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Biological motion and face perception in autism spectrum disorder

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Abstract

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◆ **The allocation of endogenous visual attention in Parkinson's disease**
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Several studies have revealed cognitive deficits in Parkinson's disease (PD) patients, suggesting a role for dopamine in cognitive functions. These functions robustly include attentional processes, indicating the involvement of the dopaminergic system in attentional modulation. Here we describe our attempt to assess the performance of three groups of volunteers (PD patients and normal elderly and young subjects) under two complementary visual tasks: the measure of simple reaction times (RT) to a single target and the temporal order judgment (TOJ) of two asynchronous stimuli (presented in opposite hemifields). In both tasks, attention was cued to a previously chosen hemifield. In comparison with normal elderly and young volunteers, PD patients showed longer RTs, a larger shift in the point of subjective simultaneity and a steeper decay in temporal discriminability (as the inter-stimulus asynchrony was decreased in TOJ tasks). These findings may be interpreted as a declining ability of PD patients to direct, sustain, or rapidly reallocate the focus of visual attention. The marked impairment in the voluntary allocation of visual attention shown by these patients lends support to the putative role of the dopaminergic system in the neural mechanisms of attentional modulation.
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◆ **Biological motion and face perception in autistic spectrum disorder**
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Studies have shown that typically developing individuals are very sensitive to visual cues generated by humans and animals. The human visual system enables us to categorise sex and identity through recognition of biological motion of faces, and these abilities take place at less than 12 months of age. In autism, there is evidence of both face- and motion-processing deficits, yet we do not know the extent of any deficits in facial-motion processing. To investigate whether motion provides useful information for categorising faces we conducted a computer-animated study on a group of adults with autism and a matched control group. The categorisation process involved discriminating sequences of animations of an average head with movements captured from real people. These stimuli had identical spatial characteristics and differed only in the way they moved. They were shown upright, inverted, forwards, and backwards. We report that the autistic observers showed consistently higher discrimination thresholds in all conditions than the control group. This corresponds with previous findings of visual recognition of biological motion with point-light displays. This finding is discussed with respect to extracting sophisticated information for social interaction and communication from faces and biological motion in the autistic population.

◆ **Facial emotion recognition is affected in social phobia and panic disorder**
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Research evidence suggests that the perception of facial emotions may be impaired in different psychiatric disorders, possibly leading to social malfunctioning. Researchers investigated the patterns of facial emotion recognition in social phobia (SP) and panic disorder (PD), compared to controls. Volunteers were recruited from university campuses and divided according to diagnosis in three groups: SP (64), PD (28), and controls (46). The task was composed by stimuli extracted from the series 'Pictures of Facial Affect' by Ekman and Friesen, morphed into different emotional intensities ranging from 0% (neutral face) to 100% (full emotion), displaying six emotions: happiness, fear, sadness, surprise, anger, and disgust. Participants were asked to label facial emotions presented progressively in pictures with gradual increases of 10% in emotional intensity. Percentage of emotional intensity required for recognition, time, and accuracy were measured. PD patients made more mistakes compared to controls, and SP patients labeled emotions with the same accuracy as controls, though requiring less emotional intensity for judgment. Investigation is recommended of the anxiety mechanisms underlying both illnesses.