with benzhexol. Risperidone is a new-generation atypical antipsychotic agent with potent dopamine antagonist action (Owens, 1994). Despite this pharmacological effect, a low risk of extrapyramidal side-effects has been reported. To our knowledge, this is the first report of rabbit syndrome caused by risperidone treatment.

Casey, D. E. (1992) Rabbit syndrome. In *Movement Disorders in Neurology and Psychiatry* (eds A. B. Joseph & R. R. Young), pp. 139–142. Boston, MA: Blackwell Scientific Publications.

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Todd, R., Lippman, S., Manshadi, M., *et al* (1983) Recognition and treatment of rabbit syndrome, an uncommon complication of neuroleptic therapies. *American Journal of Psychiatry*, **140**, 1519–1520.

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Jet lag and relapse of schizoaffective psychosis despite maintenance clozapine treatment

Sir: Jet lag is a transient disorder of the sleep–wake schedule which results from rapid multiple time zone changes, affects only east–west travel and is worse after eastward travel. Its symptoms, which may last 7–10 days, include sleepiness, fatigue, exhaustion with insomnia during sleep period (Karacan *et al*, 1992).

There has been no report of *de novo* psychosis or relapse of a stabilised psychotic disorder following an acute jet lag. Tec (1981) reported a case of relapse of endogenous depression following jet lag. I present the case of a young man whose schizoaffective psychosis, stabilised on clozapine for five years, relapsed during an eastward transatlantic flight, despite continued compliance.

Mr A., a 26-year-old man, was first hospitalised in 1991 for a psychotic episode later diagnosed as schizoaffective disorder. Following failed trials of conventional neuroleptics he commenced clozapine on 3 December 1992. The Positive and Negative Syndrome Scale (PANSS; Kay *et al*, 1987) total score was 104. He was stabilised on clozapine 400 mg per day and by early 1996 worked part-time in a grocery store. In December 1997, he left for Lebanon for a visit. Total PANSS score was 46, and maintenance dose of clozapine was 400 mg h.s. After a six-hour flight to London, England, and before boarding the plane to Lebanon that day, he became guarded, suspicious and apprehensive. On arrival in Lebanon he became psychotic, with auditory hallucinations, ideas of reference and persecutory delusions that the police were after him. He saw a psychiatrist who increased clozapine to 500 mg h.s., with benefit after two weeks.

His westward return trip to Canada a month later was uneventful. However, on arrival in Canada, the dose of clozapine had to be decreased to 450 mg h.s. because of over-sedation.

This is the first case of psychotic relapse following acute jet lag. The dose of clozapine that controlled his psychosis in Lebanon (eastward travel) was excessive on return to Canada (westward travel). The clinical implication of this report is that such patients travelling eastward across time zones may need a slight dose increase to prevent a relapse.

Karacan, I., Williams, R. L. & Moore, C. A. (1992) Sleep disorders: disorders of the sleep–wake schedule. In *Comprehensive Textbook of Psychiatry*, Vol. 2 (5th edn) (eds H. I. Kaplan & B. J. Sadock), pp. 1118–1119. Baltimore, MD: Williams & Wilkins.

Kay, S. R., Fiszbein, A. & Opler, L. A. (1987) The positive and negative syndrome scale (PANSS) for schizophrenia. *Schizophrenia Bulletin*, **13**, 261–276.

Tec, L. (1981) Depression and jet lag. *American Journal of Psychiatry*, **138**, 858.

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Testicular pain and swelling on withdrawal of imipramine

Sir: We present an unusual occurrence of testicular pain and swelling on withdrawal of imipramine. Testicular pain and swelling is noted in the package insert as an adverse reaction to the drug and it has been described in the literature with the use of desipramine (Deicken & Carr, 1987; Thienhaus & Vogel, 1988). A.B. is a 61-year-old, married, unemployed male with major depression and generalised anxiety and had been treated with imipramine 150 mg daily for the past eight years. He decided to stop imipramine because of prolonged adverse reactions. The medication was withdrawn over a two-week period. At the end of the first week he complained of bilateral pain, tenderness, swelling of testes and difficulty with micturition of gradual onset. The symptoms coincided with withdrawal.

Physical examination revealed bilateral swelling, redness and tenderness on palpation of testes. There was no history of being exposed to sexually transmitted diseases. On examination, his pulse and temperature was normal, there was no lymphadenopathy, no parotid swelling and no hypertrophy of prostate gland on rectal examination. Full blood count, erythrocyte sedimentation rate, urea, creatinine and electrolytes, prostate specific antigen, the tumour marker for beta human chorionic gonadotrophin, and alpha-fetoprotein, were all within normal limits. Urine microscopy was unremarkable and culture did not reveal any significant growth. Testicular ultrasound was not performed.

All of the genital symptoms and the other adverse symptoms subsided by the end of the fourth week and he remained symptom-free during regular follow-up over six months. The testicular pain and swelling may be due to an infection, but the laboratory findings did not support this hypothesis. There was a strong relationship between the time course of the withdrawal and the emergence of testicular pain and swelling. We postulate that a decline in level of the drug and/or its metabolite, possibly acting via an endocrine imbalance, gave rise to a hypersensitivity-type reaction and these symptoms subsided with restoration of equilibrium.

Deicken, R. F. & Carr, R. E. (1987) Testicular pain and swelling with desipramine. *Journal of Clinical Psychiatry*, **48**, 251–252.

Thienhaus, O. J. & Vogel, N. (1988) Desipramine and testicular swelling in two patients. *Journal of Clinical Psychiatry*, **49**, 33–34.

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Adults with Williams syndrome

Sir: I read with interest the preliminary report on Williams syndrome (Davies *et al*, 1998). I feel that the omission of significant behavioural phenotypes and the ascertainment bias has marred an otherwise

appealing study. These two flaws, if addressed, would improve the conclusions one could draw from future studies as well as defining a separate behavioural profile specific to the syndrome.

Davies, M., Udwin, O. & Howlin, P. (1998) Adults with Williams syndrome. Preliminary study of social, emotional and behavioural difficulties. *British Journal of Psychiatry*, **172**, 273–276.

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Author's reply: Full details of the adaptive behaviour and cognitive profile of this group are published elsewhere (see Udwin *et al*, 1996; Davies *et al*, 1997; Howlin *et al*, 1998). Briefly, it was found that differences between verbal and performance IQ, and between receptive and expressive language skills, were smaller than generally found in children with this condition, although the cognitive profile of abilities and difficulties remains almost identical to that found in children with Williams syndrome. Hyperacusis remains prominent in adulthood but it is not regarded as being as disruptive as in childhood.

With regard to recruiting participants, ensuring the generalisability of findings is a perennial problem for research of this nature. It is important that studies aim to recruit as many participants as possible. It is often very difficult to identify and recruit large numbers of people with such rare syndromes, and parent groups often represent the most efficient means of doing so. Such families are often extremely motivated to participate in research, as demonstrated by the extremely high response rate to our study. It is difficult to speculate whether the group of adults recruited in this study is truly representative of the population as a whole. However, it seems likely that families with no support or understanding of Williams syndrome will encounter more difficulties coping with the challenges presented by this condition. Moreover, given the high degree of behavioural disturbance and levels of care required by our group, it is likely that many undiagnosed adults with Williams syndrome are cared for by professional agencies. It is therefore important that those likely to encounter individuals such as those with Williams syndrome are aware of associated behavioural phenotypes.

Davies, M., Howlin, P. & Udwin, O. (1997) Independence and adaptive behaviour in adults with Williams syndrome. *American Journal of Medical Genetics*, **70**, 188–195.

Howlin, P., Davies, M. & Udwin, O. (1998) Cognitive functioning in adults with Williams syndrome. *Journal of Child Psychology and Psychiatry*, **39**, 183–189.

Udwin, O., Davies, M. & Howlin, P. (1996) A longitudinal study of cognitive ability and educational attainment in Williams syndrome. *Developmental Medicine and Child Neurology*, **38**, 1020–1029.

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White matter abnormalities and memory in Alzheimer's disease

Sir: Ikeda *et al* (1998) draw attention to the heterogeneity of memory impairment even in advanced Alzheimer's disease and the authors discuss the possible role of the amygdala and its connections in emotional memory. Given that all the subjects had magnetic resonance imaging scans, and despite the relatively small sample size, it would be interesting to know whether any imaging findings were related to the preservation or not of memory for the emotionally charged event. In particular, since white matter abnormalities are frequently present in Alzheimer's disease (Kertesz *et al*, 1990) and since memory loss has been described in association with damage to white matter projections from the amygdala (Kooistra & Heilman, 1988), it could be hypothesised that such abnormalities would be more frequent in the subjects who forgot the earthquake, for a given stage of dementia severity.

Ikeda, M., Mori, E., Hirono, N., *et al* (1998) Amnestic people with Alzheimer's disease who remembered the Kobe earthquake. *British Journal of Psychiatry*, **172**, 425–428.

Kertesz, A., Polk, M. & Carr, T. (1990) Cognition and white matter changes on magnetic resonance imaging in dementia. *Archives of Neurology*, **47**, 387–391.

Kooistra, C. A. & Heilman, K. M. (1988) Memory loss from a subcortical white matter infarct. *Journal of Neurology, Neurosurgery and Psychiatry*, **51**, 866–869.

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Authors' reply: We thank Dr Stewart for his interest in our study and his legitimate comment on magnetic resonance imaging (MRI) findings related to the emotionally charged event. In several MRI-based volumetric studies, medial temporal atrophy correlates to memory impairment in Alzheimer's disease (Mori *et al*, 1997*b*). In fact, we quantified amygdalar and hippocampal volumes in a subset of our patients by using high-resolution MRI and a computerised volumetric technique to elucidate the relationship between medial temporal damage and memory for the events surrounding the earthquake. We found that, irrespective of generalised brain atrophy and cognitive impairments, amygdalar volume (right and left averaged) correlated with emotional memory more than hippocampal volume did. General knowledge of the earthquake was correlated with neither amygdalar nor hippocampal volume. The findings indicate that impairment of emotional event memory in patients with Alzheimer's disease is related to intensity of amygdalar damage, and provide evidence of the amygdala's involvement in emotional memory in humans. A part of this study was presented at the American Neurological Association annual meeting (Mori *et al*, 1997*a*).

As Dr Stewart pointed out, it is plausible that white matter abnormalities are involved in the memory impairment of the subjects of our study. In people with Alzheimer's disease, white matter abnormalities are often noted on T2-weighted magnetic resonance images, and are reportedly involved in cognitive impairment. However, we did not include in the study those with severe white matter abnormalities whose characteristics otherwise fulfilled the criteria for clinical diagnosis of Alzheimer's disease, because of a possible involvement of ischaemic pathology. Moreover, a recent study suggested that white matter abnormalities in people with Alzheimer's disease is not a disease-specific change but an age-associated coincidence that has little relevance to cognitive function and thus little clinical importance (Leys *et al*, 1990; Marder *et al*, 1995). In a previous study, we studied the impact of T2-weighted MRI white matter hyperintensities on cerebral perfusion and oxygen metabolism in patients with Alzheimer's disease by using oxygen-15 steady-state method and positron emission tomography (Yamaji *et al*, 1997). We found no significant difference in cognitive impairment between those with and without white matter abnormalities. There were no significant differences in oxygen metabolism in cortical and white matter regions