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## Predictions and the brain: how musical sounds become rewarding.

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#### Abstract

Music has always played a central role in human culture. The question of how musical sounds can have such profound emotional and rewarding effects has been a topic of interest throughout generations. At a fundamental level, listening to music involves tracking a series of sound events over time. Because humans are experts in pattern recognition, temporal predictions are constantly generated, creating a sense of anticipation. We summarize how complex cognitive abilities and cortical processes integrate with fundamental subcortical reward and motivation systems in the brain to give rise to musical pleasure. This work builds on previous theoretical models that emphasize the role of prediction in music appreciation by integrating these ideas with recent neuroscientific evidence.

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**KEYWORDS:** cognitive reward; dopamine; emotion; music; neuroaesthetics; prediction

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