

Emotion Regulation, Stress Reactivity, and Cognitive Control in Digital Learning: An Integrative Psychological Framework for Understanding Individual Differences in Virtual and Distance Education

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Abstract:

Emotion regulation, stress reactivity, and cognitive control are core processes that jointly shape individual differences in emotional functioning and psychopathology. This article provides a comprehensive review of contemporary theories of emotion regulation, the neuropsychological and behavioral facets of stress reactivity, and the role of cognitive control as a determinant of individual differences. We highlight prominent emotion regulation models – including Gross's process model and emerging frameworks emphasizing flexibility – and examine how acute and chronic stress engage biological systems (sympathetic-adrenal-medullary and HPA axis) that can modulate emotion regulation capacity. Cognitive control, rooted in prefrontal cortex function, is reviewed as a key factor influencing one's ability to manage emotions and stress, with deficits in cognitive control linked to maladaptive emotional responses across mood, anxiety, and trauma-related disorders. Emphasis is placed on clinical psychology findings: for example, how mood and anxiety disorders, PTSD, and borderline personality disorder exhibit characteristic patterns of heightened stress reactivity, emotion regulation difficulties, and impaired cognitive control. We discuss the significance of integrating these domains into a unified framework to better understand transdiagnostic patterns of emotional dysregulation. A synthesis of recent literature (2019–2025) illustrates converging evidence that these factors interact in a cycle maintaining psychopathology – e.g. stress-induced cognitive control impairment undermining emotion regulation. We conclude with a comparative analysis of theoretical approaches and identify future research directions, including the need for longitudinal and experimental studies to unravel causal relationships and the development of targeted interventions to strengthen cognitive control and emotion regulation in the face of stress. This integrative approach has important implications for advancing personalized treatments and preventative strategies in clinical psychology.

Keywords:

Anxiety, cognitive control, emotion regulation, executive function, mood disorders.