
The impact of opioids and oxytocin on music curiosity

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Résumé

Given the profound impact of music on affect and mood regulation, we used a pharmacological approach to study the neurochemical underpinnings of music curiosity, specifically focusing on the interaction between the opioidergic and oxytocinergic neurotransmitter systems and considering existing contradictory evidence. Both systems have been proposed to modulate the hedonic component of music, as well as its effects on social connection and bonding. In this study, we investigated the differences in music curiosity and information seeking (exploratory behaviour) in 39 participants using a double-blind within-subject pharmacological design. We administered a placebo, naltrexone (an opioid antagonist), oxytocin (a neuropeptide relevant to reward processing), or a combination of the latter two, in four different sessions. In each session, participants performed a music exploration/exploitation trade-off paradigm designed to evaluate their willingness to pay to explore new, unfamiliar electronic music. Overall, and across treatments, participants' curiosity ratings for new music did not vary. As expected, the cost to explore new music was modulated by curiosity, with higher curiosity ratings increasing participants' willingness to pay to explore new songs. Analysis with binomial generalized mixed-effects models showed that treatment also influenced music exploration. Specifically, naltrexone (alone and in combination with oxytocin) drastically reduced the effect of curiosity, reducing the exploratory behaviour under higher curiosity states. Individual differences in music reward sensitivity (measured using the Barcelona Music Reward Questionnaire (eBMRQ)) also played a role in music exploration: in trials where exploring new music entailed obtaining monetary rewards, participants with high eBMRQ scores showed a greater effect of curiosity on their choices, abstaining from exploring songs that did not induce high curiosity. Overall, the present research provides new and compelling evidence on the important relationship between music curiosity and exploration, and its regulation by the opioidergic neurotransmitter subsystem.

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