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Mentalising impairment as a trait marker of schizophrenia?

One of the most controversial issues in 'theory of mind' research in schizophrenia in recent years has been whether theory of mind impairment may be seen as a trait marker or rather linked to particular symptoms. Sprong *et al*[1] conclude that evidence to date seems to favour the notion that mentalising impairment represents a possible trait marker. We believe that their meta-analysis is an excellent piece of scientific work but that this conclusion should remain tentative.

First, the existing evidence on theory of mind abilities in remitted patients is limited and difficult to interpret because of methodological shortcomings, such as non-explicit criteria for remission and poor control of cognitive abilities in the experimental design. A recent study by our group revealed that as a whole, stable patients did not show theory of mind impairment compared with carefully matched non-psychiatric controls. When standard consensus criteria for remission were applied to the sample, half failed to meet criteria for remission and showed a significantly worse theory of mind performance than remitted patients and controls. Specific theory of mind deficits in this group were associated with delusions. Thus, specific theory of mind impairment could go hand-in-hand with the presence of symptoms.[2]

Second, findings of theory of mind impairment in schizophrenia high-risk groups seem to support the assumption that theory of mind deficits represent a trait marker of the disorder. However, since these studies are mostly correlational, it is possible that the continuity of theory of mind deficits among 'at risk' groups may in fact derive from an intrinsic relationship between a psychotic symptoms continuum and theory of mind impairment. A review of the literature of theory of mind and schizotypal personality traits reveals that studies finding a positive significant relationship do so mainly with respect to schizotypal positive traits such as the cognitive-perceptual and unusual experiences dimensions of the schizotypy instruments.[3] Regarding investigations of first-degree relatives, evidence is controversial,[1] with findings of impaired performance on the more common types of theory of mind tasks but not on the 'eyes' test. However, it should be noted from these studies that those controlling for subclinical symptoms or schizotypal traits conclude that the association may be linked exclusively to the presence of subclinical positive symptoms.[4,5]

In our opinion, the existing evidence in theory of mind research is still limited but the possibility of a state-like association should not be ruled out. The most methodologically sound means to explore this would be to carry out longitudinal studies comparing theory of mind abilities in different phases of the illness, defined by explicit criteria. Future studies also need to differentiate between the affective and cognitive aspects of theory of mind, since it is possible that these show a different pattern of relationship with symptom clusters or schizophrenia profiles. Furthermore, it is possible that future research reveals that state–trait interactions may be occurring.

1 Sprong M, Schothorst P, Vos E, Hox J, van Engeland H. Theory of mind in schizophrenia: meta-analysis. *Br J Psychiatry* 2007; **191**: 5–13.

2 Pousa E, Duñó R, Brébion G, David AS, Ruiz AI, Obiols JE. Theory of mind deficits in chronic schizophrenia: evidence for state dependence. *Psychiatry Res* 2007; in press.

3 Pickup GJ. Theory of mind and its relation to schizotypy. *Cognit Neuropsychiatry* 2006; **11**: 177–92.

4 Irani F, Platek SM, Panyavin IS, Calkins ME, Kohler C, Siegel SJ, Schachter M, Gur RE, Gur RC. Self-face recognition and theory of mind in patients with schizophrenia and first-degree relatives. *Schizophr Res* 2006; **88**: 151–60.

5 Marjoram D, Miller P, McIntosh AM, Cunningham Owens DG, Johnstone EC, Lawrie S. A neuropsychological investigation into 'Theory of Mind' and enhanced risk of schizophrenia. *Psychiatry Res* 2006; **144**: 29–37.

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Authors' reply: Pousa *et al* comment that our conclusion that theory of mind impairment represents a possible trait marker for schizophrenia should remain tentative for two reasons. Regarding their first argument, data on remitted patients are indeed limited and have methodological shortcomings. Only five studies in remitted patients were available, and the number of remitted patients in each of these studies was small. We also remarked that the criteria for remission used may have varied across studies, and that other factors may have influenced the results. Thus, we agree that the conclusion that theory of mind impairment represents a trait marker for schizophrenia should be tentative. In fact, we did describe it as a 'possible' trait marker. It is important to note that meta-analyses are about effect sizes rather than significance levels. By synthesising data of multiple studies there is more statistical power to detect smaller group differences. Thus, although in three out of five studies the theory of mind impairment in remitted patients was not statistically significant, when the studies were combined, the overall effect was significant (mean $d=-0.692$, $P<0.01$). So when Pousa *et al* do no find theory of mind impairment in stable remitted patients, we are not only interested in the *P*-levels, but also in the effect size. We also agree with the second point that there is evidence of an association between psychotic symptoms and theory of mind impairment, but do not see why this would argue against our conclusion. Frith[1] already proposed associations between specific schizophrenia symptoms (e.g. paranoid delusions) and mentalising impairment, and in their upcoming paper Pousa *et al* apparently also find significant associations between theory of mind impairment and psychotic symptoms. Perhaps we should have stated that theory of mind impairment is a possible trait marker for psychosis rather than schizophrenia. We believe that theory of mind probably does not represent an 'all or nothing' skill, and that schizophrenia should perhaps be studied using a dimensional instead of a categorical approach.

1 Frith CD. *The Cognitive Neuropsychology of Schizophrenia*. Psychology Press, 1992.