

Letter to the Editor

Re. Sinistrality in subtypes of Schizophrenia

Dear Editor,

I read the paper by Dr. Dollfus et al. with interest in as much as it dealt with the issue of handedness in humans. Although the respected authors did mention the fact that reports on handedness in schizophrenia has been inconsistent (as they have been so in other matters in which the subject of enquiry has been a judgment of human, rather than that of nature), I may be correct in sensing the existence of a belief in the authors that sinistrality somehow is related to brain damage to the fetus, as it has been alleged recently (causing a scare in obstetrical circles [1]).

I, therefore, would like to bring to the attention of the authors the salient anatomical facts to indicate that (1) handedness is of two kinds, neural and behavioral and there is an incidence of incongruity of the two, which is no less than 15% [3]¹. (2) Neural sinistrality (which is what the authors are concerned about) is not subject to manipulation at any stage of pregnancy to result in a *change* of handedness in the fetus, and that left-handedness has as much anatomical legitimacy as its counterpart, and it is not a back up mechanism in motor control in human.

Handedness, in humans, is a behavioral reflection in manual dexterity (the latter term itself as prejudicial as the term "sinistrality") mandated by nature and underpinned by the fact that one hemisphere activates ("controls") another. In a vast majority of any population it is the left hemisphere that activates the right (right-handers). In the rest, the situation is reversed (left- or mixed-handers). Elsewhere, I have given technical details on the matter [1–3], which I summarize here for your readers.

Humans may choose (and 70% of left-handers as well as a few right-handers do so) which hand to adopt as their favorite; some imitating their loved ones in doing so, and others

defy the nature out right, not taking advantage of the activity dependent synaptic modification/facilitation that the above-mentioned, callosally mediated, interhemispheric facilitatory pathway provides. The occurrences of crossed aphasia and crossed non-aphasia manifest the truth of the above statement, as does the fact that forcible change of handedness does not make the pathway mentioned non-operational; such persons, if neurally left-handed, will demonstrate bilateral cortical frontal activity when tapping their fingers on the right, the reverse of that seen in neural right-handers [4]. The same is the case with the use of high resolution EEG, where the sequential activity is from left to right in right-handers [1,3].

Finally, since the percentage of neurobehavioral incongruents (i.e. fake-handers) is not small (at least one in six people) it is important to avoid all arbitrary manners of handedness determination in favor of the other objective ways of such evaluations [1–3].

References

- [1] Derakhshan I. Anatomy of handedness and safety of prenatal ultrasound. *Ultrasound Obstet Gynecol* 2003;21:209–12.
- [2] Derakhshan I. Ipsilateral cortical paresis, a key to the anatomy of handedness. *Can J Neurol Sci* 2002;69:P131.
- [3] Derakhshan I. Handedness: neural vs. behavioural. *Eur J Neurol* 2002;9:701–2.
- [4] Siebner HR, Limmer C, Peinemann A. Long term consequences of switching handedness: a positron emission tomography study on handwriting in "converted" left-handers. *J Neurosci* 2002;22:2816–25.

I. Derakhshan *

Cincinnati and Case Western Reserve Universities
415 Morris St, #401
Charleston, WV 25301, USA
E-mail address: idneuro@hotmail.com

* Corresponding author.

¹ In view of Marien et al.'s response, please see their Tables 1 and 2 regarding construction apraxia and writing difficulty in the non-paralysed right hand of their nine patients. Therefore these were all neural left-handers.