

## Correspondence

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### Language lateralisation in schizophrenia

Dr Sommer and colleagues (2004) reported decreased language lateralisation measured with functional magnetic resonance imaging (fMRI) in 12 monozygotic twin pairs discordant for schizophrenia compared with 12 healthy monozygotic twin pairs. The authors did not find significant differences in language lateralisation between affected twins and their co-twins without schizophrenia. In the December 2003 issue of the Czech peer-reviewed psychiatric journal *Psychiatrie*, we published preliminary data from a study (supported by grant NF 6794-3/2001 from the Internal Grant Agency of the Czech Republic) that examined hemispheric dominance for language processing by means of fMRI in four monozygotic twin pairs discordant for schizophrenia. Although the activation paradigm (a verbal fluency task) differed from the one employed by Dr Sommer *et al*, the lateralisation index was calculated according to the same method within identical volumes of interest. The results indicated that language processing was significantly less lateralised in affected twins compared with their co-twins without schizophrenia ( $P < 0.05$ , Wilcoxon signed ranks test, robustness assessed by analysis of 10 000 Monte Carlo permutations; mean laterality index 0.90 (s.d.=0.12) for unaffected twins and 0.73 (s.d.=0.17) for affected twins). There were no statistical differences in the laterality index during the verbal fluency paradigm between unaffected twins from the discordant monozygotic twin pairs and the four control monozygotic twin pairs (unpublished data). The explanation of the discrepancies could lie in the participants enrolled in our study. Since the aim of our work was to assess relative contribution of non-genetic factors in previously reported decreased language lateralisation in schizophrenia, the exclusion criterion was (in contrast to Dr

Sommer's study) any family history of schizophrenia or other major psychiatric disorder. This particular study strategy allowed selection of an extreme population presumably represented by sporadic forms of the disease. In addition, stringent diagnostic criteria were used in that only participants with schizophrenia were enrolled in the study. The occurrence of psychiatric disorders in co-twins without schizophrenia and the fact that the participants were not controlled for family history of psychosis suggest a substantial degree of genetic predisposition for schizophrenia in unaffected co-twins expressed as overall decrease in language lateralisation within the discordant twin group studied by Dr Sommer and her colleagues.

**Sommer, I. E. C., Ramsey, N. F., Mandl, R. C. W., et al (2004)** Language activation in monozygotic twins discordant for schizophrenia. *British Journal of Psychiatry*, **184**, 128–135.

**Španiel, F., Tintera, J., Hájek, T., et al (2003)** Language lateralization in monozygotic twins discordant for schizophrenia. Evidence from functional MRI. *Psychiatrie*, **4**, 301–303.

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**Authors' reply:** We read with interest the results of the study by Dr Španiel *et al*. In parallel to our findings, they reported decreased language lateralisation in (twin) patients with schizophrenia compared with healthy (twin) controls. However, they did not report whether the decreased lateralisation in the patients resulted from increased activation of the right hemisphere, or from decreased activation of the left hemisphere.

This is an essential point, since decreased activation of frontal, temporal and parietal language areas in the left hemisphere of schizophrenia patients is frequently associated with decreased task performance (as reported by Artiges *et al*, 2000). Increased language-related activation of right cerebral areas, in contrast, may reflect a failure to establish cerebral dominance, which may be a genetic predisposition to develop schizophrenia.

In our study (Sommer *et al*, 2004), the language tasks employed were selected to be very simple in order not to cause a difference in performance between patients and healthy subjects. Left hemispheric language activation was not lower in patients than in their co-twins, which, in our opinion, reflects equal task performance.

In the Španiel *et al* study, a verbal fluency task was employed, which is known to generate a difference in performance between schizophrenia patients and controls, and generally yields decreased activation of left frontal areas in patients (Curtis *et al*, 1999). This may explain why Španiel *et al* found lower lateralisation in patients compared with their co-twins.

Španiel *et al* mentioned that selection of co-twins without schizophrenia and of control pairs may have caused the difference between their results and ours, since the control twin pairs in their sample were selected not to have relatives with schizophrenia. This was, however, also the case in our sample. The second point of difference raised by Španiel *et al* is that the co-twins in their study had no psychiatric disorder. However, in our article we described an additional analysis comparing twins with schizophrenia with their co-twins after exclusion of all pairs from which the co-twins had psychiatric pathology, which yielded the same results as the analysis including the entire sample.

In sum, we find Dr Španiel *et al*'s study an interesting contribution; in our opinion it is differences in the language activation tasks, rather than differences in sample selection, that are the cause of the differences in outcome between the studies.

**Artiges, E., Martinot, J. L., Verdys, M., et al (2000)** Altered hemispheric functional dominance during word generation in negative schizophrenia. *Schizophrenia Bulletin*, **26**, 709–721.

**Curtis, V. A., Bullmore, E. T., Morris, R. G., et al (1999)** Attenuated frontal activation in schizophrenia