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Elementary time disturbances in schizophrenia: impairment at looking forward

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At a clinical level patients with schizophrenia display a disturbed sense of continuity. Experimentally, they are impaired in explicitly discriminating stimuli in time. However, our recent studies showed that patients process asynchronies at an implicit (automatic) level. Moreover, the implicit responses of patients differ qualitatively from those observed in controls, for asynchronies as short as 8-17 ms. It is as if controls always privilege the last occurred event whereas patients would be stuck with the first one. We proposed that in controls, elementary predictive mechanisms allow anticipation of upcoming events, whereas patients process squares as if isolated rather than following each other. This led us to question how patients judge temporal order. We compared temporal order judgments and simultaneity/asynchrony discrimination in the same patients and matched controls (N=18 in each group). As for previous studies, two squares were displayed on the screen either simultaneously or with an asynchrony of 24 to 96 ms. In one session participants made a temporal order judgement and in the other they had to detect asynchronies. Controls reached similar performance in the two tasks at asynchronies above 50 ms, whereas patients showed a large impairment in temporal order judgment selectively. All in all the results suggest that automatic predictive coding is impaired in patients (possibly underlying the disruption of the sense of time continuity), associated with a difficulty at ordering events at a conscious level which is correlated with clinical disorganization and negative symptoms. We will discuss the possible relationships between these two impairments.

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