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# Chain Free Association, Creativity, and the Default Mode Network

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## ABSTRACT

Research on creativity shows that creative thinking entails both executive (controlled) and associative (spontaneous) processes. Yet standard creativity tasks cannot reliably isolate these two types of cognitive processes, making it difficult to understand the relation between the two and the roles of their corresponding brain networks in creative cognition. In this study we used a behavioral and neuroimaging approach in an effort to establish chain free association (FA) tasks as a relevant method for directly investigating spontaneous associative thinking and its role in creative cognition. We further examined the relation between performance on such tasks and intelligence. Participants completed common creativity tasks and then underwent fMRI scanning while producing FA chains. Instructions to participants that emphasized the spontaneous nature of the task, coupled with proper control conditions that were balanced for difficulty, enabled us to uncover spontaneous (as opposed to controlled) processes. To examine whether behavioral measures that can be derived from FA chains (associative fluency, associative flexibility and semantic remoteness between associations) are indicative of unconstrained spontaneous associative processing and are related to different aspects of verbal creativity and intelligence, scores on these measures were correlated with scores on creativity tasks and on an intelligence task, and

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