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Letter to Editors

Context-sensitive social cognition is impaired in schizophrenic patients and their healthy relatives

Social cognition performance has been extensively studied within the schizophrenic population since Frith (1992) proposed a model relating mentalizing deficits and symptoms of the disorder. Moreover, recent research has suggested that social cognition is also impaired in unaffected relatives. Their deficits seem to be more pronounced when highly sophisticated tests are used (Janssen et al., 2003).

Fifteen clinically-stable medicated schizophrenic patients from multiplex families, fourteen healthy first-degree relatives, and eighteen controls were examined. Groups were similar in age, education, and sex distribution.

Initial selection criteria for all patients were: (1) diagnosis of paranoid schizophrenia according to DSM-IV-TR criteria (APA, 2000) and confirmed with Schedules of Clinical Assessment in Neuropsychiatry (SCAN) applied to both the patients and their relatives; and (2) the presence of one or more relatives with the diagnosis of schizophrenia (no greater than third-degree relative), evidenced by the Family Interview for Genetic Studies (FIGS). Healthy relatives had to be first-degree relatives. SCAN was applied to relatives in order to rule out any psychiatric conditions in this group. All participants were between 20 and 55 years old. Participants completed written informed consent and were paid for their participation in the study.

Participants completed the Raven's Coloured Progressive Matrices, Trail Making Test, Reading the Mind in the Eyes, and Faux Pas Test. Additionally, Positive and Negative Syndrome Scale (PANSS) and Calgary Depression Scale for Schizophrenia were applied to patients to characterize symptomatology and mood. Detailed information about participants, results and discussion is presented as Supplementary data. Main results (Table 1) were:

- Raven's Progressive Matrices: Similar intellectual functioning was observed between the groups ($p > 0.05$)
- Trail Making Test-A: No difference was found ($p > 0.05$)
- Trail Making Test-B: Significant difference was found ($p < 0.05$). However, post hoc comparison only showed differences between patients and controls ($p < 0.05$)
- Reading the Mind in the Eyes: Similar performance in emotion recognition was observed across the groups ($p > 0.05$)
- Faux Pas: A significant difference between groups was found ($p < 0.001$). Post hoc analysis showed worse performance of patients and relatives compared to controls ($p < 0.001$ and $p < 0.05$, respectively). No differences between patients and relatives were found ($p > 0.05$)

The Faux Pas impairment in patients replicated data reported elsewhere (Shur et al., 2008). However, to the best of our knowledge, there are no previous data reporting that Faux Pas performance is impaired in healthy relatives.

Unexpectedly, no significant differences between the groups were found in the Mind in the Eyes Test. Despite several studies reporting impaired performance on this test, other studies have reported otherwise (Kelemen et al., 2004; Kington et al., 2000).

The Faux Pas finding does not seem to be explained by IQ level, since the three groups performed similarly on the Raven's test. Instead, the Faux Pas deficit observed in patients and relatives suggests that it might be due to impaired processing of context-sensitive information. However, performance on the Faux Pas may be partially influenced by working memory load of the task and executive functioning. Future studies should address this issue in larger samples.

Social cognition is a collection of inferential abilities achieved during neurodevelopment, and the ability to detect a faux pas achieved later in development relative to other social cognition skills (Stone et al., 1998). Detecting a faux pas requires the integration of various components, namely (1) that the person committing faux pas does not know that he/she should not say it; and (2) the empathic understanding of the listener's feelings. The Faux Pas test requires integrating cognitive and emotional information in a context-sensitive manner to regulate behavior. For that reason, the Faux Pas test may be more sensitive in detecting deficits in healthy relatives.

Considering the limitations of this study, our results suggest that the high-level components of social cognition may be considered as possible endophenotype candidates for future studies.

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Appendix A. Supplementary data

Supplementary data associated with this article can be found in the online version, at doi:10.1016/j.schres.2009.10.017.

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Table 1
Performance for patients with schizophrenia, first-degree relatives, and controls.

	Schizophrenia ($n=15$)	Relatives ($n=14$)	Controls ($n=18$)	ANOVA F value ($d.f.$) and significant post-hoc comparisons
Raven's Coloured Progressive Matrices	29.6(4.03)	29.21(6.94)	32(3.09)	$F(2,45)=1.51$
Trail Making Test-A	55.0(24.86)	41.5(20.06)	43.57(21.9)	$F(2,45)=2.26$
Trail Making Test-B	141.86(88.4)	94.7(55.1)	85.0(26.9)	$F(2,45)=4.3338$* Patients–Controls*
Reading the Mind in the Eyes Test	24.53(6.15)	26.36(7.22)	27(4.16)	$F(2,45)=0.7709$
Faux pas Test	24.8 (14.97)	30,07(10.43)	41.72(9.69)	$F(2,45)=9.2623$*** Relatives–Controls* Patients–Controls***
PANNS				
Positive	17.73(6.06)			
Negative	18,67(6.2)			
General	28.6(10.4)			
Calgary Depression Scale for Schizophrenia	3.39(2.8)			

Mean scores and standard deviations (presented in parentheses). Tukey's post-hoc analysis was carried out where appropriate.
Mean (±SD); **$P<0.01$; ***$P<0.001$.

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