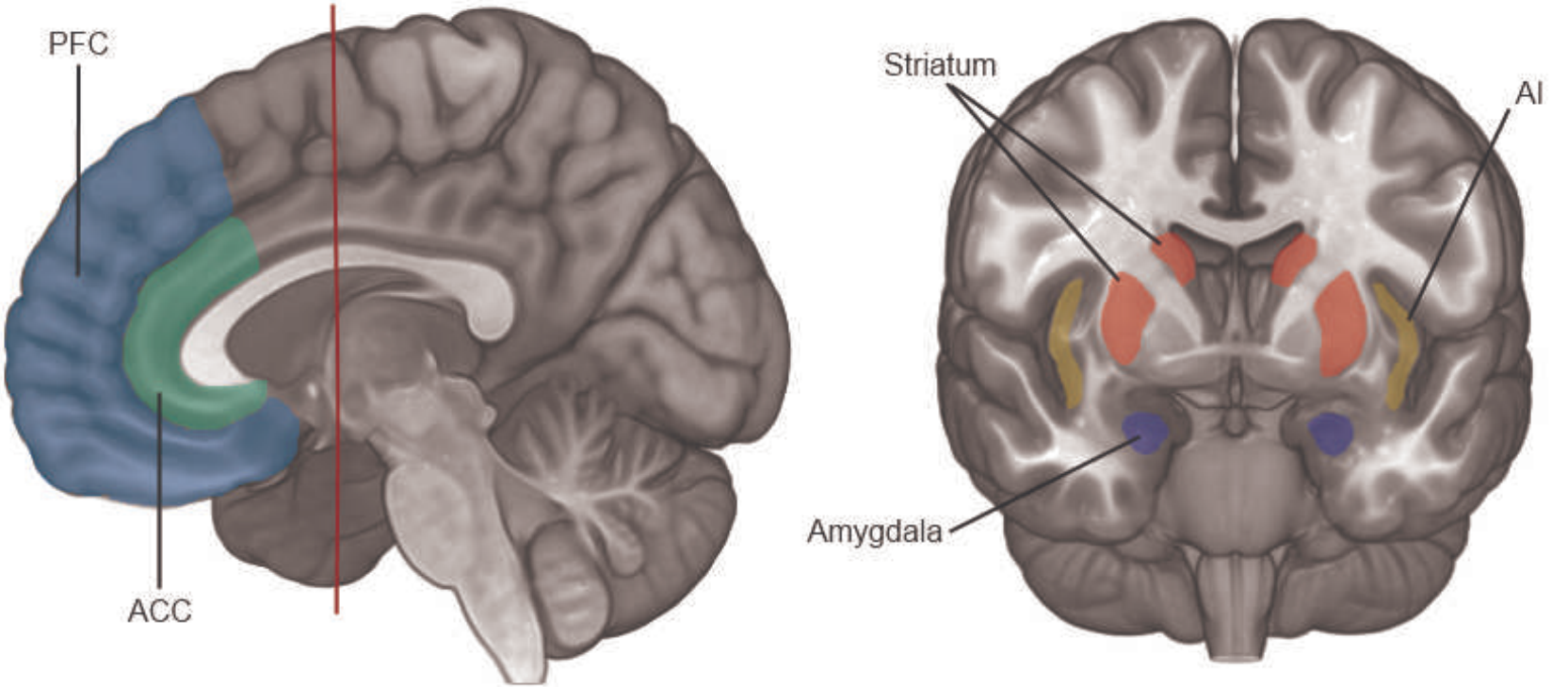
PFC
ACC
Striatum
AI
Amygdala

Figure 1. Neural circuitry involved in emotion, reward, and empathic processing; implicated in studies of children and elevated risk of developing psychopathy. Clearly, most of brain's emotional/empathic processes are achieved by functional integration across several brain areas, that is, although broad functions for these brain areas are discussed in this figure legend (below), many of these areas work together to achieve appropriate behavioral outcome for the organism. For example, amygdala, together with PFC and ventral striatum, form a network of structures involved in processing the current value of stimuli and various PFC/ACC regions are either directly or indirectly connected with amygdala to achieve emotion regulation via different mechanisms, such as reappraisal. **The amygdala** is a subcortical region that is important for processing the current value of stimuli. The amygdala has a critical role in several affective processes, such as mediating conditioned emotional responses, responding to various emotional stimuli (including facial expressions of emotion), and in social behavior toward conspecifics. **The striatum** is a subcortical region that plays a role in modulating behavior toward potentially rewarding stimuli, particularly stimuli that hold a high subjective reward value to an individual. **The anterior cingulate cortex** (ACC) is thought to play a distinct role in complex aspects of emotion, such as processing moral emotions (e.g., guilt), empathy, self-regulation of negative emotions, and action reinforcement (route by which reward history influences action choice). **The anterior insula** (AI) plays an important role in sensory integration and interoceptive awareness and may be involved in awareness of unpleasant feelings during empathy for pain. **The prefrontal cortex** Various sectors of the prefrontal cortex (PFC) have been implicated in emotion. The areas that have received most attention in affective neuroscience studies of children at risk for developing psychopathy include the orbitofrontal cortex (OFC); ventromedial prefrontal cortex (vMPFC); ventrolateral prefrontal cortex (vLPFC); and dorsolateral prefrontal cortex (DLPFC). The OFC is thought to implement rapid stimulus-reinforcement associations and the correction of these associations when the contingencies of reinforcement change, while the vMPFC is thought to represent the elementary positive and negative affective states in the absence of immediately present incentives. A more rostral region of the MPFC has been implicated in the processing of more complex social emotions such as guilt and embarrassment. Current research suggests that vLPFC integrates affective information and supports response selection by increasing the salience of alternative motor response option representations through interactions with the striatum. It is also associated with effortful regulation of negative affect, via connections with subcortical structures including the amygdala. DLPFC, in turn, is thought to increase attentional control of task-relevant stimulus features and represent goal states toward which more elementary positive and negative affective states are directed. *(Figure 1. is reproduced with permission from Viding, E., & McCrory, E. (2015). Ch 68: Developmental risk for psychopathy. In A. Thapar, D.S. Pine, J.F Leckman, S. Scott, M.J Snowling and E. Taylor (Eds.). Rutter's Child and Adolescent Psychiatry. (6th ed). John Wiley & Sons).*