The Neurobiology of Stereotypies

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The neurobiology of stereotypies in sows during chronic stress [1] is suggested by women's sudden onset of catatonia and disordered gaze, and compulsive ruminations preceding oculogyric crises [2] linked to inefficient cortical circuits and abnormalities of dopa-mine subserving alcohol-seeking behavior [3], coronary-risk (CHD) [4], gastroprotection [5, 6], and mood [7-9]. This hypothesis is supported by the association of specific frontal asymmetries with certain immune functions [10] and by chronic stress leading to a reduced immune response [1] decreasing mucosal resistance to infection [11, 12]. These findings suggest that low dopamine may have a role in the inverse relation of tongue playing, a stereotypy, with stomach wall (pyloric) ulcers in veal calves as a result of the absence of roughage (grass, hay, straw) the calves need to develop rumination [1].

The fact that delay-dependent speeding of reaction time, reflecting motor readiness, is abolished by depletion of dopamine [13], suggests evaluating cognitive consequences of dopamine agonism and antagonism at intermediate dopamine tone in a medial-frontal-striatal 'activation' system underlying response organization [14] during treatment of the brain-gut axis [5] by monitoring speech hesitation and switching pauses analyzed on a time-base by a microcomputer. Remote data acquisition [13] is a precise, unambiguous method to facilitate further research of gender disparities in CHD [15-20] and to develop a more general picture of the way individuals cope with chronic stressors [1]. This strategy is supported by the concept of cellular tone [21] and by participatory matching of pauses in dialogs at intermediate arousal, a joint, mutually responsive rhythm. It also is supported by the correlation of the frequency and duration of hesitation pauses to CHD and mood, respectively, and by a causal link between a personally relevant, emotionally arousing speaking task and myocardial ischemia of a similar magnitude as exercise [22].

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212

F. Friedman

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