

Teaching-induced changes in neural networks: Toward a model of the creative universe

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Abstract-

According to the standard definition, a creative act requires originality and effectiveness. Creativity is widely considered an exclusively human characteristic, linked to the activity of brain networks such as the Default Mode Network (DMN), the Fronto-Parietal Network (FPN), and, to a lesser extent, the Salience Network (SN). A significant body of literature explores the viability of teaching creativity, often reporting positive results. However, little attention has been paid to the neural network modifications induced by creativity training.

This study investigates changes of creativity-related brain networks over time in the resting state (participants without specific cognitive activities). The stages considered were before and after a learning process focused on visual aesthetic creation tasks (Gabarron Method). High-density electroencephalography (EEG) was used to record brain activity. 51 female volunteers participated in the research.

The results show a significant increase in the activation of the DMN and FPN, with a more limited effect in the SN. The DMN and FPN are neural networks commonly activated during artistic creation and aesthetic perception tasks. This finding supports the existence of what could be called a 'creative universe,' encompassing capacities such as creation, perception, and divergent thinking.

Index Terms- Creativity; Teaching; Neural networks; Resting state; Human evolution; Aesthetics

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