It is of interest that there is no significant correlation between GHQ-28 scores and either ACTH or cortisol levels in the Cushing's patients; especially as the authors cite the relationship between neuropsychiatric disability and hormonal levels in this subgroup as the basis for examining any relationship between these parameters in their heterogeneous sample of endocrine patients. One possible explanation for their failure to demonstrate a significant correlation between ACTH levels and GHQ-28 total scores comes from the work of Starkman & Schteingart (1981). They reported an increased prevalence of more severe neuropsychiatric disability in patients with pituitary ACTH-dependent Cushing's disease compared with patients with adrenal adenomas. However, the aetiological type of Cushing's syndrome in this subgroup is not specified.

It is difficult to know what conclusions to draw from the inclusion of the correlation coefficients between GHQ-28 total score and endocrine blood measures without additional methodological detail and further discussion of the results generated.

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Reference

STARKMAN, M. N. & SCHTEINGART, D. E. (1981) Neuropsychiatric manifestations of patients with Cushing's syndrome. *Archives of Internal Medicine*, **141**, 215–219.

SIR: The article by Lobo *et al* (*Journal*, June 1988, **152**, 807–812) uses the term 'endocrine psychosyndrome'. This term does *not* suggest that the psychopathology of all endocrine disturbances is the same: it reflects the clinical experience that the psychic alterations of endocrine patients concern in common *the same spheres of human inner life*, namely the biological background of general activity and of elementary moods, biologically-rooted trends (as for example, hunger and primitive sexuality), and biological rhythms. Within this frame of biological alterations due to endocrine diseases there are marked differences among different endocrine diseases. (In particular, the biological trends are influenced in different ways by different endocrine diseases.) If, however, an endocrine disease is complicated by a general metabolic cerebral alteration or by a general structural cerebral alteration, the psychopathology does of course no longer correspond to the term 'endocrine psychosyndrome'.

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SIR: Professor Bleuler, pioneer in the description of psychopathological disturbances among endocrine patients, further clarifies the meaning of the so-called 'endocrine psychosyndrome'. His comment about the "marked differences among different endocrine diseases" has to be welcomed. It has been his insistence on the common syndrome rather than the differences (Bleuler, 1967) which has influenced the content of some textbooks (Alonso-Fernández, 1976).

Our clinical experience, however, suggested that, firstly, the "changes referred to the impulses, mood states and different drives" in the 'endocrine psychosyndrome' (Bleuler, 1967) are frequently seen also in non-endocrine medical conditions, as it has been maintained recently (Gibbons, 1983), and secondly, consistent with present knowledge about the heterogeneity of endocrine diseases, we have been more impressed by remarkable differences between them, in the kind or severity of psychopathological phenomena. Aside from common knowledge about, for example, the predominance of anxiety in hyperthyroidism or depression in Cushing's patients, our clinical impressions, partially coincidental with literature reports, had suggested a relationship between the psychopathology observed and the severity of some diseases, such as Addison's and hyperthyroidism. The relationship seemed less clear in hyperprolactinemia and Cushing's. In type 1 diabetes, psychopathological phenomena had been observed particularly in patients with marked and quick blood glucose oscillations, especially with descending changes.

Therefore, it seemed reasonable to convert these clinical observations into a working hypothesis and submit them to test with standardised methods of assessment, which have rarely been used (Gibbons, 1983). Patients cognitively impaired were excluded, to minimise the risk of including the general metabolic or structural cerebral complications Professor Bleuler alludes to in his letter. Furthermore, in the attempt to trace the psychiatric disturbances to biological causes, it seemed appropriate to try to correlate the hormonal levels or related metabolic parameters with the psychopathology detected. The preliminary results tend to confirm the hypothesis (Pérez-Echeverria, 1985).

The present paper, part of our general study, was intended basically to validate the GHQ-28 in patients with severe endocrine diseases, with the hormonal levels or related biological parameters used as external validity criteria. To draw more specific conclusions, as Dr McGauley correctly suggests, additional details are necessary. We are in the process of reporting more data and pertinent discussions

but, in the meantime, some of his questions can be answered.

ACTH, cortisol, Na, prolactin, T4, T3 and T4f measures came from blood samples drawn at a standardised time, 08.00 h the first day after admission. 17-OHCS measures came from 24 h urine samples collected the first day after admission. Our clinical observations in diabetes and literature reports led to the introduction of some measures of glucose kinetics. "Blood glucose" measures are the means of 12 different samples for each patient, 4 samples each from one of the three consecutive days after admission, with the blood drawn before the four daily meals or snacks, at 08.00, 12.30, 16.30 and 19.30 h. 'Blood glucose dispersion' refers to the standard deviations of the above means. 'Ketone bodies' measures are the means of 12 different urine samples collected in each patient precisely at the same times as the samples for blood glucose. Finally, 'ketone bodies dispersion' refers to the standard deviations of the above means.

The correlations found between GHQ-28 total scores and endocrine or metabolic measures in diabetes and Addison patients tend to support our hypothesis. One possible explanation for the failure to demonstrate a significant correlation with hyperthyroidism parameters may come from the fact that all these patients had severe pathology (psychiatrist's global CIS severity scores 3 and 4) and, therefore, the range of GHQ scores was small.

Dr McGauley's suggestion, based on the report by Starkman & Schteingart (1981), is probably the best one to interpret the failure to demonstrate significant correlations with GHQ scores in Cushing's patients. Firstly, 8 of them (57.1%) had adrenal adenomas and 6 (42.8%) were patients with pituitary ACTH-dependent disease. Secondly, we can now report that in the group as a whole the mild cases (psychiatrist's global severity CIS score of 2) had significantly lower ACTH levels when compared with both the cases of moderate intensity (severity score of 3) ($P=0.0353$) and the severe cases (severity score of 4) ($P=0.0126$) (non-parametric Mann-Whitney U-test). Thirdly, this relationship between psychiatrist's severity CIS scores and ACTH levels could not be demonstrated with cortisol levels in the Cushing's patients.

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References

ALONSO-FERNANDEZ, F. (1976) Bases endocrinológicas de la psiquiatria. In *Fundamentos de la Psiquiatria Actual, Tomo I* (ed. F. Alonso Fernández). Madrid: Paz Montalvo.

BLEULER, E. (1967) *Tratado de Psiquiatria*. 10th German, 2nd Spanish Edition (revised by M. Bleuler). Madrid: Espasa-Calpe.

GIBBONS, J. L. (1983) Endocrine disorders. In *Handbook of Psychiatry, 2. Mental Disorders and Somatic Illness* (ed. M. H. Lader). Cambridge: Cambridge University Press.

PEREZ-ECHEVERRIA, M. J. (1985) Correlaciones entre trastornos endocrinológicos, niveles hormonales en sangre, variables de personalidad y alteraciones psicopatológicas. *Doctoral Thesis*, Universidad de Zaragoza.

STARKMAN, M. N. & SCHTEINGART, D. E. (1981) Neuropsychiatric manifestations of patients with Cushing's syndrome. *Archives of Internal Medicine*, **141**, 215–219.

Geographical Error

SIR: McCreadie *et al* (*Journal*, August 1988, **153**, 174–177) refer to my study as carried out in England. Perhaps Dumfries is now in England, but Cardiff certainly is not. It is still the capital of Wales.

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Melatonin Secretion in Depression

SIR: Thompson *et al* (*Journal*, February 1988, **152**, 260–265) compared melatonin secretion between depressed patients and individually matched control subjects. They also reviewed most of the related literature, highlighting flaws in study designs that might question the validity of published results and conclusions. In concordance with several of the reports critically reviewed, we also have reported lower melatonin concentrations in a group of depressed hospitalised boys, compared with ambulatory control subjects (Cavallo *et al*, 1987). We considered our data as preliminary, as we grouped together patients with various subtypes of depression, and we failed to examine the effect of hospitalisation *per se* on the results. In contrast to our findings and the other studies reviewed, Thompson *et al* demonstrated no difference in mean nocturnal plasma melatonin concentrations between depressed and control subjects. Also, they observed no difference in the timing of melatonin secretion.

Several issues need to be addressed in their carefully designed study. Firstly, it is unclear whether the control subjects were screened for family history of depression. Secondly, studying melatonin secretion in individuals with diverse sleep/wake (and consequently, diverse light/dark cycles) prevents a valid