Potential cause of age differences in stimulant response identified

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In young children, psychostimulants relieve symptoms of Attention Deficit Disorder, yet in adolescents and adults, those same medications can cause euphoria and are often abused. What is behind these differing drug responses?

Temple University scientists have identified a potential molecular mechanism, the neurotrophin system comprised of brain-derived neurotrophic factor (BDNF) and its receptor TrkB, as the cause of age differences in stimulant response. Their findings appear in the current issue of the Journal of Neuroscience.

“Our findings suggest that the rapidly developing young brain is able to adapt and protect itself against the rewarding effects of stimulants due to the input of the TrkB system,” said Ellen Unterwald, PhD, lead investigator and professor of pharmacology at Temple University’s School of Medicine and Center for Substance Abuse Research.

Most preclinical studies have found that susceptibility to the addictive properties of stimulants is age-dependent. This is the first study to link the TrkB neurotrophin system to those age-specific responses. The hope is that BDNF/TrkB might someday be used as a target for the development of new treatments for childhood neuropsychiatric disorders or addiction.

Source: Temple University