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Children, neurological soft signs and schizophrenia

In their recent article, Leask *et al* (2002) reconfirm the presence of neurological soft signs as a significant childhood finding among people who later develop schizophrenia in adulthood. In some earlier work using a similar, bias-proof follow-back design we had identified developmental problems (a pragmatic equivalent of soft signs), weaknesses in speech and language and difficulties in peer relationships as the strongest childhood precursors of adult schizophrenia, indeed easily more relevant than family history of psychosis or demographic characteristics.

As interest is developing in prodromes of psychosis and its early onset, we also have a far better-defined group of children who incorporate all the above parameters and factors. In our child psychiatric clinical practice, we are seeing increasing numbers of children with soft neurological signs and disturbed peer relationships who are diagnosed with Asperger syndrome. In effect, it would appear that even though neurological signs are not a central criterion, they are universally present and in exactly the areas Leask *et al* identified.

Could it be that these youngsters are indeed the most primary candidates for future schizophrenia? It would logically follow; and then our notions on continuities may need revising and, perhaps more relevantly, a target population may be identified where preventive input could be crucial. I would welcome comments from readers.

Ambelas, A. (1992) Preschizophrenics: adding to the evidence sharpening the focus. *British Journal of Psychiatry*, **160**, 401–404.

Leask, S. J., Done, D. J. & Crow, T. J. (2002) Adult psychosis, common childhood infections and neurological soft signs in a national birth cohort. *British Journal of Psychiatry*, **181**, 387–392.

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Authors' reply: Dr Ambelas raises the important relationship between the premorbid characteristics of individuals who later develop schizophrenic illnesses and the syndrome first described by Hans Asperger as 'autistic psychopathy' in childhood (Asperger, 1944). Asperger related his clinical picture to Bleuler's concept of autism in schizophrenia and wrote that, 'All but the last mentioned feature (dereistic thinking) can be found in the type of personality disorder to be described here'. But 'While the schizophrenic patient seems to show progressive loss of contact, the children we are discussing lack contact from the start'. Investigating this association, Tantam (1988) found that 18 (21%) of 86 people with Asperger syndrome later developed some form of psychosis.

The status of Asperger disorder/syndrome (DSM–IV (American Psychiatric Association, 1994) and ICD–10 (World Health Organization, 1992)) within the class of autistic spectrum or pervasive developmental disorders (DSM–IV) has been much debated. These disorders are characterised by delays or deficits in social relatedness, reciprocation, and understanding social interactions. The term pervasive developmental disorders was first introduced in DSM–III (American Psychiatric Association, 1980), with Asperger disorder only separated from other pervasive developmental disorders in DSM–IV. Pervasive developmental disorders not otherwise specified constituted the majority of cases in the DSM–IV field trials. Further subdivisions of pervasive developmental disorders are likely in revisions of DSM resulting from empirical evidence and consensus of opinion. Thus, Ambelas's target of a 'primary candidate' at this stage might be the broader class of pervasive developmental disorders, excluding autism, rather than Asperger syndrome *per se*.

Cohort studies such as the National Child Development Study (NCDS) cast some light on the issue. The epidemiology is arguably similar, with S+ schizophrenia having a lifetime prevalence of 8 per 10 000, and in the NCDS at age 7 the gender split was 20:13 (i.e. 1.5:1). While Ehlers & Gillberg (1993) using their own criteria estimated a minimum prevalence of 3.6 per 1000 children (7–16 years of age) and a male to female ratio of 4:1, using more liberal criteria their prevalence was 7 per 1000, with a gender split of 2.3:1.

Most authors agree with Tantam that the core of Asperger syndrome consists of disabilities in communication, socialisation and non-verbal expression, with conspicuous clumsiness and special interests. Cohort studies suggest that there are indeed deficits in at least some of these areas in children who go on to develop schizophrenia in adulthood. In the NCDS, we found these children more often rated as over-anxious and hostile in their relationships with adults and other children, and this was both more marked and present earlier in boys (Done *et al*, 1994). At ages 7, 11 and 16, their teachers noted the children were mispronouncing words more often than the rest of the cohort. At 11, there were increased rates of speech difficulties, and at 16 they were poor on English ability. There are therefore difficulties in communication, although it is not clear that these are comparable to the 'odd, pedantic, stereotypic speech' that is described in Asperger syndrome. Interestingly, at each age they were delayed in reading ability, although such deficits are not recorded as characteristic of Asperger syndrome. At age 11, girls but not boys among those who later developed schizophrenia were rated as withdrawn (i.e. distant, cut-off from people, avoiding communication), evidence perhaps of difficulties in non-verbal communication. However, at age 7 the girls in all respects manifested normal social behaviour, suggesting that girls who, in adulthood, develop schizophrenia might display a characteristic developmental trajectory (i.e. a decline in social relatedness and reciprocation between childhood and adolescence).

Perhaps the most interesting parallel is the one to which Ambelas draws attention, between the increase in neurological soft signs that we have observed and the clumsiness and stereotypy of movement that is described in Asperger syndrome – a clue to the neurological basis or bases of the two clinical pictures. At age 7, the children who, in adulthood, developed schizophrenia were more likely to be rated as having difficulties in coordination, and at

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