Title: "The Allostatic Neurodynamic Theory of Synesthesia (ANTS)"

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Abstract:
The Emotional Binding Theory (EBT) of synesthesia, originally proposed by us in 2013, suggested that synesthetic experiences emerge from the dynamic integration of affective and cognitive processes through binding mechanisms in the brain. Its updated formulation after 12 years, the Allostatic Neurodynamic Theory of Synesthesia (ANTS), incorporates the concept of allostasis as a central organizing principle, reframing the affective component of synesthesia as a predictive and adaptive factor, rather than a reactive one. In this talk, I will summarize the contribution of current neuroscientific research on consciousness, emotion, interoception, the motor system, and allostasis itself to our understanding of synesthesia. This revision emphasizes the role of macroanatomical subcortical changes, microanatomical characteristics and large-scale brain networks, together with different systems throughout the body, in the construction of synesthetic experiences. Thus, it provides a comprehensive neurobiological model that contributes to our conceptualization of this type of neurodiversity.

Keywords: synesthesia, emotional binding theory, neuroscience, Allostatic Neurodynamic Theory of Synesthesia (ANTS)

Authors Biography

Dr. Helena Melero is a neuroscientist and lecturer in the Department of Psychobiology and Methodology in Behavioral Sciences (Faculty of Psychology) at the Complutense University of Madrid. Her research work focuses on the optimization and application of Magnetic Resonance Imaging in cognitive neuroscience and neuropsychology, for the study of diseases affecting the nervous system, as well as the neurophysiological basis of synesthesia, neurotypical perception, and universal intermodal relationships.