

## ABSTRACT

Semantic Network Activation Contributes to the Relationship Between Mood and Inhibition

by

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Prior research has identified several relationships between mood and executive functions. Very broadly, these findings generally suggest that positive moods are associated with enhanced cognitive performance, particularly in working memory and learning. However, recent studies note that there are some instances in which negative moods may benefit select executive skills, such as those involved in divided attention and inhibition. In sum, these findings indicate that positive moods favor top-down, heuristic, or relational processing, whereas negative trait moods favor bottom-up, detail-oriented processing. However, a clear mechanism by which these effects occur has yet to be identified.

The most compelling theories that may explain these findings include Bower's Network Theory of Affect and Schwarz and Clore's Cognitive Tuning Model. While neither model accounts fully for these research findings, they share a common basis, which states that cognitive processes are informed by the expedient access of conceptual knowledge. The present research study uses conceptual access (via measures of semantic network activity) as a basis to evaluate the contribution of this activity to the relationships between trait mood and executive functions.

One hundred and twenty research participants were administered self-report mood surveys and standardized neuropsychological tests of executive and other cognitive functions. The entire study dataset was organized into 3 different models to evaluate the contribution of 1) positive trait mood alone, 2) negative trait mood alone, and 3) positive and negative trait moods together, to examine whether the effect of trait mood on various executive functions is mediated by semantic network activity. Means comparisons in each model reliably found that more positive and less negative trait moods were associated with increased semantic network activation (via verbal fluency measures) and poorer inhibition performance, whereas less positive and more negative trait moods were reliably associated with reduced semantic network activation and enhanced inhibition performance. No between-groups differences in semantic network access (i.e., naming), verbal learning and memory, verbal and non-verbal attention and working memory, psychomotor and visuolexical speed, or intellectual functioning were found. Structural equation modeling in each model failed and was unable to identify a clear relationship between trait mood and executive functions via semantic network activity. Correlation and canonical correlation analyses indicated that an indirect relationship between semantic network activation and inhibition performance exists across modalities and is most clearly identified when both positive and negative trait moods are considered together. Specifically, increased semantic network activation was reliably associated with poorer inhibition performance, and reduced semantic network activation was reliably associated with enhanced inhibition performance in each study model. The study model that considered both positive and negative trait moods together also provided some evidence of a weak, partial mediational relationship between inhibition and semantic network activation that neither the positive trait mood model nor the negative trait mood model was able to identify.