

Allostatic Load as a Predictor of Adolescents' Executive Function: A Longitudinal Network Analysis

Authors : Sipu Guo, Silin Huang

Abstract : Background: Most studies investigate the link between executive function and allostatic load (AL) among adults aged 18 years and older. Studies differed regarding the specific biological indicators studied and executive functions accounted for. Specific executive functions may be differentially related to allostatic load. We investigated the comorbidities of executive functions and allostatic load via network analysis. Methods: We included 603 adolescents (49.84% girls; Mean age = 12.38, SD age = 1.79) from junior high school in rural China. Eight biological markers at T1 and four executive function tasks at T2 were used to evaluate networks. Network analysis was used to determine the network structure, core symptoms, and bridge symptoms in the AL-executive function network among rural adolescents. Results: The executive functions were related to 6 AL biological markers, not to cortisol and epinephrine. The most influential symptoms were inhibition control, cognitive flexibility, processing speed, and systolic blood pressure (SBP). SBP, dehydroepiandrosterone, and processing speed were the bridges through which AL was related to executive functions. dehydroepiandrosterone strongly predicted processing speed. The SBP was the biggest influencer in the entire network. Conclusions: We found evidence for differential relations between markers and executive functions. SBP was a driver in the network; dehydroepiandrosterone showed strong relations with executive function.

Keywords : allostatic load, executive function, network analysis, rural adolescent

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