Adolescence: Sensitive Period of Brain Development

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Adolescent Development

• Adolescence is a period of learning and adjustment, particularly for setting long-term goals and personal aspirations

• Youth discover how to navigate new social challenges and adjust to many physical, cognitive and emotional changes

• Structural and functional brain changes accompany these complex developmental processes
Gray Matter Changes

Gogtay et al. PNAS 2004;101:8174-8179
White Matter Changes

Lebel & Deoni, *NeuroImage*, in press
Functional Brain Changes

Changes in Reward-Seeking

Self-Reported Reward-Seeking

Steinberg et al. Dev Psychol 44:1764-1778, 2008
Dopaminergic Pathways

Telzer, *Dev Cogn Neurosci* 2016;17:57-67
Sub-Cortical and Cortical Circuitry

Casey et al., Dev Cog Neurosci 2016;17:128-130
Social Context Influence

Smith et al., *Hum Behav* 2013;64:323-332
Social Context Effects -1

Cascio et al., J Cogn Neurosci 2015;27:83-95
Social Context Effects - 2

• Lebel C, Deoni S. The development of brain white matter microstructure. NeuroImage, in press.
• Telzer EH. Dopaminergic reward sensitivity can promote adolescent health: A new perspective on the mechanism of ventral striatum activation. Dev Cogn Neurosci 2016;17: 57-67