The paramenstruum and negative moods in normal young women

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Abstract

The present study investigated the effects of depressogenic statements on 154 normal young women, in relation to the late luteal phase of the female monthly cycle (paramenstruum). The women were allocated to a depressive-induction group or to either of two non-treatment groups. Multivariate ANOVAs indicated that paramenstrual women given the depressogenic statements reported more negative post-induction mood states than did other women. Four of the 12 mood states measured by the Differential Emotions Scale (DES-IV) were significantly elevated for the paramenstrual women in the depressive-induction group only (viz. Sadness, Hostility, Fear and Shame subscales). It was concluded that paramenstrual women appear to be more sensitive to depressive stimuli, and therefore, more prone to experience negative mood states than women at other stages in their monthly cycles.
Introduction

The issue of paramenstrual susceptibility to depressive stimuli, and concomitant association of negative mood states, is an important one for psychological research on women Ss, in view of the greater willingness to report depressed mood among women as compared with men (e.g. Abramson and Andrews, 1982). Much of the extensive literature involving female Ss has failed to consider possible interactions due to paramenstrual factors. The present study therefore investigates the hypothesis that normal young women are more prone to experience negative mood states during the paramenstruum than at other times during their monthly cycles.

Additionally, the present study aims to elucidate more specifically which negative mood states are more likely to arise during the paramenstruum. Izard, Dougherty, Bloxom and Kotsch (1974, pp. 18-19) postulated that depressed mood is characterized by elevations in several fundamental emotions simultaneously, involving a pattern of sadness, shame, fear, hostility and guilt. Accordingly, this study aims to test the effects of depressogenic statements on normal young women at both the paramenstrual and non-paramenstrual phases of the female monthly cycle, with the purpose of testing Izard's claim that the above-specified negative mood states are more frequently observed during the paramenstruum, after presentation of depressive stimuli. Previous studies in this area have failed to specify the diverse range of negative mood states which may be associated with the paramenstruum, concentrating usually on only one negative state, such as depressed mood or anxiety.

Moreover, previous studies have often examined negative affectivity in relation to the premenstruum (e.g. Moos and Leiderman, 1978; Reichlin,
Abplanalp, Labrum, Schwartz, Sommer and Taymor, 1979; Friedman, Hurt, Arnoff and Clarkin, 1980; Foresti, Ferraro, Reithaar, Berlanda, Volpi, Drago and Cerutti, 1981; Sampson and Prescott, 1981; DeLeon-Jones, Val and Herts, 1982; Bäckström, Sanders, Leask, Davidson, Warner and Bancroft, 1983; Sanders, Warner, Bäckström and Bancroft, 1983), and have concluded that one particular negative mood state (depressed mood) is more prevalent during the premenstruum. Instruments such as the Menstrual Distress Questionnaire (MDQ; Moos, 1977, 1985) and the Menstrual Symptom Questionnaire (MSQ; Chesney and Tasto, 1975; Stephenson, Denney and Aberger, 1983) have been used to document 'premenstrual distress'. On the other hand, several studies have failed to find a significant relationship between the premenstruum and depressed mood (e.g. Abplanalp, Rose, Donnelly and Livingston-Vaughan, 1979; Lahmeyer, Miller and DeLeon-Jones, 1982; Maloney, Deitchman and Wagner, 1982; Strauss, Schultheiss and Cohen, 1983). One study at least (Haskett, Steiner, Osmun and Carroll, 1980), reported that irritability, restlessness, tension and mood lability were prominent during the premenstruum, as opposed merely to increases in depressed mood or anxiety alone.

None of these studies however, has included women in the premenstrual category who are in Day 1 of their menstrual cycles, but who do not begin to menstruate until late in that day. Even if a woman starts her menstrual period at say II p.m., this is still regarded as Day 1 of her monthly cycle. In effect, Day 1 may be almost entirely 'premenstrual' despite it not usually being regarded as so. Moreover, the immediate onset of menstruation has been associated with depressed mood, as has the premenstruum (e.g. Lahmeyer et al., 1982, p. 183). Accordingly, in the present study, Day 1 together with the 3 days immediately
preceding Day 1 were all defined as 'paramenstrual', which therefore allowed a more comprehensive analysis of the relationship between menstrual phase and negative affectivity. Such an analysis has not been undertaken in any of the previous studies in this area.

Method

Subjects

Data was collected on 154 University of Delaware undergraduate women drawn from several class groups in Years 1, 2 and 3 of the College of Education Bachelor's degree programme. Whole classes were tested, and although participation was voluntary, virtually all students in the various class groups took part in the study (data for males was simply deleted from consideration). The mean age of the sample was 20.93 yr (SD = 4.36 yr) and the women ranged in age from 18 to 44 yr. Confounds due to possible attributional effects (where the women might have interpreted their moods and depressed feelings on the basis of menstrual cycle phase) were avoided as the women were not asked anything about their menstrual cycles until after the mood-state data had already been collected. While university women may be very 'aware' of a possible relationship between menstrual cycle phase and mood states, this was not a difficulty in the present study.

Design

A depressive-induction group (N = 53) received the Velten (1968) depressogenic statements by means of a tape-recorder, followed immediately by administration of a 49-item version of the Differential Emotions Scale (DES-IV;
Izard, Oyster, Lelwica and Blumberg, 1984). Two non-treatment groups received neutral Velten statements and subsequently responded to the DES items. The number of women in each neutral group was 46 and 25, respectively. Group testing was an adequate procedure for administering the Velten statements (Brewer, Doughtie and Lubin, 1980). The number of paramenstrual women in each group was 7, 11 and 12, respectively, for the treatment and two neutral groups.

Testing situation

Rooms used were ones in which students normally took their classes. There was little, if any, interaction between students during the data collection. Extraneous noise was minimal. The experimenter informed the students that the research was important and that all information provided was strictly confidential. About 5% of the students present in each of the classes tested were males and they filled in the DES items only, in order not to disrupt the class groups. However, only the female data was analysed.

Measurement procedure

The Velten (1968) depressive-induction treatment comprised 60 statements intended to induce a mild but transitory depressed mood. The neutral treatment comprised 60 statements designed to induce no particular mood. Despite the possibility of initial mood and demand characteristics influencing the effectiveness of the Velten treatments (e.g. Polivy and Doyle, 1980; Buchwald, Strack and Coyne, 1981), the validity of the technique has been strongly and frequently supported (e.g. Goodwin and Williams, 1982; Madigan and Bollenbach, 1982;
There is little doubt that depression-inducing statements in general produce changes of mood. Snyder and White (1982) comprehensively tested the plausibility of the demand hypothesis and demonstrated unequivocally that ostensibly effective mood inductions which are really ineffective, failed to produce differential remembering of emotionally positive and negative events (see Snyder and White, 1982, pp. 161-165). Hence demand characteristics are not primarily responsible for the effectiveness of the Velten mood-induction procedure. Since the duration of induced moods is only about 10 min (e.g. Frost and Green, 1982; Sweeney, Shaeffer and Goli, 1982), this technique was appropriate for the sample under study. A debriefing session at the completion of the experiment allowed dissipation of any residual negative affectivity.

As summarized in Boyle (1984), the reliability and validity of the DES has been supported in numerous studies. The rationale for using the DES, which is a multivariate mood-state instrument, rather than employing a single scale of depressed mood was that mood states other than those of interest are often influenced significantly by a particular treatment, thereby confounding the results (see Boyle, 1983, p. 390). The DES is unique in its conceptualization that depressed mood is characterized by elevations in several fundamental emotions simultaneously (cf. Izard et al., 1974; pp. 18-19). More recently, Izard et al. (1984) have postulated that depressed mood involves elevations in the DES-IV subscales labelled Sadness, Hostility, Shame, Anger, Fear and Guilt, and simultaneous decrements in Interest and Joy. These changes were expected to be evidenced statistically more frequently among the paramenstrual women exposed to the Velten depressogenic statements.
RESULTS AND DISCUSSION

Application of the program MULTIVARIANCE (Finn, 1977) allowed testing of the hypothesis that the DES-IV subscales listed above would exhibit a significant between groups main effect for the depressogenic vs neutral statements groups. Orthogonal contrasts tested the expectation that while there would be no significant difference in mean DES subscale scores for the two non-treatment groups, the mean of the depressive-induction group would be significantly altered for the subscales listed above. The paramenstrual factor was included in the multivariate ANOVA as a separate independent variable.

The 3 x 2 multivariate ANOVA revealed a highly significantly Velten treatment effect \[ F(24, 274) = 3.60, p < 0.0001 \], with the depressive-induction group differing highly significantly from the two non-treatment/neutral groups \[ F(12, 137) = 4.50, p < 0.0001 \]. As expected, the multivariate orthogonal contrast between the two non-treatment groups was not significant. Table I presents the mean DES-IV subscale scores separately for the paramenstrual and non-paramenstrual women across treatment groups. Evidently, the scores for the subscales of Sadness, Shame, Fear and Hostility were not only elevated significantly in the depressive-induction group, but significantly interacted with the paramenstrual factor, as shown in Table 2. The significant multivariate interaction between the treatment and paramenstrual factors was \[ F(24, 274) = 1.66, p < 0.03 \]. Contrasts revealed this effect as due to the difference in mean subscale scores of the treatment vs non-treatment groups, among the paramenstrual women only \[ F(12, 137) = 1.89, p < 0.04 \]. As shown in Tables 1 and 2, in each case for the subscales of Sadness, Shame,
Fear and Hostility, the paramenstrual women obtained higher mean scores only if they were also members of the depressive-induction group.

While differences in mean subscale scores due to menstrual status occurred only in the depressive-induction group, group differences (between treatment and non-treatment groups) occurred irrespective of menstrual status, as expected, and as indicated above. Therefore the Velten depressogenic statements induced depressed mood in the students effectively. The other substantive finding was that four of the eight DES-IV subscales purported by Izard et al. (1984) to be involved in the depressive pattern of fundamental emotions were significantly elevated only for the paramenstrual women in the depressive-induction group. Concomitantly, the DES-IV subscales of Anger and Guilt failed to exhibit significant interaction effects for the paramenstral and non-paramenstral women in the depressive-induction group. Similarly, neither the subscales of Joy nor Interest revealed any significant interaction effects despite the prediction by Izard et al. (1984). The present evidence, therefore, provides only weak support for the hypothesis that women at the paramenstral phase of their monthly cycles are more susceptible to the influence of depressive stimuli. An alternative interpretation is that Izard's postulation regarding the pattern of subscale scores pertaining to depressed mood is simply too broad, and included too many subscales. To some extent the moderate intercorrelations between the subscales postulated to show higher mean scores

<table>
<thead>
<tr>
<th>DES subscale</th>
<th>Depressive</th>
<th>Neutral 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest</td>
<td>7.5*</td>
<td>6.9*</td>
</tr>
<tr>
<td>Joy</td>
<td>7.7</td>
<td>7.2*</td>
</tr>
<tr>
<td>Surprise</td>
<td>8.0*</td>
<td>7.0</td>
</tr>
<tr>
<td>Sadness</td>
<td>12.0*</td>
<td>9.2*</td>
</tr>
<tr>
<td>Anger</td>
<td>10.4*</td>
<td>7.1*</td>
</tr>
<tr>
<td>Disgust</td>
<td>8.2*</td>
<td>5.4*</td>
</tr>
<tr>
<td>Contempt</td>
<td>2.8*</td>
<td>1.5*</td>
</tr>
<tr>
<td>Hostility</td>
<td>9.7*</td>
<td>7.2*</td>
</tr>
<tr>
<td>Fear</td>
<td>9.5*</td>
<td>7.4*</td>
</tr>
<tr>
<td>Shame</td>
<td>9.0*</td>
<td>6.0*</td>
</tr>
<tr>
<td>Guilt</td>
<td>8.8*</td>
<td>6.9*</td>
</tr>
</tbody>
</table>

Table 1. DES subscale means for paramenstrual and non-paramenstrual women (N = 154)

<table>
<thead>
<tr>
<th>DES subscale</th>
<th>MS</th>
<th>P (2,148)</th>
<th>Significance level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest</td>
<td>3.19</td>
<td>0.045</td>
<td>NS</td>
</tr>
<tr>
<td>Joy</td>
<td>11.96</td>
<td>1.39</td>
<td>NS</td>
</tr>
<tr>
<td>Surprise</td>
<td>4.07</td>
<td>6.12</td>
<td>NS</td>
</tr>
<tr>
<td>Sadness</td>
<td>56.12</td>
<td>3.13</td>
<td>p &lt; 0.05</td>
</tr>
<tr>
<td>Anger</td>
<td>11.08</td>
<td>1.04</td>
<td>NS</td>
</tr>
<tr>
<td>Disgust</td>
<td>14.88</td>
<td>2.36</td>
<td>NS</td>
</tr>
<tr>
<td>Contempt</td>
<td>2.86</td>
<td>1.50</td>
<td>NS</td>
</tr>
<tr>
<td>Hostility</td>
<td>139.38</td>
<td>4.13</td>
<td>p &lt; 0.01</td>
</tr>
<tr>
<td>Fear</td>
<td>14.54</td>
<td>3.58</td>
<td>p &lt; 0.02</td>
</tr>
<tr>
<td>Shame</td>
<td>214.26</td>
<td>3.43</td>
<td>p &lt; 0.03</td>
</tr>
<tr>
<td>Guilt</td>
<td>13.74</td>
<td>2.42</td>
<td>NS</td>
</tr>
<tr>
<td>Joy</td>
<td>2.37</td>
<td>6.62</td>
<td>NS</td>
</tr>
</tbody>
</table>

Table 2. Univariate ANOVAs for the interaction between treatment and menstrual factors (N = 154)
under depressive conditions might have been responsible for Izard's assertion. However, the subscales posited to exhibit decreases in mean scores under depressive conditions (Joy and Interest) failed to exhibit significant correlations with the subscales expected to show increases in mean scores, in general. Accordingly, the significant interactions found in the present study for the subscales of Sadness, Hostility (inner-directed), Fear and Shame seem valid, and not just an artifact of DES-IV subscale intercorrelations. The conclusion from the present results, therefore, is that the findings presented in Tables 1 and 2 above are consistent with a multifaceted interpretation of mood-state susceptibility associated with the paramenstruum. Many previous studies, as listed above, have reported increased negative affectivity as part of the 'premenstrual distress syndrome'. The present study demonstrated that this negative effectivity is very mild, but involves a complex pattern of fundamental emotions.

Acknowledgements

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References


