Approaching Behavior and State Anxiety Influence Vigilance Performance in the High Cognitive Load Task

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A recent and well-known theory [1], the Attentional control theory (ACT), assumes that high levels of anxiety decrease the efficiency and performance of the attentional system, in particular the central executive (inhibition and shifting). Dual competition framework (DCF) predicts that low-level threat may improve performance effectiveness by enhancing executive control functioning and that experimentally or naturally induced states of anxiety can add to this effect even more through amplified threat’s affective significance [2]. Both theories are closely related to conflict-monitoring hypothesis [3,4] of anterior cingulate cortex (ACC). Although ACT like DCF as well takes into account specific situations where anxiety might facilitate executive control efficiency, both theories fail to explain why state anxiety produce threat-related facilitation of executive control efficiency but trait anxiety does not. In order to fill the explanatory gap of ACT and DCF we decided to perform an experiment using the sustained attention dual task [5], where we tested the influence of cognitive and somatic state anxiety (ARS-2) and motivational system (BIS/BAS) on all attentional networks (alerting, orienting, and executive control). Partial correlations showed that naturally occurring state anxiety significantly enhanced executive control functioning in conjunction with some direct vigilance measures, while no significant effects on any of attentional components were observed for trait anxiety. In addition, step-wise multiple regression analysis revealed similar pattern of predicted results. It seems, that higher levels of cognitive and somatic state anxiety might enhance vigilance performance because of the allocation of resources in processing of visual stimuli which facilitates problem solving and executive control functioning


