some of the influences contributing to severity ratings in general practice. It is apparent from the comparative work on GP versus hospital depression now appearing that although the statistical significance of differences is impressive, the magnitude of these differences is often quite small.

T. J. FAHY

Department of Psychiatry
University College
Galway

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The Nottingham ECT Study: Double-Blind?

SIR: Gregory *et al* (*Journal*, May 1985, **146**, 520–524) state: "The rater and clinical teams in charge of patients were blind to the treatment group." The statement that a trial is "double-blind" does not make it so. The authors are not seen to attempt to disprove their "double-blind" design by assessing blindness in the rater, the clinical teams and the patients at every assessment point, when a lack of blindness would influence results. Notionally blind participants can be asked to guess patient status and then the observed guesses can be compared with guesses to be expected by chance, thereby quantifying any disparity between theory and practice using conventional statistical criteria. If it is believed that simulated, unilateral and bilateral ECT produce different degrees of dysmnesia then these could vitiate the "double-blind" design, a criticism which can be approached if the side-effects are systematically recorded at each assessment point and then submitted to statistical comparison between groups.

MICHAEL ROBINSON
GIRISH SHETTY

Department of Psychiatry
University of Liverpool

Unilateral Auditory Occlusions and Auditory Hallucinations

SIR: After McGuffin noted that schizophrenic patients with auditory hallucinations sometimes plug their ears (*Journal*, June 1979, **134**, 651–652), Green suggested that plugging just one ear may help (*Journal*, September 1979, **135**, 287). Finding impaired binaural vs monaural verbal comprehension in schizophrenics, Green & Kotenko (1980) reasoned that plugging the inferior ear (usually the left) would improve comprehension and might ameliorate auditory hallucinations. Concurrent with another intervention, James (*Journal*, November 1983, **143**, 515–516) tried unilateral ear plugging (UEP) for auditory hallucinations. He concluded that the associated improvement was not due to UEP because plugging either ear helped. While inconsistent with the hypothesis that only UEP of the inferior ear should help, other notions about UEP could accomodate these findings. The need for other hypotheses about the UEP effect is further raised by a case we wish to report. For this patient with chronic hallucinations, plugging the superior comprehending right ear was followed by a striking decrease in auditory hallucinations. The effect outlasted the period of occlusion, and even persisted into an exacerbation of psychosis.

UEP had no effect on four other actively psychotic chronic schizophrenic men, but perhaps their heterogeneity was a factor. Compared with the others, the patient who benefitted was younger, better adjusted premorbidly, and was more reactive to life events. He had more florid positive and less marked negative symptoms, and was relatively more neuroleptic-responsive.

Case report: This right-handed 32-year old with chronic paranoid schizophrenia (DSM–III) had experienced frequent exacerbations, and was in hospital when UEP trials began. While other symptoms were neuroleptic-responsive, medication did little for his loud, nearly continuous hallucinatory 'voices'. He had heard them daily for six years. He was symptomatically stable for several months, and no change was made in medication or dose (chlorpromazine 400 mg, p.o., TID) for a month before, and during UEP trials. An independent rater assessed auditory hallucinations at base-line as severe (BPRS score = 6).

The patient had normal hearing on audiometric testing. On Green & Kotenko's (1980) test, his right ear comprehension score (27/40) was better than both binaural (22/40) and left ear (13/40) scores. Plugging the inferior-comprehending left ear ten hours daily for five days did not yield the predicted therapeutic response.

Three days after left UEP was ended, right UEP was begun. After two days, the intensity, clarity, and frequency of his auditory hallucinations markedly decreased (BPRS ratings = 2 (very mild) or 3 (mild)). Anxiety, excitement, suspiciousness, and unusual thoughts also diminished. Comprehension increased on all tested conditions, especially in the left ear. Three weeks of right UEP was associated with continued improvement. During this time

he was well enough to be discharged, and he went without UEP for two months, with only rare, soft, and indistinct hallucinatory 'mumbling'. Visual, but not auditory hallucinations gradually developed. A few weeks after readmission, right and left plugs were sequentially tried, but without effect. Auditory hallucinations did not recur until several months into this relapse as his general condition worsened. As the primary investigator had left the city, UEP was not again tried.

While not proving the efficacy of UEP this case strongly suggests it, and the recurrence of psychosis without auditory, but with visual hallucinations implies that UEP effects were modality-specific. Cross-modal 'compensatory' processes may have led to the emergence of visual hallucinations. This result with UEP opposite to the predicted side requires an alternative formulation to Green & Kotenko's (1980) model. One possibility is suggested by the reduced right hemisphere evoked response to left ear stimulation in schizophrenia (Connolly *et al*, 1985). By limiting auditory input to the left ear, a right ear plug might enforce better engagement of right hemisphere attention. There is also evidence of left hemisphere overactivation and dysfunction in schizophrenia (Gruzelier, 1983). By nearly eliminating right ear input, right UEP may help to normalize left hemisphere activation and function. The relevance of this to auditory hallucinations is suggested by the fact that plugging the ear contralateral to the affected hemisphere alleviates auditory illusions associated with temporal lobe epilepsy (Jacobs *et al*, 1973). UEP could interfere in several ways with processes underlying auditory hallucinations.

STEPHEN E. LEVICK
ERIC PESELOW

Yale University
V.A. Medical Center 116A/1
West Haven, CT. 06516, USA

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Awake, Perchance Asleep?

SIR: It is generally agreed that patients suffering from depression show reduced Sleep Efficiency, decreased Slow Wave Sleep and latency to REM, and changes in the distribution of REM sleep. Some recent models of depressive illness have been based in major respects on these findings (Borbely & Wirz-Justice, 1982; Wehr & Wirz-Justice, 1981). However, recording of the EEG has been restricted to the nocturnal sleep period in the studies demonstrating these abnormalities of sleep. Studies in normal subjects show that the duration of preceding wakefulness has a profound influence on subsequent sleep (Borbely, 1982), and that daytime naps may result in nocturnal sleep which has two of the main features shown in depressed patients: decreased Slow Wave Sleep and REM Latency (Karacan *et al*, 1970). We are aware of only one study in which the EEG of depressed patients was recorded over a 24 hour period: the average duration of daytime sleep was 5.7 hours (Shimizu *et al*, 1979). Because patients in this study were selected on the basis of complaints of increased sleepiness and time in bed, the results may be biased, though to what extent cannot be determined.

Precise information about the occurrence of sleep over 24 hour periods in a random sample of patients would be required to define more specifically the EEG characteristics of sleep in depression. Some information can be obtained by behavioural observation. On the Treatment Evaluation Unit at the Kingston Psychiatric Hospital we obtained behavioural observations in 20 randomly selected patients suffering from major affective disorder (depression) according to DSM–III criteria (three bipolar, 17 unipolar; mean age 53.3 years). Over periods of at least five days of observation for each patient, all showed episodes of bed rest when seen at half-hourly intervals between 0800 and 2100 hrs. Bed rest was noted on 62% of the observation days, with a mean duration of 2.6 hours. Although in this sample we cannot rule out the possible sedating effects of psychotropic medication, this finding supports the notion that daytime sleep may occur frequently in depressed patients not selected for increased daytime sleepiness.

Behavioural observation may, however, underestimate the amount of sleep that occurs. We have now obtained a continuous EEG record of sleep activity over the last eight hours of a 48-hour sleep deprivation in a depressed patient. The record was made with a portable cassette monitoring system (Oxford Medilog). During the time of presumed wakefulness the patient accumulated 11.1 minutes of Stage 2 sleep. In most instances the episodes did not exceed 20 seconds in duration; the shortest was