

MODULARITY IN SENSORY AUDITORY MEMORY

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The goal of this paper was to review various experimental and neuropsychological studies that support the modular conception of auditory sensory memory or auditory short-term memory. Based on initial findings demonstrating that verbal sensory memory system can be dissociated from a general auditory memory store at the functional and anatomical levels, we reported a series of studies that provided evidence in favor of multiple auditory sensory stores specialized in retaining either pitch, loudness, timbre or possibly modulated amplitude sounds. Finally, we also presented human data indicating the existence of a dissociation between auditory sensory memory for spatial and non spatial information. All these findings are consistent with multiple storage systems that are, to some extent, independent from one another.

THE AMUSIAS

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It is quite recently that the study of the neural bases of music has become a rich and promising area of research. A key investigation in this field is the study of musical disorders, known as *amusias*. In the present review, we will first describe cases of acquired amusia in the presence or absence of an acquired language disorder. Next, we will present the congenital form of amusia. This will be followed by a description of a recent model of musical processing, including a discussion of the possible lateralization of the 'musical brain'. We will conclude by presenting the existing methods used to study the amusias.

PERSISTENCE OF PERFORMANCE DETAILS IN MUSIC AND SPEECH

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What aspects of music and speech are retained in memory? How do remembered performance details influence future performances? This paper focuses on memory for performance details in music and speech and the influence of these elements from perception to performance. Listeners form a memory for a sentence or melody that includes timing and intensity details. These details then influence performance. Musicians persist in the tempo of a melody they have just heard. They also incorporate details of timing and intensity into their subsequent performances. Speakers persist in the rate of sentences when they produce similar sentences. As in music, this persistence extends beyond the global dimension of rate.

THE ATTRIBUTION OF EMOTION AND MEANING TO SONG LYRICS

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We examined the effect of music on the interpretation of song lyrics. Listeners were presented with sung lyrics, spoken lyrics, or written poetry, and judged the text for emotional valence and meaningfulness. Experiment 1 revealed that, for some songs, music influenced whether lyrics were interpreted as conveying a positive or negative message. Experiment 2 showed that for familiar music, sung lyrics were judged as more meaningful than the same lyrics presented as spoken text, suggesting that personal associations or other significance implied by familiar music are attributed to the accompanying lyrics. In Experiment 3, repeated exposure to unfamiliar songs led to an increase in the perceived meaningfulness of the lyrics. We raise the possibility that music and lyrics become represented in an increasingly integrated manner with increased exposure and familiarity, allowing greater cross-talk between the two media.

ELECTRODERMAL RESPONSES TO DISSONANT AND CONSONANT MUSIC

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Owing to the close relation between music and emotions, autonomic responses to music have been often studied. In particular, we have previously shown that musical excerpts can elicit skin conductance responses (SCRs) depending on the level of arousal of the emotion as expressed by the music. In the present study, we extend the SCR sensitivity to valence, as conveyed by musical consonance/dissonance. Dissonant music is generally considered as unpleasant whereas consonant music is generally pleasant. Hence we tested the SCR to consonant and dissonant excerpts in university students. In order to assess whether the expected SCR sensitivity to consonance/dissonance is linked to valence rather than to differences in musical characteristics, rare individuals having no perceptual deficit but having difficulties in experiencing pleasure have been included in the experiment. These subjects who have no psychiatric disorders are known as non-clinical physical anhedonics. Anhedonics are expected to perceive the consonance/dissonance distinction as well as controls but to exhibit smaller SCR in comparison to normal listeners. The results are consistent with these predictions in showing larger SCRs to consonant than to dissonant musical excerpts, particularly so in controls. Thus, the results are in accordance with the notion that SCR is sensitive to valence, and not only to arousal in musical settings.