

NEURAL REPRESENTATIONS UNDERLYING RAPID AND DELIBERATIVE PROCESSES OF AESTHETIC EXPERIENCE

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ABSTRACT

When confronted with an ambiguous abstract painting, individuals may initially experience subtle negative emotions such as confusion or uncertainty. However, once such negative emotions are resolved, a sense of interest that fosters positive emotions can arise. Contemporary psychological accounts of aesthetic experience propose that the formation of aesthetic experience entails an interaction between rapid and deliberative processing stages. However, direct empirical support for this hypothesis remains limited and the neural processes underlying this sequence of experiences are yet to be elucidated. In the present study using functional magnetic resonance imaging (fMRI), we investigated whether two key regions implicated in aesthetic experience, the medial orbitofrontal cortex (mOFC) and the insula, represent preference for abstract paintings in a similar or distinct manner across rapid and deliberative processing stages. By applying representational similarity analysis (RSA) to neuroimaging data, this study aimed to identify spatial neural representations associated with aesthetic evaluations at each processing stage. The results revealed that preference was represented in circumscribed regions, including the insula and mOFC, at the moment of perception but in more widespread regions during later deliberative evaluations. The broader recruitment observed during the later stage may reflect the contribution of multiple cognitive processes underlying aesthetic evaluations. Elucidating the relationships between these regions will be a key focus of future research to clarify how aesthetic experience is processed.

Keywords: neuroaesthetics, aesthetic preference, fMRI, multivoxel pattern analysis

INTRODUCTION

Although the aesthetic appreciation is a cultural practice observed worldwide, not all works immediately evoke a sense of beauty in viewers. Viewing abstract paintings often engages complex psychological processes: they may appear obscure at first glance and elicit subtle negative emotions, such as confusion and uncertainty ^[1], yet they can subsequently arouse interest. Building on this observation, theoretical accounts propose that the formation of aesthetic experience entails an interaction between rapid and deliberative processing stages ^[1-6]. However, to date, no study has directly elucidated the neural mechanisms underlying the stage-dependent processing of aesthetic experience.