

# Relationship between personality and premenstrual symptoms: a study in five general practices

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**SUMMARY.** A large representative sample of women of child bearing age in five urban practices were asked to complete two measures to record premenstrual changes in their health. The first method was a daily health record which sought to disguise the fact that the focus of the study was premenstrual changes while the second method was a conventional, retrospective checklist. In addition, the women completed a personality inventory which allowed them to be allocated to one of two personality subtypes according to level of neuroticism — neurotic or stable.

The results suggest that women in the neurotic subgroup are, in general, more likely to report premenstrual changes than stable women and particularly so on the retrospective checklist rather than the daily record of health changes. It was also shown that women in the stable subgroup were less likely to be inconsistent reporters of symptoms on the two questionnaires than neurotic women.

Better understanding of the variable nature of the premenstrual syndrome may demand that more attention is paid to the method of collection of data and to how this interacts with the woman's basic personality. In particular, for research purposes, the traditional method of a retrospective checklist introduces an unacceptable level of response bias in favour of the identification of women with high neuroticism scores, and underrepresents more stable women who suffer from premenstrual complaints. Previous treatment trials which have used this method may therefore be invalid and their conclusions should be reappraised.

## Introduction

OVER 50 years have elapsed since Frank's first systematic description of the so-called premenstrual syndrome,<sup>1</sup> but substantial doubt still remains about its aetiology and its relationship with various biological,<sup>2</sup> psychological<sup>3</sup> and social<sup>4</sup> phenomena. Whether or not personality variables are implicated is also an important but contentious issue. There have been a number of studies<sup>5-8</sup> of premenstrual symptoms and certain personality traits, such as anxiety and neuroticism, but the relationship is still far from clear. Moreover, in a survey of 249 general practitioners,<sup>9</sup> only about half thought that women reporting premenstrual symptoms could be distinguished by particular personality traits.

The exploration of the relationship between personality and premenstrual symptoms has been bedevilled by methodological problems, such as unrepresentative samples and a variety of

methods of symptom reporting, some of which may introduce bias.

In this paper we describe the relationship between certain aspects of personality and menstrual changes in a large, representative sample of women who were exposed to two different methods of data collection. In the first method the fact that the study was designed to obtain information about menstrual changes was deliberately camouflaged while in the second a more traditional menstrual questionnaire was used in which the purpose of the enquiry was explicit. These methods are fully described in a previous report.<sup>10</sup>

Our previous report<sup>10</sup> showed that there was a striking lack of concordance of comparable paired data about premenstrual complaints, obtained from the same women by each of the two survey techniques. In particular, many women reported complaints about premenstrual mood and general health in the retrospectively applied checklist that they had not recorded in the daily health record. We suspected that the traditional questionnaire — which is retrospective and explicitly about menstruation — was likely to encourage overreporting of complaints, both through prompting and through the vagaries of memory. The aim of this study was to determine whether this response bias increased with neuroticism score, as might be expected.

## Method

### Measures used

**Daily health record.** This was a covert method of collecting information about menstrual changes and the women were told only that the purpose of the enquiry was to obtain a general profile of their health over a six week period. Information about menstruation was obtained discreetly by embedding the relevant questions within a list of questions which sought information about a range of other common variations in health, such as appetite and constipation.

The women were asked to keep this prospective record on a daily basis over a six week period, thereby making it likely that one menstrual cycle would be included. Earlier pilot studies<sup>10</sup> had confirmed the ease of completion and validity of the daily health record, as well as its ability to disguise the real purpose behind it.

**Menstrual questionnaire.** Information relating to menstruation (including the day of onset and whether or not the woman was taking an oral contraceptive) was obtained by a retrospective checklist. This comprised a list of symptoms which had been reported by at least 15% of respondents in a large survey.<sup>11</sup> The symptom 'headache' was omitted from this list for the reasons described in the earlier report.<sup>10</sup>

The menstrual questionnaire was sent to the same women only after they had completed the daily health record in order that its completion did not interfere with their daily record of health changes. The covering letter explained that the woman was to use the symptoms checklist to report what changes she had observed before, during and after her last period. This was the same one as covered by the daily health record.

**Eysenck personality inventory.** The women were asked to fill in version A of the Eysenck personality inventory at the same time as completing the menstrual questionnaire. The Eysenck per-

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sonality inventory is a well established instrument that provides a measure of two independent dimensions of personality, namely, extraversion/introversion (E score) and neuroticism/stability (N score). In addition, a 'lie' score provides an index of the validity of the individual's responses.

### Subjects

Five urban practices, covering a total of 39 000 patients, were included in this postal survey. A one in four sample was randomly selected from the total population of 6500 women aged between 20 and 40 years. To avoid possible communication difficulties, all obviously foreign surnames were excluded. Of the 1386 women contacted 838 responded and, of these 530 satisfactorily completed all three measures and had menstruated within the study period. A further 42 women were excluded because their 'lie' scores were in excess of five, the cut-off point recommended by the authors of the Eysenck personality inventory as excluding responses of doubtful validity.<sup>12</sup> The analyses which follow are therefore based on the remaining 488 women whose mean age was 32.4 years (standard deviation 6.2 years). Of these women 131 (26.8%) were taking an oral contraceptive at the time of the study.

McNemar's test for paired proportions was used to estimate the statistical significance of differences between instruments, within groups; and differences between the personality groups were assessed using the standard error of differences in proportions.

### Results

The mean extraversion score for the 488 women was 11.1 (median 11, SD 4.3) and the mean neuroticism score 11.6 (median 12, SD 4.9). These scores correspond satisfactorily to the normative data provided by Eysenck and Eysenck,<sup>12</sup> confirming that these women do not constitute an atypical sample in terms of their personality structure.

Using the median scores for the neuroticism scale the sample was divided into two groups: stable (that is, those on or below the median score,  $n = 247$ ) and neurotic (those above the median,  $n = 241$ ). Only those comparisons involving the neuroticism scale are reported here because none of the analyses revealed any significant relationship between symptom reporting and extraversion scores. There were also no significant differences between the stable and neurotic groups in terms of the proportions above 30 years of age or aged 30 years and less and the proportions taking an oral contraceptive. It was found previously that women on an oral contraceptive had a reduced frequency of symptom reporting,<sup>10</sup> but that this had no effect on the rank order of the relative frequency of reported premenstrual symptoms. For clarity, the variables, age and

whether taking an oral contraceptive are therefore excluded from the analyses presented here.

Comparison of personality subgroups by instrument (Table 1) for five symptoms which were common to both instruments (malaise, moodiness, poor decision making, insomnia and lethargy) indicates that the level of reporting was generally higher in the neurotic group, and that this was particularly true for the retrospective menstrual questionnaire.

**Table 1.** Comparison of percentage of women reporting symptoms by personality group and by measurement instrument.

Symptom	% of women reporting symptom on DHR			% of women reporting symptom on MQ		
	Stable group (n = 247)	Neurotic group (n = 241)	SE	Stable group (n = 247)	Neurotic group (n = 241)	SE
Malaise	18.9	17.9	3.6	37.0	56.0	4.5***
Moodiness	29.6	37.9	4.4*	56.3	70.7	4.4***
Poor decision making	9.1	17.9	3.1**	11.5	24.8	3.5***
Insomnia	20.7	22.2	3.8	12.0	21.8	3.4**
Lethargy	31.4	34.3	4.3	21.0	25.3	3.9

DHR = daily health record. MQ = menstrual questionnaire. SE = standard error of the difference in proportions. \* $P < 0.05$ ; \*\* $P < 0.01$ ; \*\*\* $P < 0.001$ .

Table 2 shows the disparities between the daily health record and the menstrual questionnaire in the reporting of symptoms, that is the number of instances in which a woman reported a symptom at the time but not retrospectively, or vice versa. It is noticeable that in both personality subgroups the level of recording of malaise and moodiness was significantly higher on the retrospective instrument than on the contemporary daily health record. On the other hand there was significantly more frequent reporting of lethargy at the time than in retrospect. Among the stable subgroup insomnia was also more commonly reported on the daily health record.

From the standard errors of differences in proportions of women reporting symptoms (Table 2) it is evident that, overall, women in the stable subgroup were less likely to be inconsistent reporters than those in the neurotic subgroup. For every symptom there was greater inconsistency among the neurotic subgroup, although only in the case of malaise and poor decision making did the differences reach statistically significant levels. The neurotic subgroup reported symptoms on the retrospective questionnaire only more often than the stable subgroup and in three instances these differences were statistically significant. The neurotic subgroup were also significantly more likely to report poor decision making on the daily health record

**Table 2.** Comparison of the frequency of reporting of symptoms by measurement instrument within and between personality groups.

	% of stable women (n = 247) recording symptom on:			% of neurotic women (n = 241) recording symptoms on:			Standard error of differences in proportions in stable versus neurotic groups reporting symptom on:		
	DHR only	MQ only	SND	DHR only	MQ only	SND	DHR only	MQ only	Either
Malaise	11.7	29.6	4.4***	7.1	44.0	8.0***	2.6*	4.3***	4.5*
Moodiness	8.5	34.8	6.4***	7.5	39.0	7.2***	2.5	4.4	4.5
Poor decision making	6.1	8.5	1.0	11.2	17.8	1.9	2.5*	3.0**	3.7***
Insomnia	16.2	7.7	2.7**	14.5	14.9	0.1	3.3	2.9**	4.0
Lethargy	23.9	13.0	2.8**	24.9	16.2	2.1*	3.9	3.3	4.9

DHR = daily health record. MQ = menstrual questionnaire. SND = standardized normal deviate. \* $P < 0.05$ ; \*\* $P < 0.01$ ; \*\*\* $P < 0.001$ .

only than the stable subgroup, but for malaise there was a significant difference in the opposite direction.

### Discussion

Although the two instruments were used in the same sample of women and referred to the same menstrual cycle, each produced different results. Our previous paper<sup>10</sup> discussed more fully the two main sources of difference — retrospective versus concurrent reporting, and overt versus covert questioning. In this study a comparison of the reporting of five symptoms on the daily health record and on the retrospective menstrual questionnaire showed that the influence of these different methods of reporting varied according to the women's personality traits. For clarity, we have characterized respondents as 'stable' or 'neurotic', but we should re-emphasize that these typifications are simply different halves of the spectrum of a single variable, that is the degree of stability/instability measured by the neuroticism score of the Eysenck personality inventory. Thus there is a general tendency to report health changes more frequently on the retrospective questionnaire than on the daily health record, demonstrated in both the 'stable' and the 'neurotic' groups. This response bias is, however, in several instances significantly greater in the women from the upper half of the spectrum (whom we have typified as 'neurotic'), supporting our assumption that it is a bias which is directly associated with degree of neuroticism, as measured by the score on the Eysenck personality inventory.

There is no reason to suppose that neurotic individuals would be selectively less likely to record major changes in health at the time of their occurrence. Our findings do not, therefore, confirm the concern of some investigators<sup>13</sup> that the daily method of reporting may be too sensitive to changes unrelated to the menstrual cycle. Although other explanations are possible, two main postulates are either that neurotic women respond more readily to suggestion when symptoms are presented as a checklist; or that they respond according to a generalized global memory or social expectation of menstrual changes rather than to their own actual experiences of a specific menstrual period.

Our findings may help to explain the disparate results from previous studies, which have commonly employed retrospective survey methods using instruments which explicitly declare the intention to measure menstrually related changes. These conventional methods generally have a negative bias as Stout and Steege<sup>14</sup> point out and, for the sake of comparison, the daily health record similarly did not encourage the reporting of positive changes in health which may occur in the paramenstruum. Our instrument could, however, more easily be adjusted to take account of positive, as well as negative, health changes.

The design which we selected was determined by our wish to compare the paired responses of individual women to each of the two instruments and it is difficult to see how disparities in individual responses could have been obtained in any better way. It is, however, not possible for us to disentangle completely the differential effects of concurrent versus retrospective reporting, and overt versus covert questioning.

Nevertheless, we have identified a distinct sub-group of women who are consistent reporters of premenstrual changes regardless of how they are questioned and whose reports are largely independent of personality traits. One important postulate for further research is that the changes that these women report arise mainly from definable variations in endocrine function; and that their response to treatment may therefore be different from that of other women who also report otherwise apparently similar premenstrual symptoms. Conversely, this postulated differential response to treatment would have been masked in treatment trials where patients were selected by conventional methods

which, as we have shown in this paper, may introduce a distinct response bias in neurotically disposed individuals. Our results should therefore prompt reappraisal of some clinical research in this field.

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