activity as sensory-specific and abstract codes. While the former may provide support for Wundt's thesis of affect as a primary perceptual dimension, the latter affords a reference frame in which the subjective quality of affect can be objectively quantified across stimuli, modalities, and people.