RELATIONSHIPS OF RETROSPECTIVE AND PROSPECTIVE REPORTS OF PREMENSTRUAL DEPRESSIVE CHANGE TO PATHOLOGICAL INDICATORS, MENSTRUAL ATTITUDES, ATTRIBUTIONAL STYLE, AND STRESS

by

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Relationships of Retrospective and Prospective Reports of Premenstrual Depressive Change to Pathological Indicators, Menstrual Attitudes, Attributional Style, and Stress

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ABSTRACT

Research investigating relationships between premenstrual symptomatology and psychological variables has typically studied either women who provide unsubstantiated complaints of premenstrual symptomatology, in endeavours to suggest causal relationships between feminine attitudes or personality style and premenstrual symptomatology, or women in general (without regard for actual complaints of symptomatology) in attempts to suggest a stereotypical or attributional style basis to the perception of premenstrual symptomatology. The present research investigated personality and pathological indicators, attitudes toward menstruation, attributional style, and perceptions of stressors and stress in four groups of women obtained by combining two grouping variables: retrospective perception of premenstrual depressive change or no change (RetPDC and NoRetPDC) and prospective daily reports of premenstrual depressive change or no change (ProPDC and NoProPDC). From previous research it was expected that RetPDC women would show evidence of more personality and pathological indicators and more negative attitudes toward menstruation than would NoRetPDC women; that ProPDC women would show evidence of more negative attitudes toward menstruation and more menstrual cycle-related (and less personality/situational) causal attributions for premenstrual negative feelings; and that while no between- or within-group differences were expected for occurrence of daily stressors, the ProPDC women would report a higher intensity of subjective stress premenstrually when compared to both their own intermenstrual scores and the premenstrual scores of the NoProPDC women. Results revealed significant main effects of retrospective reporting for some personality and pathological indicators (RetPDC > NoRetPDC), for menstruation as a predictable event (RetPDC > NoRetPDC), and for situational causal attributions (RetPDC < NoRetPDC) and menstrual phase causal attributions (RetPDC > NoRetPDC) for negative premenstrual feelings. Analyses of data regarding stress and stressors revealed significant main effects, in both variables, of menstrual phase (Premenstrual > Intermenstrual) and, again in both variables, a significant interaction between menstrual phase and prospective ratings. Results are discussed with respect to both the

importance of prospective confirmation of retrospective accounts of premenstrual depressive symptomatology/asymptomatology, and the implications of these findings for intervention strategies.

DEDICATION

For John, Damon, and Corian

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INTRODUCTION

CHAPTER I

HISTORICAL OVERVIEW

Observations of physical, behavioural and psychological changes that are ascribed to disturbances of the menstrual cycle have been documented throughout history dating back to the writings of Hippocratic physicians who described the presence of "a sense of heaviness, headache, ringing in the ears and specks before the eyes" in premenstrual women (Dennerstein & Burrows, 1979, p. 78).

Soranus, in the second century A.D., noted the tendency for women to be tense immediately before menstruating (Delaney, Lupton, & Toth, 1976). A possible connection was drawn between menstruation and depression by Giovanni da Monte in the sixteenth century (Bonuzzi, 1976) and concerns were expressed by nineteenth century physicians with respect to the negative effects of a woman's "periodic ordeal" on her general level of functioning (Haller & Haller, 1974). Michelet, in 1859, referred to a period of 15 to 20 days out of 28 when a woman was "not only an invalid but a wounded one" (Haller & Haller, 1974), while Icard, in 1890, attributed a number of disorders to the effects of menstruation including "kleptomania, pyromania, dypsomania, homicidal mania, suicidal mania, erotomania, nymphomania, delirious insanity, impulsive insanity, morbid jealousy, lying, and calumny, illusions, hallucinations and melancholia" (Rubinow, Hoban, Roy-Byrne, Grover, & Post, 1985, p. 469).

It was not until the early twentieth century that such changes in behaviour, mood and physiology became formally identified as a syndrome. Frank (1931) is generally credited with providing the earliest systematic description of "premenstrual tension" which he attributed to faulty ovarian functioning. In the same year, Horney (1931) also described premenstrual symptomatology, although she attributed its existence to conflicts surrounding the repressed wish for a child. The same sharp distinction among etiological theories persists in the literature today despite almost 60 years of subsequent research on the nature of psychological and biological changes experienced

over the menstrual cycle and their effects on the behaviours, moods, and physical well-being of women.

During the 1980's premenstrual syndrome received increasing attention in both medical and psychological literature and in the more popular media. Heneson (1984) described this upsurge of interest in premenstrual syndrome after decades of skepticism:

> Disorders may languish for half a century in dark corners of the medical literature, and then, when the climate is right, emerge into the light of public notice. Thus, it happened in the summer of 1982 that premenstrual syndrome, or PMS, arrived. A disease that thousands of women had been told didn't exist suddenly became almost a media event. Newsweeklies, talk shows, style pages, bookstores—all had something to offer on PMS. There was no news, no cure, not even a better idea of its cause. What happened was less tangible: PMS acquired medical legitimacy. After years of telling women their problems were "all in the head", the proportion of doctors who accepted PMS as real disease reached critical mass. (p. 67)

Abplanalp (1983a) and Gannon (1985) suggested two possibilities for this apparent reversal of medical opinion: a) that the discovery of a physiological basis and subsequent physiological treatment for dysmenorrhea served to legitimize this disorder as an "acceptable" medical problem and opened avenues for discussion of other menstrually-related medical phenomena; and b) that several murder cases in England, in which premenstrual syndrome was accepted as a defense, sparked widespread discussion and controversy internationally and focused attention on premenstrual syndrome at all levels of society. An additional factor in the evolution of professional interest in this disorder may reside in the current trend in psychiatry toward acceptance of biological etiology in mental disorders (Heneson, 1984).

PMS comes out of the closet and into DSM-R-III

Perhaps the most salient indication of the recent and dramatic increase in the medical profession's willingness to embrace premenstrual syndrome as a legitimate diagnostic category is seen in its inclusion in the most recent revision of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-III-R; American Psychiatric Association, 1987). Initial proposals favoured

"premenstrual dysphoric disorder" as the preferred nomenclature and intended its inclusion in the body of the manual (Fisher, 1986). Because the term "premenstrual" did not include recognition that the disorder is also identified in women who do not menstruate, "periluteal phase dysphoric disorder" was subsequently adopted. Finally, with consideration of the fact that symptoms actually occur during the late luteal phase of the menstrual cycle rather than "around" (peri) the luteal phase, "PMS" further evolved into "late luteal phase dysphoric disorder" or LLPDD (Spitzer, Severino, Williams, & Parry, 1989). The disorder was also moved from the body of the manual to the appendix. Table 1 outlines diagnostic criteria for LLPDD.

Inclusion of the disorder in the DSM-III-R was not accomplished, however, without considerable and heated debate between those who consider formal inclusion of the phenomenon in a manual of mental disorders to serve women positively, and those for whom this inclusion represents a clear disservice to women. Interestingly, although much of the opposition stems from feminist concerns of an anti-women bias, many proponents also invoke feminist philosophy in their defense of LLPDD's inclusion in DSM-III-R:

> PMS has been characterized as a double-edged sword. If denied or treated lightly, researchers will ignore it and women whose symptoms could be treated will continue to suffer. On the other hand, since the menstrual cycle is one of the few real biological differences between women and men, when we do acknowledge menstrual problems, they are alleged to be evidence of our biological inferiority. (Chait, 1986, p. 271)

Proponents of the inclusion of LLPDD in a manual of mental disorders argue that formal standardization of criteria will facilitate communication between professionals, education of those same professionals, and more coherent and organized research endeavours which will, in turn, benefit women by reducing misclassification of women with cyclically recurring dysphoric moods and result in providing better health care for women (Severino & Moline, 1989; Spitzer et al., 1989). Opponents, on the other hand, point to the previously poor research upon which diagnostic criteria for LLPDD are based, the gender bias inherent in menstrual-cycle related nomenclature of what may alternatively be construed as "periodic dysphoric disorder", the lack of clear severity criteria, and the lack of attention paid to situational factors (Gallant & Hamilton, 1988). Of

Table 1: DSM-III-R Criteria for Late Luteal Phase Dysphoric Disorder

A. In most menstrual cycles during the past year, symptoms in B occurred during the last week of the luteal phase and remitted within a few days after onset of the follicular phase. In menstruating females, these phases correspond to the week before, and a few days after, the onset of menses. (In nonmenstruating females who have had a hysterectomy, the timing of luteal and follicular phases may require measurement of circulating reproductive hormones).

B. At least five of the following symptoms have been present for most of the time during each symptomatic late luteal phase, at least one of the symptoms being either (1), (2), (3), or (4):
(1) marked affective lability, e.g., feeling suddenly sad, tearful, irritable, or angry
(2) persistent and marked anger or irritability
(3) marked anxiety, tension, feelings of being "keyed up", or "on edge"
(4) markedly depressed mood, feelings of hopelessness, or self-depracating thoughts
(5) decreased interest in usual activities, e.g., work. friends, hobbies
(6) easy fatigability or marked lack of energy
(7) subjective sense of difficulty in concentrating
(8) marked change in appetite, overeating, or specific food cravings
(9) hypersomnia or insomnia
(10) other physical symptoms, such as breast tenderness or swelling, headaches, joint or muscle pain, a sensation of "bloating", weight gain

C. The disturbance seriously interferes with work or with usual social activities or relationships with others.

D. The disturbance is not merely an exacerbation of the symptoms of another disorder, such as Major Depression, Panic Disorder, Dysthymia, or a Personality Disorder (although it may be superimposed on any of these disorders).

E. Criteria A, B, C, and D are confirmed by prospective daily self-ratings during at least two symptomatic cycles. (The diagnosis may be made provisionally prior to this confirmation).

(American Psychiatric Association, 1987, p. 369)

particular concern is the potential for misuse of the diagnosis to discriminate against women by reviving the myth of "raging hormomes" and their subsequent impact on women's abilities to function in the workplace (e.g., promotional issues) and in the home (e.g., in child custody cases).

Other criticisms include specific details of diagnostic criteria (McFarlane & Williams, 1990) and the potential for reinforcement of the victim role in women whose premenstrual changes are not only legitimized by diagnosis but are also seen as relieving them of responsibility for gender-uncharacteristic behaviour (Gallant & Hamilton, 1988).

"Raging Hormones" as a Legal Defense

The introduction of premenstrual syndrome as a legal defense in recent years has also sparked controversial discussion within both the legal and medical/psychological professions (Benedek, 1988; Heggestad, 1986; Holtzmann, 1984, 1988). Although premenstrual syndrome has been successfully used as a legal defense against both murder and threatening bodily harm in the United Kingdom, this has in large part been due to the zeal with which Dr. Katarina Dalton, a proponent of progesterone deficiency as cause and progesterone therapy as treatment, has championed this cause (see Holtzmann, 1988 for details of these cases). In the United States, two attempts have been made to offer premenstrual syndrome as a defense for assault on a child and attempted felony assault (Benedek, 1988; Holtzmann, 1988). In neither instance has the defense been effective in acquitting the defendant.

Benedek (1988), Heggestad (1986), and Holtzmann (1988) have provided reviews of the legal and social objections to this defense strategy. These include arguments that premenstrual syndrome does not render the individual criminally insane under the M'Naughten Test, the Irresistible Impulse Test, or the Durham Test.

> A careful reading of all the standards for insanity as a defense in a criminal court make it apparent that premenstrual syndrome, with all its symptoms, does not make a defendant incapable of appreciating wrongfulness of conduct or conforming her

> conduct to the requirements of the law. Premenstrual syndrome is not, in itself, associated with mental disease or defect and as it is defined today does not fit any of the current tests of insanity. (Benedek, 1988, p. 501)

Furthermore, since research has clearly established that premenstrual syndrome does not include, as one if its symptoms, impairment in cognitive abilities, the defense of "diminished capacity" (i.e., the inability to formulate the intention to commit the crime) is also unsupported. As Holtzmann (1988) has stated, "it is difficult to argue that a person cannot formulate the requisite intent if that person does not lose cognitive abilities" (p. 140).

Heggestad (1986) considered the enormity of "the sheer numbers of women who can claim PMS as a defense or mitigating factor" (p. 161) by virtue of the fact that they are female. In addition, there would inevitably be problems arising from attempts to prove that menstruation did or did not occur within the requisite time after the crime was committed, and problems in proving that a woman has the syndrome. Furthermore, non-premenstrual factors such as other mental illness and environmental stressors may be mitigating factors which are of more relevance to the defense than the fact that one may have had premenstrual symptomatology at the time of the offense. Finally, Heggestad has offered a facetious warning:

> if PMS is used successfully, by women, someone is bound to realize that men also have hormones and might suffer from hormonal deficiencies or imbalances. A "prespermatogenesis syndrome" (PSS) could be hypothesized and studies regarding cause and cure would begin. Rapists could claim that they suffer from this new syndrome and use it as a defense in their violent crimes. (1986, p. 162)

The social consequences of premenstrual syndrome becoming an accepted defense echo those foreseen as a result of the syndrome's inclusion in DSM-III-R: the resurrection and legal endorsement of the old stereotype of women as raging hormones and the advent of subsequent discrimination against women in the workplace, in their bid to hold positions of social responsibility, and in legal battles such as divorce and/or child custody cases (Gallant & Hamilton, 1988; Holtzmann, 1988).

Despite the failure, to date, of a legal precedent being set for premenstrual syndrome as a successful defense, it will doubtless be offered again in North America. With the formal sanctioning (by inclusion of LLPDD in DSM-III-R) of premenstrual syndrome as a "mental illness", it becomes more likely that, at some point, such a precedent will be set.

The Future of LLPDD

Clearly, the debate surrounding the rise of "PMS" to "LLPDD" and consequent benefits and disadvantages to women will continue. Already, women's professional groups are rallying to document adverse consequences of the DSM-III-R appendix (Braude, 1988) in preparation for presentation of this material to the revising committee for DSM-IV. Others have formally protested the inclusion by way of petition (Caplan, 1989) and have also proposed a male counterpart disorder (colloquially called "Macho Personality Disorder") for inclusion in DSM-IV:

> We have tentatively called it "Delusional Dominating Personality Disorder"....Suggesting to the APA that it is time for them to take the progressive step of recognizing that this kind of disorder is indeed a form of serious pathology and to label it as such, in view of the harm it causes to people who suffer from it and those with whom they live and work, we formally submitted it for the inclusion in DSM-IV. (Caplan, 1990, p. 14)

Proponents of the inclusion of LLPDD in DSM-III-R are also busy generating research to support the utility of the DSM-III-R criteria in diagnosis and further clarify the associated diagnostic issues (e.g., Severino, Hurt, & Shindledecker, 1989).

Despite proponents' arguments that many of the objections to formalization of LLPDD in a manual of mental disorders (e.g., gender bias, incomplete understanding of etiology, potential discrimination against women - see Spitzer et al., 1989 for review) also apply to other disorders, there is good reason to be vigilant regarding the potential misuse of this diagnosis. As Abplanalp (1985) has suggested, "our understanding of the complex events comprising PMS still remains at a rather primitive level" (p. 104). The application of a diagnosis which is supported by an empirical

understanding that is at "a primitive level" is at best, premature, and, at worst, irresponsible. Nevertheless, for better or for worse, LLPDD is now a recognized diagnostic category in DSM-III-R and, in order to ensure that this serves to benefit those who may, indeed, suffer recurrent and severe premenstrual changes by providing recognition of their difficulties and suitable interventions, but is not simultaneously detrimental to women in general, ongoing methodologically sound research of the phenomenon is necessary.

CHAPTER II

DIAGNOSTIC ISSUES

Labelling and Classification

A lack of consensus is evident, even at the most basic level of discussion of premenstrual symptomatology, in the variety of terms that are used in the literature to describe this phenomenon. In his early delineation of premenstrual symptomatology, Frank (1931) coined the term "premenstrual tension", a referent which is still used by some (e.g., Hargrove & Abraham, 1982; Rausch & Janowsky, 1982). Horney (1931), on the other hand, referred to *die prämenstruelle Verstimmungen* – literally: the premenstrual ill-humour or ill-temper (Wildhagen & Héraucourt, 1965). Subsequently, the phenomenon has been labelled "toxaemia of menstruation" (Greenhill & Freed, 1940), "menstrual psychosis" (Sadler, 1945), "premenstrual tension syndrome" (Rees, 1953a, 1953b), "premenstrual syndrome" (Greene & Dalton, 1953), "cyclical syndrome" or "cyclical tension state" (Sutherland & Stewart, 1965), "premenstrual affective syndrome" (Friedman, Hurt, Clarkin, Corn, & Aronoff, 1982; Kashiwagi, McClure, & Wetzel, 1976; Wetzel, Reich, McClure, & Wald, 1975), "premenstrual dysphoria" (Steiner & Carroll, 1977), "premenstrual changes" (Endicott, Nee, Cohen, & Halbreich, 1986; Halbreich, Endicott, Schacht & Nee, 1982), or "premenstrual depressive changes" (Halbreich, Endicott, & Nee 1983), "premenstrual dysphoric changes" (Endicott & Halbreich, 1988), and "late luteal phase dysphoric disorder" (American Psychiatric Association, 1987).

While the term "premenstrual syndrome" has been most frequently applied and accepted by researchers, there is a growing body body of literature that supports the use of the term "premenstrual changes" as it reflects the recognition that premenstrual symptomatology must be perceived and investigated in terms of *change* from an individual's "normal level of functioning" rather than in terms of mere presence or absence of symptoms (Endicott & Halbreich, 1988;

Endicott, Halbreich, Schacht, & Nee, 1981; Halbreich & Endicott, 1985a; Halbreich et al., 1982; Rubinow et al., 1985; Rubinow & Roy-Byrne, 1984).

A growing number of researchers have disputed the presumed homogeneity of premenstrually symptomatic populations and maintain, instead, that there are actually a number of different premenstrual syndromes (Abraham, 1980, 1982; Abraham & Hargrove, 1980; Endicott et al., 1981; Goei, Ralston, & Abraham, 1982; Halbreich & Endicott, 1982; Halbreich et al., 1982; Hargrove & Abraham, 1982; Moos & Leiderman, 1978). The rationale for this approach stems from a concern that management of premenstrual changes may not be best achieved by combining all symptom constellations into one diagnostic category: "...the recognition of the diversified premenstrual subtypes and appropriate assessment procedures may contribute to the development of specific treatment modalities for most PMC [premenstrual changes]. At present once the diagnosis of PMC is established the symptomatic treatment is a matter of trial and error" (Halbreich, Endicott, & Lesser, 1985, p. 496).

Given the varied nomenclature and the lack of agreement on whether the phenomenon comprises only one or many distinctive syndromes, it is hardly surprising that little consensus exists, also, with respect to the prevalence of premenstrual syndrome.

Prevalence of Premenstrual Syndrome

Widespread variations in the prevalence of premenstrual syndrome are reported in the literature. Bickers and Wood (1951) reported a 36% prevalence rate among American factory workers; 52% of Moos, Kopell, Melges, Yalom, Lunde, Clayton, and Hamburg's (1969) sample of American university graduates and/or their wives met criteria for premenstrual syndrome; and a study of "normal" American women reported 96% of the sample to be premenstrually symptomatic (Pennington, 1957). Appleby (1960) reported a prevalence rate of 29% in a sample of British general practice patients; 73% of Lamb, Ulet, Masters, and Robinson's (1953) sample of student

nurses were diagnosed as premenstrual syndrome; 97% of a sample of nulliparous young women were similarly diagnosed by Sutherland and Stewart (1965); and 77% of women surveyed from a French community were reportedly premenstrually symptomatic (Van Keep & Lehert, 1981). In 1982, Hargrove and Abraham reported that, of 1395 regularly menstruating women between the ages of 13 and 54 years who were not using oral contraceptives, 702 women (50%) reported experiencing at least some symptoms of premenstrual syndrome. More recently, Boyle, Berkowitz, and Kelsey's (1987) epidemiological study of 520 women revealed prevalence rates for individual premenstrual symptoms ranging from 41% overall for breast swelling to 81% for weight gain or bloating, while a sample of 730 nursing school graduates showed that 12.7% reported no history of premenstrual symptoms, 39.6% had "mild" symptoms, 25.6% had "moderate" symptoms, 13.4% had "moderately severe" symptoms, and 3.2% had "severe" symptoms (Johnson, McChesney, & Bean, 1988). Finally, in a cross-cultural study (among residents of the one country) of menstrual cycle related complaints, Hasin, Dennerstein, and Gotts (1988) found an overall prevalence rate of 69% for premenstrual symptoms "experienced" (but not differentiated for severity) and individual cultural rates ranging from 84% and 85% for Australian and Greek women, to 42% of Vietnamese women.

Currently available epidemiological data may be misleading on two counts according to Reid and Yen (1981): a) variations in interpretations of clinical manifestations and subsequent quantification of severity of symptoms; and b) bias may result from an overrepresentation of women who experience premenstrual symptomatology volunteering to participate in epidemiological studies. These authors nevertheless suggested that "the general consensus based on questionnaire data is that 70% to 90% of the female population will admit to recurrent premenstrual symptoms and that 20% to 40% report some degree of temporary mental or physical incapacitation" (Reid & Yen, 1981, p. 86). Johnson et al.'s (1988) more recent statistics tend to support these conclusions.

Several factors are worthy of discussion when considering either the veracity of previously reported prevalence data or the instigation of epidemiological research.

Age

Although much of the data relating age to premenstrual syndrome is contradictory, there is some overall suggestion that moderate to severe premenstrual symptomatology is more prevalent in women in their thirties and forties than in teenagers and those in their twenties (Golub, 1988).

Golub (1976a) and Golub and Harrington (1981) found differences between young women aged 15 to 16 years and older women aged between 30 and 45 years in the extent of mood changes experienced during the premenstruum. Specifically, while women over 30 showed significant mood changes in the premenstrual phase when compared to other phases of the menstrual cycle (Golub, 1976a), the younger females did not show evidence of similar differences among cycle phases (Golub & Harrington, 1981). Rouse (1978) found similar age group differences in severity of premenstrual symptoms while a more recent study (Hargrove & Abraham, 1982) indicated that women between the ages of 31 and 40 are significantly more likely to experience premenstrual symptomatology than are those in the 16 to 25 year age group. Moos et al. (1969) similarly concluded that premenstrual symptomatology is more common in older women but also found that *menstrual* problems were more common in young women (less than 21 years of age).

In contrast, however, both Woods, Most, and Dery's (1982b) study of perimenstrual symptoms and Boyle et al.'s (1987) epidemiological study of premenstrual symptoms revealed a reduction in the incidence of many symptoms with age.

Oral Contraceptive Use

Studies investigating the effect of oral contraceptive use on premenstrual symptom reporting also provide contradictory results.

Kutner and Brown (1972) and Paige (1971) found that a significantly smaller proportion of women using oral contraceptives experienced symptoms of premenstrual depression than did women who did not use hormonal contraception. Oral contraceptive users have been found to report less

water retention, pain, and negative affect than women not using oral contraceptives (Moos, 1968b; Wilcoxin, Schrader, & Sherif, 1976) while fewer changes in school or work performance and concentration during the paramenstruum have been reported by pill users (Moos, 1968b). However, women who used oral contraceptives in Banks and Beresford's (1979) study reported having more premenstrual symptoms. Silbergeld, Brast and Noble (1971) also reported premenstrual increases in water retention for oral contraceptive users.

More recent studies (Graham & Sherwin, 1987; Walker & Bancroft, 1990; Woods, Most & Dery, 1982b, 1982c) have tended to show little or no differences overall in premenstrual symptomatology among oral contraceptive users and non-users, although there is evidence that non-pill users may report higher levels of premenstrual anxiety, low mood, fatigue, water retention, and impaired social functioning and that their symptoms may begin earlier in the cycle when compared to pill users (Graham & Sherwin, 1987).

Parity

Studies investigating the relationship between parity and premenstrual symptomatology once again provide conflicting results. Premenstrual cramping has been found to decrease following fullterm pregnancy (Boyle et al., 1987), however, six percent of Johnson et al.'s (1988) reportedly symptomatic women claimed that childbirth was a precipitating event in the onset of their symptoms while a further 18.0% reported that childbirth resulted in an exacerbation of existent symptomatology.

Severity

Two aspects of this issue (which will be discussed in more depth later) combine to cast doubt on the validity of much of the epidemiological information compiled to date. Firstly, considerable evidence has accumulated that suggests that retrospective reports of premenstrual symptomatology tend to represent an overestimation of *actual* symptomatology when compared to

prospectively reported data (Abplanalp, Donnelley & Rose, 1979; Christensen, Oei, & Callan, 1989; May 1976; Rapkin, Chang, & Reading, 1988; Rouse, 1978; Sampson & Prescott, 1981; Vila & Beech, 1980; Woods, Most, & Dery, 1982a; Youdale & Freeman, 1987). Most epidemiological studies, to date, have relied on retrospective measures of premenstrual symptomatology and, thus, can be expected to contain a significant proportion of overestimated claims to premenstrual symptomatology which may not be confirmed by prospective data.

Secondly, the majority of such studies have used crude measures of symptom presence and have, at best, only cursorily addressed the issue of severity of symptomatology experienced. As a result, it is often unclear if women included in the premenstrually symptomatic categories actually experience severe and recurrent premenstrual changes. Furthermore, it is frequently evident that they do not: instead, women who complain of *any* premenstrual symptomatology have, in many instances, been included in these categories.

Specificity of prevalence rates

Given the increasing evidence, in recent years, of the questionability of retrospectively reported symptomatology and the growing recognition of the need to delineate clear and realistic levels of severity required for diagnosis, it is likely that previously reported prevalence rates may be overestimated and that the incidence of recurrent premenstrual symptomatology which is severe enough to warrant a diagnosis of premenstrual syndrome may prove to be significantly lower than that of previous reports. However, it is similarly possible that closer consideration of age, parity, and oral contraceptive use in epidemiological studies may reveal an apparent *under*estimation, to date, of prevalence rates among specific groups of women (e.g., older parous women who are not using oral contraceptives). More specific attention to these and other factors is required before reliable and valid epidemiological data can be expected to result.

A major factor which has precluded the likelihood of methodologically rigorous epidemiological studies being completed is the lack of a standard definition and set of widely

accepted criteria for diagnosis of the syndrome. It is difficult to establish the prevalence of a phenomenon for which there exists no clear and consensual guidelines for identification.

Defining Premenstrual Syndrome

Frank (1931) described women with premenstrual tension as those who:

> especially complain of a feeling of indescribable tension from ten to seven days preceding menstruation which, in most instances, continues until the time that the menstrual flow occurs. These patients complain of unrest, irritability, 'like jumping out of their skin' and a desire to find relief by foolish and ill considered actions....Within an hour or two after the onset of the menstrual flow complete relief from both physical and mental tension occurs. (p. 1054)

Israel (1938) concurred with this general description and added that:

> When the tension periodically reaches its maximum height, the manic activity of the patient beggars description....The illness may mimic an oncoming mental disease when the more exhausting episodes of motor activity are followed by brief periods of depression and hebetude. The forbearance of the patient's family is taxed beyond endurance by her unnatural and extreme annoyance with trifles. Unreasonable emotional outbursts and causeless crying spells, similar to those which characterize the menopausal syndrome, are frequent... (p. 1721)

In their critical analysis of the premenstrual syndrome, Sutherland and Stewart (1965) offered the following definition: "any combination of emotional or physical features which occur cyclically in a female before menstruation, and which regress and disappeared(sic) during menstruation, constitutes the premenstrual syndrome" (p. 1182). However, they added their dissatisfaction with this definition: a woman with only two relatively mild symptoms (such as facial acne and periocular pigmentation) would thus be classified as premenstrually symptomatic. "But a woman with only these two symptoms is far from comparable with one deeply distressed by the typical premenstrual tension state involving acute emotional depression and irritability, physical lethargy, and uncomfortable bloatedness" (Sutherland & Stewart, 1965, p. 1182).

During the 1980's, attention was directed toward the need to develop a meaningful definition as a first and necessary step to untangling the myriad of divergent results seen in the

literature on premenstrual syndrome (Abplanalp, 1983a, 1983b, 1985; Abplanalp, Haskett, & Rose, 1980; Rubinow & Roy-Byrne, 1984; Rubinow et al., 1985). At the National Institute of Mental Health (NIMH) workshop on premenstrual syndrome in 1983, the lack of a precise definition of premenstrual syndrome was recognized and an attempt was made to rectify that. Difficulties encountered in doing so included: "assigning time limits to the premenstrual phase and selecting a baseline period with which it can be compared; specifying the difference (in terms of symptoms) needed between these two phases and the consistency with which changes must be seen; and deciding how often measurements of symptoms must be made" (Blume, 1983, p. 2866). Final recommendations suggested that: "a diagnosis of [premenstrual syndrome] should be made only when mean symptom intensity changes at least 30 percent in the premenstrual period (six days before menses) compared with the intermenstrual period (days 5-10 of the cycle)" (Parry, Rosenthal, & Wehr, 1985) for at least two consecutive cycles. However, issues of actual assessment were left unaddressed.

Rubinow et al., (1985) have offered the following preliminary operational definition of premenstrual syndrome: "a cyclic disorder with symptoms that are of sufficient severity so as to interfere with some apsect(sic) of living and that occur with a consistent and predictable relationship to menstruation" (p. 470). The authors noted, however, that attention to a number of questions is required to fully "operationalize" this definition:

1. What are the symptoms that are experienced?
2. What is the intensity of the symptoms experienced?
3. When do symptoms occur in relation to menstruation?
4. What is the symptomatic baseline upon which symptoms occur?
5. By what methods can one establish the menstrual linkage of symptoms? (Rubinow et al., 1985, p. 470)

DSM-III-R described late luteal phase dysphoric disorder (LLPDD) as follows:

> the essential feature of Late Luteal Phase Dysphoric Disorder is a pattern of clinically significant emotional and behavioral symptoms that occur during the last week of the luteal phase and remit within a few days after the onset of the follicular phase. In most females these symptoms occur in the week before, and remit within a few days after, the onset of menses. (American Psychiatric Association, 1987, p. 367)

Specific diagnostic criteria are outlined (see Table 1) that address some, but not all, of Rubinow et al.'s (1985) questions regarding specific symptoms, intensity of symptoms, and measurement issues. McFarlane and Williams (1990) have provided analysis of these criteria with respect to their ability to provide accurate and consistent diagnosis. While DSM-III-R criteria do explicitly require prospective confirmation of retrospective reports, they do not indicate whether all or only some of the intermenstrual days should be used in comparison, nor the degree of change in symptoms that is required for diagnosis. In addition, while DSM-III-R criteria require that symptoms be present "in most menstrual cycles during the year" (American Psychiatric Association, 1987, p. 369), they require that this (presumably) retrospectively reported data be confirmed by "prospective daily self-ratings during at least two symptomatic cycles" (p. 369). As McFarlane and Williams (1990) observed, this appears to present a contradiction: "A woman might meet all other criteria for PMS in two prospectively measured menstrual cycles, but there would be no way to know whether these changes occur in most cycles unless she were prospectively studied for more than half her cycles for a year" (p. 99).

The lack of consensus regarding a definition has significantly hampered progress in research on premenstrual changes and the comparability of results across studies. Although some agreement is evident in a general acknowledgement that premenstrual symptomatology may include affective, behavioural, and somatic changes, symptom constellations which are necessary and/or sufficient for diagnosis have only recently begun to be addressed. Other critically important definitional issues, including delineation of the premenstrual phase of the menstrual cycle, timing and patterning of symptoms, and severity, also remain unresolved (Abplanalp, 1983a, 1985; Abplanalp et al., 1980).

The "premenstrual" phase

The term "premenstrual", while obviously connoting a period of time which precedes the onset of menses, is defined variously throughout the literature as the two days (Pierson & Lockhart, 1963), three days (Cox, 1983), four days (Dalton, 1959, 1960b, 1960c, 1961, 1968; Jacobs

& Charles, 1970; Mandell & Mandell, 1967), five days (Dalton, 1960a), six days (Kramp, 1968), and seven days preceding the onset of menstruation (Glass, Heninger, Lansky, & Talan, 1971; Lamb et al., 1953; Moos, 1968a; Sommer, 1972). Frank (1931) suggested that premenstrual tension can begin up to 10 days prior to the onset of menstruation, while Israel (1938) described cyclic alterations of personality which appear 10 to 14 days prior to menstruation. Furthermore, several researchers have distinguished only between the paramenstruum (premenstrual and menstrual phases combined) and other, intermenstrual, phases of the menstrual cycle (e.g., Bernstein, 1977; Wickham, 1958). The paramenstruum, in these instances, is defined as the four days preceding and four days following the onset of menstruation.

It is clear that previous research provides little assistance in establishing a consensual opinion with respect to determination of the premenstrual phase. Even DSM-III-R diagnostic criteria offer only the guideline that the last week of the luteal phase "correspond[s] to the week before...the onset of menses" (American Psychiatric Association, 1987, p. 369) while simultaneously acknowledging that, in nonmenstruating women who have had a hysterectomy, diagnosis may require hormonal measurement in order to establish the luteal and follicular phases. However, if one turns to a more endocrinological perspective in search of guidelines for identifying the premenstrual phase, one is also faced with ambiguity.

The menstrual cycle is generally divided into a number of phases according to changes in hormone levels and in the reproductive organs. Of primary importance in defining these phases are levels of the ovarian hormones estrogen and progesterone and their influence on the release of follicle stimulating hormone (FSH) and luteinizing hormone (LH) from the pituitary (Asso, 1983). Figure 1 shows the relative levels of these hormones throughout the menstrual cycle and a common method of dividing the cycle into the following phases: menstrual phase (days 1-5); follicular phase (days 6-12); ovulatory phase (days 13-15); luteal phase (days 16-23); premenstrual phase (days 24-28) (Asso, 1983).

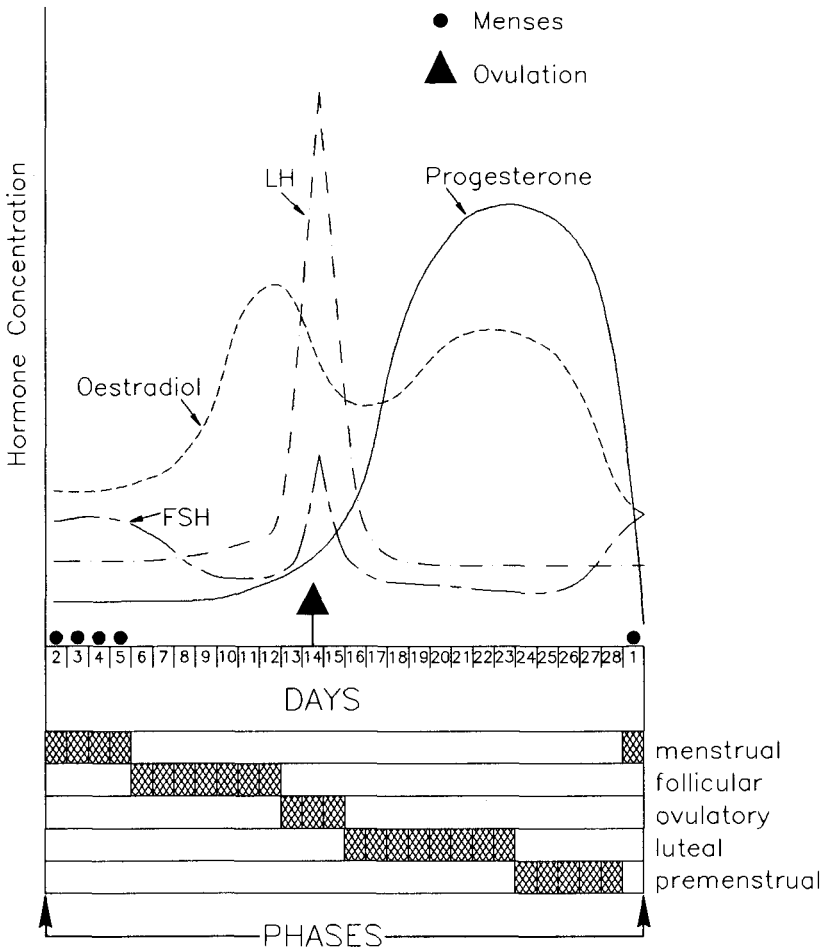

Figure 1: Relative levels of oestradiol, progesterone, FSH, and LH throughout the menstrual cycle. Adapted from Asso (1983). The real menstrual cycle. New York: John Wiley & Sons, p. 21. (Adapted from Shaw (1978). Neuroendocrinology of the menstrual cycle in humans. Clinics in Endocrinology and Metabolism, 7, 531–559 and reproduced by permission of W.B. Saunders Co.)

Despite the apparent clarity of defining menstrual phases by hormone levels and number of days since the onset of menses, determination of the onset of the premenstrual phase remains problematic: the length of the menstrual cycle varies from one individual to another and, even among endocrinologists who determine phase status by hormonal levels rather than by number of days prior to or following menstruation, there is no consistent definition of the premenstrual phase (Abplanalp, 1983b).

Timing and Patterning of Symptoms

Additional areas of contention in defining the temporal limits of premenstrual syndrome include the necessity (or otherwise) of a discrete asymptomatic interval following the premenstruum; the duration of that interval; and the timing of termination of symptoms (i.e., onset of the symptom-free interval).

Frank (1931), in his description of premenstrual tension, suggested that "within an hour or two after the onset of the menstrual flow complete relief from both physical and mental tension occurs" (p. 1054). Israel (1938) similarly described premenstrual symptoms as terminating "dramatically with the onset of [menstrual] flow" (p. 1721). Others, however, describe a more gradual alleviation of symptomatology following onset of menses.

Reid and Yen (1983) described four patterns of premenstrual symptomatology:

1. The development of symptoms begins during the late luteal phase, and increases steadily in intensity with sudden termination shortly after menses begins.
2. Symptoms develop immediately following ovulation, increase steadily in intensity until the premenstrual phase and then remain constant until the onset of menstruation when they terminate abruptly.
3. A sudden peak of symptomatology is seen at ovulation and lasts for one or two days. During the mid to late luteal phase symptoms reappear and increase steadily in intensity until relief is gained shortly after onset of menstruation.

4. The development of symptoms begins following ovulation with a steady increase in intensity until the late luteal or early premenstrual phase when they remain at a constant level through the premenstrual and menstrual phases with an abrupt return to normal at the end of the menstrual phase.

The requirement of a symptom-free period for diagnosis of premenstrual syndrome is a controversial one. Dalton (1977, 1980b) has suggested that premenstrual syndrome must include a period of time during each menstrual cycle when the individual is truly symptom-free. She has distinguished between women who have a distinct symptom-free interval (premenstrual syndrome) and those with "menstrual distress" in which symptoms are experienced at all phases of the cycle with an increase in intensity of symptoms premenstrually.

Dennerstein, Spencer-Gardner, Brown, Smith, and Burrows' (1984) investigation of the presence and severity of symptoms over two menstrual cycles in 30 women, all of whom described themselves as premenstrually symptomatic with an absence of symptoms at other phases of the menstrual cycle, lends some support to this position. Subjects were differentiated on the basis of presence *versus* absence of psychiatric disorder and pattern of symptoms over the menstrual cycle. The authors were able to identify two subgroups: 1) "Premenstrual Syndrome" patients who had no psychiatric disorder within the previous 12 months *and* had a cyclic pattern of premenstrual symptoms with a symptom-free period of at least seven days in each cycle; and 2) "Menstrual Distress" patients who had a diagnosed psychiatric disorder *and* had "premenstrual" symptoms, of at least moderate intensity, throughout the entire menstrual cycle with an intensification of severity premenstrually.

However, others (e.g., Clare, 1980, 1981, 1983b) view the requirement of an asymptomatic interval as an unrealistic criterion given that many premenstrual symptoms (in particular the emotional changes) are experienced to varying degrees as part of the human experience and, therefore, may be present to some degree at any time.

Similarly, Halbreich, Endicott and their colleagues do not demand a discrete asymptomatic period for diagnosis of premenstrual syndrome. They have developed an assessment technique which is concerned with *changes* from "normal level of functioning" over the menstrual cycle. The Premenstrual Assessment Form (Halbreich et al., 1982) thus allows idiosyncratic profiles of baseline symptomatology with which premenstrual levels of symptomatology can be compared, and is less concerned with presence *versus* absence *per se*. Inclusion in any of their subtypes of premenstrual syndrome is determined by degree of change from "normal level of functioning" during the premenstrual phase, regardless of the extent of symptomatology which may already be present during baseline (nonpremenstrual) phases.[1]

In the absence of clear criteria in this regard there remains a potential diagnostic dilemma in the case of women who have a psychiatric disorder (i.e., experience the presence of symptoms, some of which have commonalities with premenstrual symptoms, at all phases of the menstrual cycle) yet who simultaneously complain of premenstrual exacerbation of symptoms. If the former position is adhered to and diagnostic criteria for premenstrual syndrome include a distinct asymptomatic interval, then these women would be excluded from the premenstrual syndrome diagnostic category. The alternative, more liberal position, which does not demand a symptom-free period of time and, instead, focuses on exacerbation of symptoms in comparison to non-premenstrual levels, would allow a diagnosis of premenstrual syndrome in women for whom a psychiatric diagnosis is also indicated.

In light of contemporary diagnostic systems which encourage multiple diagnoses where appropriate (e.g., DSM-III-R) the latter position would seem to represent the more meaningful approach. However, DSM-III-R provides ambiguous criteria in this regard also. In the general description of LLPDD, it is clear that "the diagnosis should not be made if the symptoms fail to disappear within a few days after onset of the follicular phase. Thus, the diagnosis should not be

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[1]It should be noted, however, that careful screening for the presence of psychiatric disorders using the Research Diagnostic Criteria is carried out prior to assessment of premenstrual changes.

made in a person who is experiencing only a late luteal phase exacerbation of another disorder, such as Major Depression, Panic Disorder, Dysthymia, or a Personality Disorder" (American Psychiatric Association, 1987, p. 367). This statement would appear to endorse Dalton's notion of a "pure" syndrome in which women are required to be "symptom-free" (whatever that really means!) within a few days following onset of menses. However, the formal diagnostic criteria for LLPDD appear to first disallow, then allow, dual diagnosis of, say, Major Depression *and* LLPDD when both are present, i.e., a woman who meets diagnostic criteria for Major Depression and *also* experiences a premenstrual exacerbation of symptoms with a subsequent return to "normal" (Major Depression) level of functioning with the onset of menses: "The disturbance is not merely an exacerbation of the symptoms of another disorder...(although it may be superimposed on any of these disorders)" (American Psychiatric Association, 1987, p. 369). This ambiguity is clarified elsewhere. In their section on menstrual cycle exacerbation of psychiatric illness, Severino (a member of the Advisory Committee which drafted the criteria for LLPDD) and Moline (1989) stated:

> The diagnosis of PMS or LLPDD *should not be made* in a woman who is experiencing only a premenstrual exacerbation of another psychiatric disorder. However, a woman may have PMS or LLPDD in addition to another psychiatric disorder if she experiences premenstrual symptoms that are markedly different from those she experiences as part of the psychiatric disorder. (p. 86)

However, there is no compelling evidence to suggest that premenstrual syndrome may not be superimposed on a psychiatric disorder and be manifested by exacerbation of already present psychiatric symptoms. On the contrary, there is evidence to suggest that some women with psychiatric disorders may experience intensification of existent symptomatology premenstrually (Abramowitz, Baker, & Fleischer, 1982; Endo, Daiguji, Asano, Yamashita, & Takahashi, 1978; Glass et al., 1971; Glick & Stewart, 1980; Torghele, 1957; Williams & Weekes, 1952) although there is also some suggestion of a similar (or ongoing) exacerbation during menstruation (Abramowitz et al., 1982; Dalton, 1959; Jacobs & Charles, 1970; Janowsky, Gorney, Castelnuovo-Tedesco, & Stone, 1969).

Quite why premenstrual symptomatology must be qualitatively *different* from intermenstrual symptomatology in order to diagnose premenstrual syndrome (or LLPDD) when a psychiatric disorder is already present is not clear when, in the absence of a psychiatric disorder, women are required only to have a premenstrual exacerbation of "symptoms" which are normally present at various times during the intermenstruum, e.g., emotional ups and downs ("marked affective lability"), anger and irritability ("persistent and marked anger or irritability"), anxiety, low mood, tiredness, etc., rather than display a whole new set of symptoms which are unique to the premenstruum.

Clearly this area of contention requires further research in order to illuminate and clarify the issues and consequences inherent in implementing each approach.

Premenstrual Syndrome and Psychiatric Disorders

A considerable amount of research has been devoted to establishing a relationship between premenstrual syndrome and psychiatric disorders. A number of studies have reported premenstrual exacerbation of existing psychiatric disorders such as schizophrenia (Glick & Stewart, 1980; Janowsky et al., 1969; Torghele, 1957; Williams & Weekes, 1952; Zola, Meyerson, Reznikoff, Thornton, & Concool, 1979), puerperal psychosis (Brockington, Kelly, Hall, & Deakin, 1988), and mood disorders (Endicott & Halbreich, 1988; Janowsky et al., 1969; Mandell & Mandell, 1967; Tonks, Rack, & Rose, 1968). Others have found premenstrual increases in psychiatric symptoms such as binge-eating in bulimics (Gladis & Walsh, 1987) and anxiety in panic disordered women (Cameron, Lee, Kotun, & Murphy, 1986). There are also some accounts of periodic psychiatric disorders which are associated with the menstrual cycle (e.g., Endo et al., 1978; Gerada & Reveley, 1988).

Of most interest to menstrual cycle researchers, however, is the relationship between premenstrual syndrome and affective disorders. Evidence exists to support both that women with affective disorders have a higher incidence of premenstrual symptoms than do nondepressed

women (Diamond, Rubenstein, Dunner, & Fieve, 1976; Endicott, et al., 1981; Hurt, Friedman, Clarkin, Corn, & Aronoff, 1982; Kashiwaga et al., 1976) and that women who *complain of* premenstrual syndrome have a higher incidence of affective disorder than women who do not similarly complain (Endicott & Halbreich, 1988; Halbreich & Endicott, 1985b).

Premenstrual symptom constellations

The term "syndrome" which denotes a specific combination of symptoms, is applied more loosely in this area of research. Whether one regards premenstrual syndrome as a single diagnostic entity or as a collection of subtypes, it is evident that a large number of symptoms (only some of which need be present for any individual diagnosis) have been identified as contributing to premenstrual syndrome(s).

1. Premenstrual Affective Symptoms. Reports of a premenstrual increase in anxiety are frequent (Benedek & Rubenstein, 1939a, 1939b; Beumont, Richards, & Gelder, 1975; Golub, 1976a; Ivey & Bardwick, 1968; May 1976; Moos, 1969; Silbergeld et al., 1971; Silverman, Zimmer, & Silverman, 1974; Stein, Schmidt, Rubinow, & Uhde, 1989). More generally, numerous studies report an increase, premenstrually, in negative affect or mood, which usually includes anxiety, irritability, restlessness, and tension (Abplanalp et al., 1979; Garling & Roberts, 1980; Janowsky, Berens, & Davis, 1973; Kirstein, Rosenberg, & Smith, 1980–81; Moos, 1977; Parlee, 1980; Taylor, 1979b; Voda, 1980). Premenstrual increases in feelings of aggression (Moos, 1969; Sibergeld et al., 1971) and hostility (Ivey & Bardwick, 1968; Paige, 1971; Silbergeld et al., 1971) have also been reported.

While some studies of depression in the premenstrual phase report an increase (Beumont et al., 1975; Golub, 1976a; May 1976; Taylor, 1979b), others have found no change from nonpremenstrual levels (Moos, 1969; Silbergeld et al., 1971), or a significant decrease in depression from mid-cycle levels (Parlee, 1980).

2. Premenstrual Physiological Symptoms. A commonly reported premenstrual symptom is weight gain (Janowsky et al., 1973; Smith, 1975; Taylor, 1979b) which is often explained in terms of fluid retention (De Marchi, 1976; Doty, Huggins, Snyder, & Lowry, 1981; Gruba & Rohrbraugh, 1975; Janowsky et al., 1973; Silbergeld et al., 1971; Voda, 1980; Wilcoxin et al., 1976) and sodium retention (Bell, Christie, & Venables, 1975; Janowsky et al., 1973).

The use of contraceptive pills may affect premenstrual fluid retention rates although results differ. Moos (1969) and Wilcoxin et al. (1976) found less fluid retention in pill users, Doty et al. (1981) reported no cyclical variation, while Silbergeld et al. (1971) found an increase in fluid retention in pill users.

Premenstrual pain is often reported (Doty et al., 1981; Garling & Roberts, 1980; Gruba & Rohrbaugh, 1975; Janowsky et al., 1973; Webster, 1980; Wilcoxin et al., 1976) and generally described as a dull, aching pain in the lower abdomen. Dalton (1964b) distinguished between "congestive dysmenorrhea", dull, aching pain which precedes menstruation, and "spasmodic dysmenorrhea" which begins on the first day of menstruation and consists of spasms of pain in the pelvic region. Webster (1980) and Woods, Most, and Dery (1982b), however, have disputed this distinction and suggested, instead, that premenstrual and menstrual symptoms cannot be regarded as independent and mutually exclusive entities.

Other types of pain reported premenstrually include headaches (Dalton, 1964b; Garling & Roberts, 1980; Kessell & Coppen, 1963; Nattero, 1982; Waters & O'Connor, 1971), breast tenderness (Brush, 1977), muscle stiffness, and backache (Beumont et al., 1975; Garling & Roberts, 1980; Moos, 1969; Paige, 1971). Once again, a reduction in these symptoms premenstrually has been noted in women using oral contraceptives (Moos, 1969; Paige, 1971; Silbergeld et al., 1971).

Some evidence exists for increases in asthma and skin eruptions during the premenstruum (Dalton, 1964b; Hanley, 1981; Southam & Gonzaga, 1965), and for a hypoglycaemic response to sugar tolerance tests premenstrually (Morton, Additon, Addison, Hunt, & Sullivan, 1953). Increased

premenstrual cravings for sweet foods have been reported (Smith & Sauder, 1969; Sutherland & Stewart, 1965) and variations in alcohol metabolism throughout the menstrual cycle, with the highest peak alcohol level, following a given dose of alcohol, occurring during the premenstrual phase, have been found (Jones & Jones, 1976). The majority of alcoholic women studied by Belfer and Shader (1976) related their drinking to menstrual cycle changes in general and to premenstrual changes in particular.

A decline in central nervous system activity, when compared to other phases of the cycle, has been observed (Asso & Braier, 1982; Belmaker, Murphy, Wyatt, & Loriaux, 1974; De Marchi & Tong, 1972; Engel & Hildebrandt, 1974; Kopell, Lunde, Clayton, & Moos, 1969). Increased autonomic nervous system activity premenstrually is frequently reported (Asso & Beech, 1975; Gruba & Rohrbraugh, 1975; Moos et al., 1969; Wineman, 1971), however, Slade and Jenner (1979) found no significant cyclical variations in autonomic indices.

3. **Premenstrual Behavioural Symptoms.** A number of reports of premenstrual increases in aggression have been documented in the literature, however, many are methodologically questionable in that they fail to indicate how cycle phase was determined or report retrospective determination of cycle phase.

Correlations between premenstrual (or menstrual) phase and the commission of violent crimes have been reported (Cooke, 1945; Dalton, 1961; d'Orban & Dalton, 1980; Ribeiro, 1962) as have increases, premenstrually, in offenses committed by prisoners (Dalton, 1964a; Morton et al., 1953) and by schoolgirls (Dalton, 1964a). More recently, Dalton (1979) provided a clinical report of increased child abuse during the premenstruum and described three cases of women who successfully pleaded diminished responsibility in violent crimes committed during the premenstruum (Dalton, 1980a).

There is some suggestion that mothers take their children to doctors more often during the premenstrual and menstrual phases (Dalton, 1966; Tuch, 1975) and that children of premenstrual

women are admitted to hospital more often than expected (Dalton, 1970).

The relationship between attempted suicide and the menstrual cycle is an ambiguous one. Studies suggesting an increased risk, premenstrually, for suicidal behaviour (Dalton, 1959; Mandell & Mandell, 1967; Tonks et al., 1968) stand in contrast to others that have found no significant cyclical variation in suicidal risk (Birtchnell & Floyd, 1974, 1975; Buckle, Linnane, & McConachy, 1965; Holding & Minkoff, 1973; Pallis & Holding, 1976).

On a more positive note, several researchers (Kinsey, Pomeroy, Martin & Gebhard, 1953; Masters & Johnson, 1966) have reported increased frequency and intensity of sexual activity in the premenstrual and early menstrual phases.

Finally, despite Dalton and Williams' (1976) conclusion that "the majority of women [in sport] tend to perform less well during the premenstruum" (p. 213), other studies (Erdelyi, 1962; Pierson & Lockhart, 1963; Zaharieva, 1965) do not provide any consistent patterns of relationship between menstrual cycle phase and performance in sporting activities.

4. Premenstrual Cognitive Symptoms. The belief that women's cognitive functions are impaired during the premenstruum is a popular one (Tiger, 1970). However, with the exception of two early studies of school examination performance (Dalton, 1960a, 1968), which have been criticized on methodological grounds (Parlee, 1973; Sommer, 1973), the preponderance of evidence suggests that cognitive abilities are not significantly affected by the menstrual cycle.

From her extensive review of the literature investigating cognitive behaviour and its relationship to the menstrual cycle, Sommer (1982) concluded that

> problem-solving does not appear to be affected by menstrual variables. When chance findings and the publication bias are taken into account, the evidence does not support a perimenstrual [premenstrual and menstrual] decrement in performance nor changes approximating the cyclic fluctuations of the menstrual cycle. Although there are some hints of alterations of cognitive style, the evidence is not consistent and most of it supports no change. (pp. 121-122)

It is interesting to note that self-report measures of cognitive abilities have revealed some women

who believe that they suffer cognitive decrements premenstrually, particularly in areas of judgement and/or attention (Garling & Roberts, 1980; Golub, 1976a; Kirstein et al., 1980–81; Moos, 1969; Youdale, 1984). However, there is also evidence to suggest that actual performance on objective tests of attention and concentration shows no decrement from that achieved during other, nonpremenstrual, phases (Sommer, 1973; Youdale, 1984).

More recent research (Hampson & Kimura, 1988) has suggested that midluteal phase (early premenstrual) high levels of estrogen and progesterone are associated both with improved motor skills and with poorer perceptual-spatial abilities when compared with performance in these abilities during the menstrual phase when estrogen and progesterone levels are at their lowest. It is possible then, that there may be some menstrual cycle variation of cognitive abilities that is associated with fluctuations in levels of estrogen and progesterone and that is evident only when premenstrual phase performance is compared to menstrual phase performance.

Delineation of Subtypes

Clearly, the phenomena that have been associated with the premenstruum are varied and extensive. In general, most early researchers employed loose and frequently unidentified criteria with respect to symptom constellations required for diagnosis. More recently, some attempts have been made to formalize diagnostic criteria (e.g., Steiner, Haskett, & Carroll, 1980).

Those researchers who ascribe to the theoretical position that there are, in fact, several subtypes of premenstrual syndrome rather than a single syndrome, (e.g., Abraham, 1980; Halbreich et al., 1982) have perhaps contributed most to the development of clear and concise symptom constellations required for diagnosis. The use of factor analytic techniques with data from large subject populations has allowed the emergence of symptom clusters which are presumed to represent discrete premenstrual subtypes. However, as Abplanalp (1983a) has noted: "the multifactorial approach to defining premenstrual syndromes is in its infancy. The clinical advantage of the statistically derived symptoms clusters or subtypes remains to be established..." (p. 113).

A related confounding issue which precludes an easy consensus regarding specific symptomatology is the fact that the number and combination of symptoms may vary both between women *and* within the same woman over a number of menstrual cycles (Abplanalp, 1983a). Nevertheless, some consistency has been observed across studies:

> First, in cases of moderate to severe PMS, the most troublesome symptoms are emotional in nature. Of these, the most commonly reported are irritability, anxiety, tension, depression, and hostility. Somatic changes usually, but not always, accompany the emotional changes. The most common of the somatic complaints are breast tenderness, enlargement, or pain; swelling (of abdomen, ankles, fingers); back pain; and headache. Changes in patterns of normal social interaction or other changes in behavior are also common and may include a preference for solitude or cancelling of social activities. (Abplanalp, 1985, p. 105).

Severity of Symptoms

Whether one approaches the assessment of premenstrual syndrome from a perspective of *presence* of symptoms or of *change* in symptom levels, the issue of the severity of present symptoms or symptom changes is a critical one which has only recently been addressed in the literature.

Medical reports have frequently described women who "have premenstrual symptoms" without reference to the severity of those symptoms (Abplanalp et al., 1980). Much of the psychological literature reports statistically significant premenstrual increases in symptomatology, however, closer examination of measures used frequently reveals only "mild" increases which may not always translate into meaningful clinical changes (Rubinow et al., 1985).

The 1983 NIMH workshop on premenstrual syndrome concluded that a 30 percent change in symptom intensity, from intermenstrual to premenstrual phases, is required before a diagnosis of premenstrual syndrome can be made (Parry et al., 1985) and this criterion has been adopted in a number of research endeavours (Both-Orthman, Rubinow, Hoban, Malley, & Grover, 1988; Christensen, & Oei, 1989; Christensen et al., 1989; McMillan & Pihl, 1987; Rubinow, Roy-Byrne, Hoban, Gold, & Post, 1984). Most of these studies have used the Premenstrual Assessment Form

Daily Ratings Form (PAF-DRF; Endicott & Halbreich, 1982). However, application of this criterion with the PAF-DRF where symptoms are rated on a daily basis from 1 ("not present") to 6 ("extreme") is not easily achieved. As Anderson, Severino, Hurt, and Williams (1988) have asked: "Would a change in symptom intensity from "not present" to "mild" or "moderate" intensity meet the criteria requiring a 30% change in mean symptom intensity, or would only reports of "severe" or "extreme" intensity satisfy the criteria?" (p. 485).

Most have adopted a strategy of computing the average of rated items for each menstrual phase and determining whether there is a 30 percent increase from intermenstruum to premenstruum. For example, McMillan and Pihl (1987) used criteria suggested by Endicott et al., (1986) to determine change scores (from intermenstruum to premenstruum) for each item "by contrasting the mean score of the highest 3 consecutive days during the 5 premenstrual days with the mean of the scores of the 5 postmenstrual days" (Endicott et al., 1986, p. 130), and then calculated the percentage increase from intermenstruum to premenstruum. As appealing as this strategy may appear to be in meeting the "30 percent increase" criterion, it is an inappropriate one for use with an instrument such as the PAF-DRF that does not yield data with ratio scale properties but, instead, provides ordinal data. Clearly, some other method of determining the percentage of increase in symptomatology is required. Perhaps in the case of the PAF-DRF, where items used are identical to those of the PAF typological category of interest (e.g., Major or Minor Depressive Syndrome), daily "diagnosis" of this typological category could be made from items on the PAF-DRF and the percentage of days (in each menstrual phase) calculated when diagnostic criteria are satisfied. In this way, one could satisfy the requirement of establishing a 30 percent increase in symptomatology (in this case, a 30 percent increase in number of days when diagnostic criteria are fulfilled) without violating statistical principles by attributing ratio scale properties to ordinal scale data.

Although other daily ratings methods and procedures for calculation of change have been employed (e.g., spectral analysis of rating data, Coleman, Hart & Russell, 1988; differences in

ratings on a visual analogue scale, Rubinow et al., 1984; application of a sine wave model to checklist data, Sampson & Jenner, 1977; and application of trend analysis to daily ratings, Magos & Studd, 1986), the PAF-DRF and calculation of percentage difference in phase means appears to be the most popular.

Assessment Techniques and Research Diagnostic Criteria

In the several decades following Frank's (1931) initial description of the syndrome, researchers employed varied and idiosyncratic methods of identifying women with premenstrual syndrome including unstructured interviews to assess, retrospectively, each woman's subjective experience of premenstrual symptoms (Ferguson & Vermillion, 1957; Fortin, Wittkower, & Kalz, 1958; Greene & Dalton, 1953; Greenhill & Freed, 1940; Gregory, 1957), unidentified self-report questionnaires to determine the presence (and, occasionally, the intensity) of specific symptoms (Coppen & Kessel, 1963; Lamb et al., 1953; Morton et al., 1953; Paulson, 1961; Sutherland & Stewart, 1965), and affect rating instruments involving thematic analysis of verbal material (Ivey & Bardwick, 1968). However, specification of criteria for diagnosis and prospective confirmation of reported symptomatology are notably absent from these reports. One exception to the latter observation is a report of psychosomatic aspects of premenstrual tension syndrome by Rees (1953b) in which the assessment of premenstrual syndrome included an interview followed by daily recording of "a series of premenstrual symptoms and related items...over a number of menstrual cycles" (p. 62).

In an attempt to standardize the assessment of menstrual cycle symptoms, Moos (1968a) developed the Menstrual Distress Questionnaire (MDQ). This is a rating scale that consists of 41 symptoms that may be associated with the menstrual cycle and a further six symptoms which were included as a control scale to obtain a measure of the degree to which the respondent will complain of symptoms regardless of whether they are present or not. This assessment technique

has been widely used, however, it has also received criticism of both a practical and a methodological nature. Rouse (1978) reported that a large number of women found the questionnaire both complicated and difficult to understand and that, despite claims that the questionnaire takes only five minutes to complete, women routinely took 20 minutes or longer in doing so. Furthermore, half of the women in Moos' (1968a) normative sample were using oral contraceptives, 10% were pregnant, and 5% did not provide details about their use of contraceptives (Parlee, 1973).

Investigations of typologies of menstrual cycle symptomatology have yielded descriptions of profiles or configurations across a number of dimensional scales at different menstrual cycle phases (Moos & Leiderman, 1978). However, specific criteria regarding level of profile elevation necessary for inclusion in a premenstrually symptomatic category are not provided.

More recent attempts to standardize the assessment of premenstrual syndrome and, simultaneously, improve on the MDQ, include Steiner et al.'s (1980) rating scales and research diagnostic criteria, Abraham's (1980) modified MDQ and subtypes, and Halbreich et al.'s (1982) Premenstrual Assessment Form and resultant categorical systems.

Steiner et al. (1980) developed self-report and observer-rating scales and research diagnostic criteria for premenstrual tension syndrome from data obtained on changes in symptomatology from the follicular phase (day nine of the menstrual cycle) to the luteal phase (two to six days premenstrual) using the MDQ and several psychiatric symptom scales. Data were obtained from women who were severely symptomatic with no psychiatric disorders and whose symptoms were alleviated with the onset of menses. From analyses of the responses on the MDQ and psychiatric scales, the authors constructed self-report and observer-rating questionnaires for use in monitoring specific clinical features of premenstrual tension syndrome.

The diagnostic criteria for "primary recurrent premenstrual tension disorder" includes eight psychological and behavioural symptoms of which five are necessary for diagnosis. While it is

acknowledged that these symptoms frequently occur in association with physical premenstrual symptoms, the somatic changes are not regarded as necessary for diagnosis. Thus, women for whom physical premenstrual symptoms are most salient with dysphoric symptoms being either minimal or absent would not be included in this diagnostic category. Furthermore, in order to be diagnosed "primary recurrent premenstrual tension disorder", an individual must not currently meet criteria for any other psychiatric disorder. Steiner et al. (1980) do, however, include the category "secondary recurrent premenstrual tension disorder" to capture those women who do meet the remaining criteria for primary recurrent premenstrual tension disorder and simultaneously meet criteria for another psychiatric disorder.

While Steiner and associates' diagnostic system results in a homogeneous group of women meeting diagnostic criteria, it is nevertheless an exclusive group and fails to account for those women for whom premenstrual changes represent an exacerbation of ongoing psychiatric symptoms or are primarily somatic. Unlike others, however, Steiner et al. (1980) included a severity of disturbance factor to ensure that only women for whom premenstrual changes result in severe impairment or the need for medication will be included in the diagnostic category.

Subsequent research (Haskett & Abplanalp, 1983) has demonstrated that the self-rating scales and diagnostic criteria developed by Steiner and associates are successful in identifying a group of women with a severe and time-limited premenstrual psychological disturbance and in distinguishing them from women with milder and more temporally diffuse changes.

Abraham (1980) proposed five symptomatic subgroups of premenstrual tension:

1. PMT-A: anxiety, irritability, and nervous tension.
2. PMT-C: increased appetite craving for sweets, headache, palpitation, fainting spells, and fatigue.
3. PMT-D: premenstrual depression, lethargy, confusion, withdrawal, thoughts of (and, occasionally, attempts at) suicide.

4. PMT-H: premenstrual weight gain, edema of face and extremities, abdominal bloating, and mastalgia.

5. PMT-P: general aches and pains with lower threshold for pain premenstrually.

Evaluation of premenstrual tension includes a complete history and daily rating of symptoms throughout the menstrual cycle using a modified MDQ with basal body temperature and basal weight included. Criteria for inclusion in a premenstrual tension subtype are based on the observation of a significant increase in severity of symptomatology during the luteal phase when compared with the follicular phase *and* a severity level during the luteal phase that is more than just mild (Abraham, 1980).

Finally, Halbreich and associates (1982) developed the Premenstrual Assessment Form (PAF) which is a 95-item checklist of specific types of change in mood, behaviour, and physical condition. Unlike previous assessment procedures, the PAF was developed specifically to meet the perceived need for a measure of premenstrual changes that:

1. covers a broader and more clearly specified variety of changes in mood, behavior, and physical condition than is in existing questionnaires;
2. provides more sensitive measures suitable for describing dimensions of changes and levels of severity;
3. provides specific criteria for typological categorization of different clinical types of changes; and
4. defines different levels of severity of change. (Halbreich et al., 1982, p. 47)

Three summary scoring systems were also developed for use with the PAF: 1) Bipolar continua; 2) Unipolar summary scales; and 3) Typological categories.

1. Bipolar continua. While most women report changes in only one direction of bipolar continua (e.g., psychomotor activity), some do report changes occurring in both directions over the several days of the premenstruum. Halbreich et al. (1982) paired PAF items that reflect manifestations of opposite poles to give seven bipolar continua. Women who report changes in both directions of a continuum are described as having "bipolar changes".

2. Unipolar summary scales. Item intercorrelations and alpha coefficients of internal consistency were used to develop 18 unipolar summary scales that assess the severity of dimensions of premenstrual change. A severity index for each scale is derived by calculating the maximum total score possible (for all items combined on that scale) and then expressing the individual's *actual* total score on all items as a percentage of the maximum score possible.

3. Typological categories. In contrast to Moos and his associates' attempts to describe typologies by profiles or configurations of symptoms across the menstrual cycle, Halbreich and Endicott (1982) developed criteria for typological categorization that require specific types of changes to occur simultaneously and at specified levels of severity. Using a procedure that is similar to that of the Research Diagnostic Criteria (Spitzer, Endicott, & Robins, 1978), women can be classified in one or more of a number of syndromal categories on the basis of their responses on the PAF:

1. Major Depressive Syndrome
2. Minor Depressive Syndrome
    a. Endogenous Features
    b. Atypical Features
    c. Hysteroid Features
    d. Anxious-agitated Features
    e. Hostile Features
    f. Withdrawn Features
3. Anxious Syndrome (Not Depressed)
4. Irritable Syndrome (Not Depressed)
5. Impulsive Syndrome
6. Increased Wellbeing Syndrome
7. General Discomfort Syndrome
8. Water Retention Syndrome

9. Fatigue Syndrome

10. Autonomic Physical Syndrome

11. Impaired Social Functioning

12. "Organic" Mental Features

13. No Significant Changes

14. No Suitable PAF Subtype

The PAF Major and Minor Depressive syndromes are mutually exclusive and inclusion in either also precludes categorization in Anxiety or Angry/Irritable syndromes. The six subtypes of PAF Major Depressive syndrome (five of which are also used as subtypes of minor depressive syndrome) are not mutually exclusive with the exception of Endogenous Depressive features and Atypical Depressive features. None of the remaining clinical categories are mutually exclusive.

Although a number of recent studies which have used the PAF typological categories have found them useful in distinguishing subtypes of premenstrual changes (Endicott et al., 1981; Graham & Sherwin, 1987; Halbreich et al., 1983; Harrison, Endicott, Rabkin, & Nee, 1984; Steege, Stout, & Rupp, 1985) there is some suggestion that the level of severity required for inclusion in typological categories may not be stringent enough to distinguish between those for whom premenstrual changes are experienced as subjectively disruptive and those for whom similar (but lesser) changes are not perceived as problematic (Youdale & Freeman, 1987).

The PAF was developed as a retrospective questionnaire, however, a Daily Rating Form, consisting of 15 to 21 items, can be used prospectively to confirm reported premenstrual changes (Endicott & Halbreich, 1982; Endicott et al., 1986; Halbreich et al., 1985).

Inclusionary and Exclusionary Research Criteria

The need for a widely accepted definition of premenstrual syndrome is evident in both clinical and research applications. Consistency in diagnostic criteria used in clinical settings enhances communication among professionals and increases the homogeneity of any group of individuals who share a diagnosis. In research endeavours:

> a clearly stated consensually agreed upon definition would, at least, increase the probability that comparisons between studies (which are very difficult at present) would be possible and valid because (a) different investigators would use similar inclusionary and exclusionary criteria for the selection of subjects, and (b) the criteria for defining the onset and duration of the premenstrual phase would be constant across studies. (Abplanalp, 1983a, p. 110).

To this end, some investigators have begun to articulate inclusionary and exclusionary criteria for premenstrual syndrome research with more clarity and precision in recent years. For example, Haskett, Steiner, Osmun, and Carroll (1980) employed the following criteria in the selection of research subjects:

1. Premenstrual dysphoric symptoms for at least six preceding menstrual cycles.
2. Moderate to severe physical *and* psychological premenstrual symptoms.
3. Symptoms *only* during the premenstrual period with marked *relief at onset of menses.*
4. Age between 18 and 45 years.
5. Not pregnant.
6. No hormonal contraceptives.
7. Regular menses for six previous cycles.
8. No psychiatric disorder, normal physical examination and laboratory test profile.
9. No drugs for preceding 4 weeks.
10. Will not receive the following drugs during the study: anxiolytics, diuretics, hormones, neuroleptics. (p. 124)

On a more general level, Abplanalp (1983a) has suggested that the following exclusionary and inclusionary criteria must be described in detail in order to communicate fully the methodological approach inherent in premenstrual syndrome studies:

1. Specification of the ways in which subjects were recruited.
2. Age limitations.
3. Contraception and medication information.
4. Marital status.
5. Parity.
6. Race.

7. Menstrual history data.
8. Assessment instruments.
9. Operational definition of PMS.
10. Psychiatric history data.
11. Assessment of current psychological state.
12. Criteria for assessment of severity of symptoms.
13. Criteria for defining ovulatory status of cycle.
14. Cut-off criteria for "unacceptable" subjects. (p. 114)

With clearer specification of both inclusionary and exclusionary criteria and diagnostic criteria used in premenstrual syndrome research, comparison between studies and, thus, the accumulation of methodologically sound information on premenstrual changes, will be enhanced.

Retrospective reporting of symptomatology

As noted previously, much of the research on premenstrual syndrome (until recently) has relied solely on retrospective accounts of premenstrual symptomatology as the basis of inclusion in premenstrually symptomatic groups. Subsequent research (e.g., Abplanalp et al., 1979; AuBuchon & Calhoun, 1985; Endicott & Halbreich, 1982; Rouse, 1978; Slade, 1984; Vila & Beech, 1980; Woods et al., 1982a) has shown that retrospective self-reporting provides insufficient data upon which to make a valid diagnosis, although some research continues to support the validity of retrospective reports (Hart, Coleman, & Russell, 1987). Of all women who qualify, by retrospective data, for inclusion in a premenstrually symptomatic group, only 20 to 50 percent continue to be eligible for inclusion after prospective data is gathered (Hamilton, Parry, Alagna, Blumenthal, & Herz, 1984). That is, some women who recall the presence of regularly recurring changes during the premenstrual phase with a return to normal level menstrually, do not actually experience this pattern. Of these women, it is likely that some, in fact, experience symptoms in varying degrees of severity across the menstrual cycle with no clear pattern of premenstrual exacerbation while others may confuse, in recollection, *menstrual* changes with premenstrual changes. Furthermore, some women who retrospectively report *no* (or minimal) premenstrual symptomatology are able to be classified as "premenstrual syndrome" from prospective date (Youdale & Freeman, 1987).

These findings pose important questions with respect to the experience and perception of premenstrual symptomatology. It is evident that four discrete groupings may be identifiable in the context of research on premenstrual syndrome:

1. Women who retrospectively perceive recurrent premenstrual changes that are confirmed by prospective assessment;
2. Women who retrospectively perceive recurrent premenstrual changes that are *not* confirmed by prospective assessment;
3. Women who report, neither retrospectively nor prospectively, significant premenstrual changes; and,
4. Women who report no (or minimal) premenstrual symptomatology retrospectively but whose prospective assessment data reveals levels of recurrent changes which meet diagnostic criteria for premenstrual syndrome.

One can ask then, how women who retrospectively report premenstrual change differ from those who do not, and how women who prospectively report premenstrual change differ from those who do not. Of perhaps most interest, are the ways in which women who retrospectively perceive a cyclic recurrence of premenstrual changes which do not appear to actually occur differ from others who do *not* retrospectively perceive apparently recurrent premenstrual changes or, at least, do not associate them with their menstrual cycle.

CHAPTER III

THE PSYCHOLOGY OF THE MENSTRUAL CYCLE

Research investigating the etiology of premenstrual syndrome has almost exclusively focused on relationships between physiological changes observed over the cycle and the (presumed) consequent psychological, somatic, and behavioural changes. Consequently, physiological hypotheses concerning the etiology of premenstrual syndrome abound.[1] In general, psychological research has concerned itself with investigations of those psychological (and behavioural) changes without regard for etiology (or with implicit endorsement of physiological hypotheses).

Until recently, as noted by Parlee (1982), a focus on biological changes had provided the framework in which research on psychological changes over the menstrual cycle had been conducted. That is, research had proceeded from the observation of cyclic changes in physiology across the menstrual cycle to the psychological question: "What are the psychological consequences of these physiological changes?" (Parlee, 1982, p. 77).

More, recently, however,

> the biologically based perspective on the psychology of the menstrual cycle (the focus on physiological changes and their direct psychological consequences) has been supplemented by a more traditionally psychological perspective. In this perspective, the starting point of the inquiry *is* the psychological changes occurring over the course of the menstrual cycle. The research question asked is: What are these changes and what are the processes, biological and social, that produce them? A psychological perspective also entails, more or less explicitly, a set of questions about systematic variability: what changes occur in what groups of women under what circumstances? (Parlee, 1982, p. 77)

This shift in perspective has resulted in the advancement of psychological hypotheses concerning premenstrual symptom etiology and recognition that investigation of psychological variables may constitute an important contribution to our understanding of premenstrual changes.

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[1]See Janowsky and Rausch (1985), Rausch and Janowsky (1982), and Steiner and Carroll (1977) for reviews.

In reviewing the research on the psychological aspects of premenstrual changes it is important to recognize that the psychology of the menstrual cycle can be approached from two different research questions:

1. What is the relationship between psychological variables and actual change?
2. What is the relationship between psychological variables and the perception of change?

Psychological Variables and Actual Change

Several theories concerning the psychological processes that may be linked to premenstrual symptomatology have been proposed.

The psychodynamic approach

From this perspective, premenstrual symptomatology is the manifestation of unresolved, unconscious conflict surrounding menstruation, sexuality, femininity, and body image. Karen Horney (1931) attributed premenstrual tension to conflicts surrounding the repressed wish for a child. According to Horney, premenstrual tension can arise from anxiety resulting from any aspects of the possible realization of that wish, for example, fear of sexual intimacy, fear of dying in childbirth, or fear of caring for an infant. Helene Deutsch (1944) hypothesized that early fears and fantasies about menstruation persist (unconsciously) and recur as premenstrual (or menstrual) symptomatology. For example, premenarcheal fears that menstruation represents a time when something terrible will happen may persist and be manifested each month as premenstrual anxiety and depression. With the onset of menses, and the realization that these fears are unfounded, the symptoms cease.

In contrast, a more recent hypothesis (Shuttle & Redgrove, 1978) suggests that unconscious disturbances that are normally repressed are manifested as symptoms during the premenstruum when women are more honest with themselves and, thus, unable to continue repressing them.

Alleviation of symptomatology is possible only when women deal honestly with these problems and come to accept the menstrual cycle in a positive light.

Support for the psychodynamic hypothesis is seen in studies of attitudes toward menstruation, femininity, body image and sexuality, and in detailed analyses of dreams, fantasies, and free associations. Women with negative recollections of menarche (Fortin et al., 1958; Shainess, 1961) and/or negative attitudes toward menstruation (Fortin et al., 1958; May, 1976; Paulson, 1961; Spencer-Gardner, Dennerstein, & Burrows, 1983; Woods, Dery & Most, 1982) have been found to report more premenstrual symptomatology than those with positive attitudes in these spheres. However, others have found increased negative affect and impaired performance premenstrually in women with positive recollections of menarche (Woods et al., 1982). Similarly, there is also evidence suggesting no differences in reactions to menarche (Lamb et al., 1953; May, 1976; Spencer-Gardner et al., 1983) and attitudes toward menses (Watts, Dennerstein, & Horne, 1980) between those with and without premenstrual symptomatology.

Conflicts surrounding acceptance of the feminine role have also been associated with premenstrual symptomatology (Fortin et al., 1958; May, 1976; Paulson, 1961; Schick, 1953). However, once again these findings are challenged by others who have either found that a greater degree of premenstrual symptomatology is evident in women who have accepted a more traditional feminine role (Berry & McGuire, 1972; Gough, 1975; Paige, 1973; Schneider & Schneider-Duker, 1974; Spencer-Gardner et al., 1983) or have found no group differences (Watts et al., 1980).

Negative attitudes toward self (Gough, 1975; Paulson, 1961; Spencer-Gardner et al., 1983) and negative attitudes toward one's body (Anderson & Switzman, 1985; Watts et al., 1980) and sexuality (Watts et al., 1980) have been associated with premenstrual syndrome, as have the presence of disturbed intrafamilial relationships (Fortin et al., 1958; Paulson, 1961). Friedman et al. (1982) found that, of 28 premenstrually symptomatic women, 16 had sexual histories that included incidents of rape, abortion, and/or incest while only one of 17 asymptomatic women had

a comparably abnormal sexual history.

Finally, studies involving the analysis of dreams, fantasies, and free associations (Benedek & Rubenstein, 1939a, 1939b; Ivey & Bardwick, 1968) have revealed the presence of conflicts about pregnancy and childbirth and increased conscious and unconscious anxiety premenstrually in women who show evidence of premenstrual syndrome.

While the above-mentioned studies tend, in many cases, to support an association between premenstrual symptomatology and conflictual fears and attitudes, they nevertheless offer no concrete support for the hypothesis that premenstrual syndrome is *caused* by these phenomena. Furthermore, in almost all cases, the assessment of premenstrual syndrome in research subjects has consisted of retrospective self-reports of symptomatology with no attempt to confirm diagnoses longitudinally or assess subjects for concurrent psychiatric disorder.

The psychosomatic approach

The emphasis, from this perspective, is on the delineation of personality characteristics or styles and psychosocial factors which are associated with premenstrual symptomatology. The underlying assumption in much of this research (despite its correlational nature) is that these factors are in some way instrumental in the production of premenstrual changes.

Cultural and religious factors and adherence to menstrual taboos have been associated with premenstrual increases in anxiety (Paige, 1973). A large cross-cultural survey revealed that, while symptoms of premenstrual syndrome are found in all of the six cultures studied, there were marked variations in the frequency of several symptoms (e.g., breast complaints, headache) among cultural groups (Janiger, Riffenburgh & Kersh, 1972). However, one examination of specific cultural differences and premenstrual symptomatology in Spanish and British students revealed a comparable incidence of premenstrual symptoms in the two groups despite greater inhibitions toward menstruation and sex in the Spanish group (Théano, 1968).

Ivey and Bardwick (1968) and Whitehead, Busch, Heller, and Costa (1986) found an association between receiving gratification for the sick role as a child and reporting increased premenstrual symptomatology as an adult. Similarly, self-reported absence from school or work for premenstrual symptoms was found to be correlated with encouragement of the sick role as a child (Whitehead et al., 1986).

Investigations of personality factors associated with premenstrual syndrome have yielded mixed results. Relationships have been found between premenstrual symptomatology and neuroticism (Coppen & Kessel, 1963; Kleinsasser, 1976; Kramp 1968; Mira, Vizzard, & Abraham, 1985; Rees, 1953b; Slade & Jenner, 1980; Taylor, 1979a; Watts et al., 1980), state anxiety (Goudsmit, 1983; Mira et al., 1985), general maladjustment and help-seeking behaviour (White & Wildman, 1986), emotional instability (Morton, 1950), Type A behaviour (Hicks, Olsen, & Smith-Robinson, 1986) and elevations of clinical MMPI scales that are indicative of neuroticism (Gruba & Rohrbraugh, 1975). On the other hand, other investigations have found no significant correlations between premenstrual well-being and neuroticism (Seagull, 1974; Walsh, Budtz-Olsen, Leader, & Cummins, 1981), obsessionality or hysterical tendencies (James & Pollitt, 1974) and other personality characteristics or types (Kleinsasser, 1976; Maloney, Deitchman, & Wagner, 1982; Stout & Steege, 1985).

As an alternative to the psychosomatic approach which investigates the hypothesis that psychological factors are of primary importance in premenstrual syndrome, a somatopsychic approach (Rees, 1976) suggests that psychological factors such as personality characteristics may interact with somatic changes (the primary etiological agents) and affect the degree of distress and disability experienced. "If the patient suffers from a neurotic illness or has traits of personality indicative of over-anxious obsessional or hypochondriacal tendencies, the degree of distress and disability associated with the premenstrual syndrome can be increased" (Rees, 1976, p. 13). However, the sharp division in much of the research on premenstrual syndrome to date between studies investigating somatic features of premenstrual syndrome and those in which the primary

focus is on psychological factors has precluded the advent of studies in which the interactive hypothesis of the somatopsychic approach may be investigated.

Psychological Variables and the Perception of Change

While most studies of the psychological processes in premenstrual syndrome have taken reports of premenstrual symptomatology at face value, others have specifically investigated the actual basis of reporting of premenstrual symptoms. Whether explicitly or implicitly, these investigations are concerned with the reporting or perception of changes, particularly in relation to the absence of actual change.

Stereotypic beliefs about menstruation

Research from this perspective investigates the hypothesis that menstrual questionnaire responses are influenced by stereotypic beliefs about menstruation rather than by actual change. Menstruation is generally viewed as a negative event in North American society and several studies suggest that *attitudes* toward menstruation may be more negative than the actual experience of menstruation (Gannon, 1985). Examination of the stereotypical beliefs about menstruation has been undertaken in several ways.

Parlee (1974) administered the Menstrual Distress Questionnaire (MDQ) to both male and female undergraduate students with instructions to "describe each of the symptoms which women sometimes experience during the three different time periods listed below: during the menstrual flow, during the one week before the menstrual flow, during the remainder of the cycle" (Parlee, 1974, p. 234). From her observations that both males and females responded similarly, Parlee concluded that "one might consider the possibility that questionnaires concerning menstruation provide measures of stereotypic conceptions of menstrual distress or premenstrual tension rather than of any psychological states more directly related to hormonal fluctuations" (1974, p. 239).

Ruble (1977) investigated the role of expectation in reporting premenstrual symptoms by convincing women they were either premenstrual or intermenstrual and having them complete the MDQ with reference to symptoms they had experienced in the last day or two. Results indicated that women who thought they were premenstrual rated MDQ symptoms higher than those in the "intermenstrual" group. However, of interest, is the fact that women in the control group, to whom no information was given about cycle phase, generally reported severity ratings in between those of the two experimental groups or close to those of the "premenstrual" group. Ruble concluded that "it appears that learned associations or beliefs might lead a woman either to overstate what she is actually experiencing or to perceive an exaggeration of naturally fluctuating bodily states...when she believes she is premenstrual" (1977, p. 292).

In a further study using the "as if" method, Brooks, Ruble, and Clark (1977) recruited female university undergraduates to complete the MDQ as if they were in the premenstrual (then intermenstrual) phase of their cycle and found a higher incidence of symptoms expected to occur in the premenstrual phase. Although the authors suggested that "these findings are consistent with previous research suggesting that reported symptomatology may reflect stereotypic expectations" (p. 295) they also acknowledged that the actual mean differences are small and that scores typically reflect only minimal symptomatology experienced.

Other studies reported by this research team have confirmed both the similarity in adolescent males' and females' beliefs about menstrual cycle symptomatology and expected differences between the severity of symptoms reported by post-menarcheal adolescent females with respect to themselves and with respect to "girls in general". On all eight scales of the MDQ, female adolescents reported significantly more severe premenstrual and menstrual symptoms in other girls than in themselves (Brooks-Gunn & Ruble, 1980a).

In an attempt to investigate the relationship between attitudes (which are assumed to be affected by stereotypical beliefs about menstruation) and self-reports of menstrual-related

symptomatology, Brooks-Gunn and Ruble (1980b) developed the Menstrual Attitudes Questionnaire (MAQ). This is a 33-item questionnaire in which the subject is asked to indicate, on a 7-point scale from "disagree strongly" to "agree strongly", their agreement or disagreement with each statement about menstruation. Scores are calculated on five attitude factors: 1) menstruation as a debilitating event; 2) menstruation as a bothersome event; 3) menstruation as a natural event; 4) anticipation and prediction of the onset of menstruation; and 5) denial of any effect of menstruation.

The authors subsequently administered this measure and the MDQ to college women who were instructed to complete the MDQ in one of three ways: a) "as if" they were in the premenstrual and intermenstrual phases of the menstrual cycle; b) with respect to what they usually experienced premenstrually, menstrually, and intermenstrually; or c) with respect to what women in general experience in these three phases. Results indicated that while the perception of menstruation as natural or bothersome was not related to MDQ symptom reporting, relationships were evident for the remaining three attitude factors and MDQ symptom reporting. Specifically, the perception of menstruation as debilitating or predictable was generally positively correlated with symptom reporting while denial of the effects of menstruation was negatively associated with symptom reporting. Similar findings have been reported by Woods et al., (1982) and Woods et al., (1982b).

Other investigations of stereotypically based beliefs about the menstrual cycle provide mixed results. AuBuchon and Calhoun (1985) compared measures of psychological and physiological variables over an eight week period in two groups: women who were informed that the study was investigating changes over the menstrual cycle and women and men who were not informed of the intent of the study. As expected, the "menstrual study" group reported significantly more psychological and physiological complaints premenstrually and menstrually than intermenstrually. Similar cyclical fluctuations were not evident in the "nonmenstrual study" women.

In contrast, however, a similar study (Markum, 1976), which compared menstrual distress reports from women who were aware of the interest in menstrual symptoms with those of women who were not similarly aware of the interest in menstrual symptoms, found no effect of knowledge of the purpose of the questionnaire on symptom reporting. Finally, Golub (1976b) concluded that observed premenstrual increases in anxiety and depression could not be determined by stereotypical beliefs since scores on one questionnaire were unrelated to scores on another and, additionally, few women recognized that they were being tested premenstrually.

Several researchers have investigated the ways in which prevailing cultural stereotypes about menstruation (and the premenstruum) may influence causal attributions and, subsequently, the reporting of premenstrual symptomatology.

Attributions and labelling

Researchers who find no evidence for significant premenstrual or menstrual peaks in cyclic variations of reported symptomatology in normal women often invoke an attributional or labelling explanation for the subjective perception and reporting of menstrual-cycle related symptomatology. Paige (1973) suggested "the possibility that women use menstruation to "explain" bodily discomfort and psychological stress that in fact have their origins in other events. That is, when a woman feels irritable and has backaches during her period, she may attribute these feelings to the fact that she is menstruating, while if she has the same feelings after a hard day's work, she will attribute them to the tensions of the job" (p. 45). Similarly, Slade (1984) concluded that

> if levels of negative emotions fluctuate as a normal phenomenon then this may have led to inappropriate labelling when emotional upset happens to coincide with the premenstruum....Women experiencing negative moods during their premenstrual or menstrual phases may attribute these to a specific menstrual cycle syndrome. When similar changes occur during other phases attribution may instead be made to personal or environmental factors. (p. 5)

However, the veracity of these hypotheses with respect to women who *do* experience premenstrual changes (as opposed to "normal" women who report no such experiences) remains unconfirmed.

Koeske (1980) presented an attributional approach to menstrual cycle research that examines the beliefs and explanatory principles that women use in understanding their own and others' behaviour. This approach constituted a response to the perceived "failure of the social or no-effect approach to develop a psychologically accurate depiction of women's own experiences with their own bodies, apart from an ideological statement of 'no effect' or 'cultural oppression', and apart from the biological determinism or 'professionals-know-what-people-themselves-cannot' attitude of previous research" (p. 13).

This approach involves two aspects: 1) beliefs about premenstrual emotionality, and 2) the actual sources of that emotion. Common beliefs about premenstrual emotionality were examined in a study (Koeske & Koeske, 1975) in which information about a hypothetical young woman's cycle phase (pre- *versus* postmenstrual), mood (positive *versus* negative), and environment (pleasant *versus* unpleasant) were varied and presented as a questionnaire study of "how people use information to make decisions" to male and female undergraduates. All subjects received identical information with respect to the young woman's background, current responsibilities and personality. After reading the excerpt, subjects were required to rate the young woman's mood and personality and to make causal attributions for her mood. Results indicated attributional patterns in which a) biology was considered important for explaining negative moods occurring premenstrually, b) internal (personality) factors were used to explain moods which were inappropriate to the situation, while aspects of the situation were seen as more etiologically important in situation-appropriate moods, and c) emotionally expressive behaviour (moodiness) was thought to be related to internal (personality) factors despite extenuating situational factors.

In a similarly designed study, Koeske (1975) examined stereotypically appropriate expressions of felt emotion by varying the behavioural response (outward hostility and pleasantness) to an upsetting situation in three hypothetical individuals: a premenstrual woman, a nonpremenstrual woman, and a man. Results indicated that while premenstrual hostile moods were attributed to biology, premenstrual displays of positive behaviour were attributed to personality or situational

factors. Furthermore, when premenstrual negative mood was attributed to biology, situational factors were discounted and the behaviour judged as more unreasonable than identical behaviour in either a nonpremenstrual woman or a man.

These data suggest, then, that the (predominantly negative) symptom constellation which is perceived to occur premenstrually may, in fact, actually occur but may be given unwarranted emphasis due to the attribution of biological causation. Premenstrual positive behaviour or nonpremenstrual negative behaviour, which are both more commonly attributed to personality or situational factors, are thus de-emphasized in comparison. This may imply that

> the observed tendency to attribute negative behavior to biology arises, not from actual differences in the relative *incidence* of positive to negative behaviors during the premenstruum as had been assumed, but from the implicit assumption that only women's *negative* behavior can or must be explained by biology....If the premenstruum cues in different interpretations of behavior...these information-processing biases could explain differential recall or self-report of typical premenstrual behavior without necessitating relative differences in the incidence of positive and negative behaviors. (Koeske, 1980, p. 16)

Subsequent research (Koeske, 1976, 1977) has investigated an arousability-labelling hypothesis which suggests that ***both*** negative and positive behaviours are enhanced premenstrually and that the situational cues rather than the pattern of physiological response may determine whether positive or negative emotions are experienced. Observations of fluctuations on physiological and performance measures over the menstrual cycle and reports of emotional responsiveness and mood revealed a relationship between premenstrual physiological sensitivity and self-reported premenstrual emotionality and a tendency for premenstrual moods and situations to be more highly correlated than midcycle mood and situations (Koeske, 1976) suggesting an enhanced sensitivity to salient stimuli (both positive and negative) premenstrually.

In a further set of studies (Koeske, 1977), both male and female college students reported mood, recent positive and negative life events, and various aspects of their health including menstrual cycle information during low, moderate, and high stress periods of the school term. As predicted, both positive and negative paramenstrual moods were more highly correlated with

situation than were nonparamenstrual moods or moods for males. Furthermore, the clearest evidence for negative paramenstrual moods was observed during high stress.

Koeske (1980) has suggested from these findings that "a differential social interpretation of negative and positive behaviors occurring premenstrually and a tendency for general premenstrual enhancement of responses to prevailing situational cues can explain observed correlations between the paramenstruum and negative moods and behaviors" (p. 20).

In contrast to Koeske's investigations of attributional processes in menstrual cycle symptomatology, Rodin's (1976) studies of menstruation, reattribution, and competence investigated actual performance of menstrually symptomatic and asymptomatic women. Data from a pilot study involving manipulated arousal level (high, low) and attributional information concerning the source of that arousal (pill attribution, task-related attribution, no attribution) indicated that cognitive attributions for task-related arousal influence task performance. Both the pill attribution and task-related attribution groups in the high arousal condition performed significantly better on tasks than the no attribution group.

A second study investigated the hypothesis that women who attribute task-related stress to menstrual-related factors will perform better than those who do not and that women who usually *experience* menstrual-related symptoms will be more likely to reattribute task-related tension to their menstrual state than those who report minimal or no symptoms. A 2 x 2 x 2 design involving premenstrual or menstrual *versus* midcycle testing, moderate or more *versus* no symptomatology reported, and high *versus* low task-relevant arousal conditions was used. Results indicated that menstruating women who attributed task-produced arousal to their menstrual symptoms performed more effectively than equally aroused nonmenstruating women and performed as well as nonaroused women. Furthermore, while reported level of menstrual symptomatology had no effect on performance at midcycle, performance during menstruation was enhanced for those who reported stronger symptoms and reattributed arousal to menstrual state when compared to

those with minimal or no menstrual symptomatology. These data would suggest, then, that the reattribution of negative mood states to the menstrual cycle in stressful situations may not necessarily result in impaired performance. Rodin further noted that "it may be that the regular occurrence of menstruation can serve as an attribution that enhances performance and tolerance for frustration among many women, given that they have correct expectations about how it affects them" (1976, p. 353).

Despite the similarity of proposed cognitive mechanisms in Koeske's and Rodin's models it is clear that the expected outcomes are contradictory. Koeske and Koeske (1975) postulated that attribution of situation-related negative mood states to biology may "predispose women to suffer guilt, anxiety, and depression as a function of premenstrual tension and might make action to alter upsetting situations more unlikely" (p. 478). Rodin (1976), on the other hand, has suggested that, when situation-related negative emotionality is reattributed to biology, woman may actually perform more effectively than those who do not reattribute because "...the attribution information led subjects to expect to feel distressed, and then their experience confirmed these expectations....Predictability may benefit performance by its direct stress-reducing effects...or through self-preparation and increased effort..." (p. 352).

A possible unifying factor for these two theoretical positions lies in Ruble and Brooks-Gunn's (1982) suggestion that menstruation and the premenstruum may signal a loss of control over performance and emotions in some women. Response to this perceived loss of control may be that of reactance (attempts to regain control by increased effort) or of learned helplessness, a passive acceptance of one's loss of control and an unwillingness to attempt to overcome it.

A recent study (Fradkin & Firestone, 1986) has investigated the effects of differing attributional explanations on the reporting of premenstrual symptoms and premenstrual performance in women who experienced at least moderate premenstrual negative affect. Two groups of women

were told that premenstrual symptomatology was due to either universal, unavoidable biological causes or to negative societal myths and negative labelling of ambiguous physiological arousal. A third group were given no etiological information. Results indicated that women given a psychological explanation both expected and reported fewer premenstrual symptoms during the test menstrual cycle and did not report a premenstrual increase in negative affect. Symptom complaints remained unchanged in the two other groups, with significantly greater negative affect reported premenstrually than during midcycle. Furthermore, all three groups showed more "positive maternal behaviour" in doing puzzles with their children during the premenstruum than during midcycle. Fradkin and Firestone (1986) concluded from this data that Rodin's (1976) stress-reducing or increased effort hypothesis of reattribution to biology is not supported: one would have expected to observe less persistence in tasks in the psychological explanation group than in the other two groups. Nevertheless, the opposing hypothesis, that the greater the expectancy of negative mood (due to attribution to biology), the greater the experience of it, was not supported either. Women in the biological explanation group did not show significant increases in either expectancies or reports of premenstrual symptomatology and did not show an increase in negative maternal behaviour during the premenstruum.

Further research in this spirit, which addresses the issue of perception of control loss, as suggested by Ruble and Brooks-Gunn (1982), may illuminate the efficacy of these models in explaining the effects of attribution on outcome during the premenstruum.

Psychological Research on Premenstrual Syndrome

From the foregoing review it is clear that much controversy exists with respect to the role of psychological variables in actual and perceived premenstrual symptomatology. Nevertheless, this area of investigation represents an important one for understanding the psychology of premenstrual changes and has obvious implications for treatment of women who present with premenstrual

symptom complaints. Research on actual premenstrual changes has typically focussed on issues of unresolved conflict and attitudes surrounding menstruation, sexuality, femininity, and body image, and attempts to delineate personality characteristics or styles which may be instrumental in producing premenstrual changes. Most of these variables, however, can also be invoked as explanations for *perceived* premenstrual changes in the absence of actual change: research investigating the perception or reporting of premenstrual changes has investigated attitudes towards and beliefs about menstruation (which, presumably, may result from either intrapsychic conflict or social/experiential learning) and attributional styles in the context of reported symptomatology which is situationally-related. Similarly, most of the variables studied in the context of the perception of change can also be considered to be instrumental in producing intrapsychic conflict or personality styles which, in turn, produce actual premenstrual symptomatology.

Much of the research on actual change has uncritically accepted retrospective accounts of premenstrual symptomatology and compared data on "complainers" *versus* "noncomplainers" while research investigating the perception of change has typically studied women (and men) without regard to their *actual* experience of premenstrual change. Clearly, it is necessary to investigate hypothesized influential psychological variables in the context of ***both*** actual and perceived change in order to further understand these potential relationships. However, it is also necessary to consider other influential variables in investigations of menstrual cycle related changes. Specifically, both level of stressors encountered and one's subjective experience of stress are important.

Stress and the Experience of Stress

Although the role of stressors (and the experience of stress) has frequently been acknowledged as a potentially confounding variable in studies of premenstrual symptomatology, early studies in the area paid little direct attention to this variable.

An exception is that of Wilcoxin et al. (1976) in which 33 students (11 male, 11 females taking oral contraceptives, and 11 females not taking oral contraceptives) provided daily self-report data on pleasant and stressful events, moods, and somatic changes over a period of 35 days. Although results indicated that "reported stressful events accounted for significantly more of the variance on the negative mood factors than did the phase of the cycle" (p. 414), it is interesting to note that both groups of women reported significantly higher levels of personal stress in the premenstrual phase when compared to the intermenstrual phase. Since it is unlikely that environmental events that can be regarded as "stressors" impinge on individuals selectively more often during the premenstrual phase, one must assume that women were reporting higher levels of stress experienced (as opposed to number of stressors encountered) premenstrually when compared to the intermenstruum.

As part of a broader study, Woods et al. (1982b) reported an association between negative life events and premenstrual negative affect while Woods (1985) investigated the influence of environmental stress and socialization on perimenstrual symptoms and menstrual attitudes, and found that exposure to a stressful environment was positively related to symptoms of negative affect during the premenstruum. Woods, Most, and Longenecker (1985) examined the influences on perimenstrual symptoms of both major life events (as measured by the Schedule of Recent Events, Holmes & Rahe, 1967) and daily stressors (as measured by daily recordings of stressors in a health diary). Once again, major life events were correlated with perimenstrual negative affect, as were daily stressors. However, the authors noted that "Correlations between daily stressors and symptoms were larger than those for cumulative life events scores and symptoms, suggesting that the effects of daily stressors are of comparable if not greater magnitude than the major life events" (Woods et al., 1985, p. 267).

These latter findings are particularly relevant in the study of the impact of stress on premenstrual symptoms. Measures such as the Holmes and Rahe (1967) Schedule of Life Events tap the frequency of occurrence of events that are regarded as potentially stressful, but do not

address the issue of individual experience of stress (or relative lack thereof) in the face of these events on a daily basis. As Woods et al. (1985) acknowledged, "Although there is evidence for the influence of major life changes on symptom experience in general, and perimenstrual symptom experiences in particular, the role of chronic stressors experienced in daily living is unclear" (p. 263).

Clearly, a global measure of the occurrence of stressful life events is insufficient to provide data regarding stressors and the perception of stress in relation to premenstrual symptomatology. Instead, both the occurrence of daily events that may act as environmental stressors, *and* the individual's perception of stress actually experienced in response to those stressors is required. While the actual occurrence of any given daily stressors cannot be expected to vary according to menstrual phase in any systematic way, any observed systematic variation (by menstrual cycle) of the subjective experience of stress would be of interest. For example, for women who experience significant premenstrual increases in depressive affect, daily stressors that are perceived to be only mildly stressful during the intermenstruum may be experienced as significantly stressful during the premenstruum.

Of particular interest in this context, are differences in levels of stress experienced that may be apparent between women whose retrospective reports of premenstrual symptomatology are not confirmed by prospective data, and women whose retrospective reports are so confirmed.

CHAPTER IV

THE CURRENT STUDY

Research on premenstrual syndrome has progressed rapidly during the 1980's both in its methodological sophistication and in the sheer number of research endeavours. While it is evident that we are still far from reaching a consensus in defining the phenomenon, there has, nevertheless, been advancement in the area of diagnosis: carefully constructed and validated assessment techniques with associated research criteria (e.g., Steiner et al.'s, (1980) rating scales and Halbreich et al.'s (1982) PAF) are now available for use. Their continued use in varied research will allow an accumulation of information across studies and accelerate the progress of knowledge gained from research in this area. After almost 60 years of relatively disconnected and idiosyncratic research methodologies, premenstrual syndrome investigators are finally beginning to channel their efforts, in a collaborative spirit, toward a common goal.

It has now been almost universally accepted that the use of retrospective reports, alone, as data for diagnosis of premenstrual syndrome, is unsatisfactory. Although this assessment strategy provides valuable initial screening information, it is imperative that prospective data, over several menstrual cycles, be gathered in order to confirm (or disconfirm) retrospective accounts and upon which to base diagnostic decisions.

Furthermore, the recognition and general consensus that severity of symptomatology must be addressed in assessing premenstrual syndrome provides researchers with a more homogeneous and valid subject population. It is no longer enough to establish that women experience "some symptoms" premenstrually "to some degree" – inclusion in this category is dependent on a minimum number of symptoms being present at moderate to severe levels of intensity. However, there remains work to be done before a satisfactory and reliable method of establishing criteria for intermenstrual to premenstrual change is determined.

Selection of research subjects using inclusionary and exclusionary criteria has also increased the homogeneity of subject populations and has decreased the incidence of confounded results due to lack of control for oral contraceptive use, other medications, irregular menses, etc. Nevertheless, the use of exclusionary screening criteria simultaneously reduces the population of women to whom research findings can be generalized. It is to be hoped that, at some time, those in specialized populations (e.g., oral contraceptive users) who may experience premenstrual changes will also be investigated. Of particular importance, within this context, is the population of women for whom a psychiatric diagnosis is warranted yet whom simultaneously experience premenstrual changes - whether those changes be manifested as the presentation of new symptoms premenstrually, or as exacerbation of ongoing symptoms associated with their psychiatric disorder.

The increased interest, in recent years, in the delineation of subtypes of premenstrual changes may represent the most influential factor in the progress made in premenstrual research. Greater homogeneity of research groups and the resultant explicit diagnostic criteria for subtypes have allowed replicability and a clearer understanding of the phenomenon being investigated. It is likely that varied symptom constellations, all of which were previously designated as "premenstrual syndrome" and subjected to group analyses, may have clouded meaningful findings in early premenstrual syndrome research. It now seems clear that, while women may share common features of premenstrual syndrome - recurring changes which begin during the premenstruum and are alleviated during menstruation - they, nevertheless, may differ substantially in their actual symptom constellations. The resultant implications in the search for etiological underpinnings of the disorder and subsequent treatment regimes are obvious: differing subtypes are likely to have different etiological bases and divergent responses to specific treatment regimes.

In light of the preceding discussion of recent advances in research methodology and conceptualization of premenstrual changes, one can question the validity of much of the research on premenstrual syndrome during the several decades following Frank's (1931) description of the syndrome. The retrospective nature of assessment in much of this literature, coupled with the use

of unidentified assessment techniques, unclear inclusionary/exclusionary and diagnostic criteria (including symptom constellations required and severity of symptoms), and a lack of differentiation between subtypes of premenstrual syndrome may well have combined to obscure potential relationships between premenstrual symptomatology and other variables.

The present research study represents a reinvestigation of an area that began receiving attention during the 1950s and 1960s as a possible direct cause of premenstrual symptomatology and has subsequently gained increased attention during the 1970s and 1980s as a possible explanation for the subjective *perception* of premenstrual symptomatology. Research indicating support for a role of biological variables in premenstrual syndrome notwithstanding, it is clear that psychological variables may contribute to the etiology and/or the perception of premenstrual symptomatology. To date, however, research in this area has too frequently been launched with *a priori* assumptions about the homogeneity of women who report experiencing premenstrual symptomatology both with respect to the symptom constellations experienced and with respect to the veracity of those claims (e.g., reliance on retrospective accounts alone), or has been conducted with subject populations on whom no data is available with respect to their actual or perceived symptomatology. In reviewing the literature to date on the role of psychological variables in premenstrual syndrome, there appears to be a sharp theoretical division between those who subscribe to psychology as contributing to actual change and others who see psychology as a cause of *perceived* change. The inevitable, although implicit, outcome of these divergent positions is one in which premenstrual syndrome is seen as a legitimate entity on the one hand and as a stereotypically based myth on the other.

It is possible that the single-factor methodological approach of much of this research may have served to obscure underlying important issues in understanding premenstrual syndrome. A factorial approach, in which retrospective and prospective reports of premenstrual symptomatology are considered simultaneously, may illuminate relationships between the accuracy of retrospective reports and psychological variables of interest. This alternative approach was investigated in the

present study by observing relationships among prospective (Pro) and retrospective (Ret) reporting of premenstrual depressive change (PDC), personality styles and pathological indicators, attitudes toward menstruation, attributional style, and stress. Combinations of categorization made on the basis of retrospective (RetPDC *vs.* NoRetPDC) and prospective (ProPDC *vs.* NoProPDC) reports of premenstrual depressive change resulted in the investigation of four groups of women:

1. Women who retrospectively report significant premenstrual depressive changes and for whom prospective data confirm these changes (RetPDC/ProPDC or "Ret/Pro").
2. Women who report similarly significant premenstrual depressive changes retrospectively but for whom prospective data are disconfirming of those reports (RetPDC/NoProPDC or "Ret/NoPro").
3. Women who do not report significant premenstrual depressive changes retrospectively but for whom subsequent prospective monitoring reveals actual changes that are of sufficient severity to meet diagnostic criteria for a premenstrual depressive disorder (NoRetPDC/ProPDC or "NoRet/Pro").
4. Women who report, both retrospectively and prospectively, no or minimal premenstrual depressive changes (NoRetPDC/NoProPDC or "NoRet/NoPro").

Research investigating psychological variables and premenstrual symptomatology has generally taken one of the four theoretical approaches outlined earlier. Although the present study is not intended as a definitive test of these approaches, they are, nevertheless, useful in providing a framework within which to generate the first four hypotheses for the current exploratory investigation of the relationships between the accuracy of perception of premenstrual symptomatology and various psychological variables:

1. Psychodynamic: Women who actually experience premenstrual depressive change (ProPDC) were expected to regard menstruation as significantly more negative ("debilitating" and "bothersome") and significantly less ineffectual ("denial of effects") than women who do not actually experience premenstrual depressive change (NoProPDC).

2. Psychosomatic: Women who actually experience premenstrual depressive change (ProPDC) were expected to show significantly more evidence of neurotic personality styles and other pathological indicators than women who do not actually experience premenstrual depressive change (NoProPDC).

3. Stereotypic Beliefs: Women who retrospectively perceive premenstrual depressive change (RetPDC) were expected to regard menstruation as significantly more "debilitating" and "predictable" and significantly less "positive" and ineffectual ("denial of effects") than women who retrospectively perceive little or no premenstrual depressive change (NoRetPDC).

4. Attributions and Labelling: Women who retrospectively perceive premenstrual depressive change (RetPDC) were expected to make significantly greater biological (menstrual cycle) causal attributions in relation to negative premenstrual moods and significantly fewer personality or situational causal attributions, than women who retrospectively perceive little or no premenstrual depressive change (NoRetPDC).

In addition:

5. No significant between-group or within-group differences were expected in number of daily stressors encountered (occurrence) between the premenstrual and intermenstrual phases of the menstrual cycle.

6. Women who actually experience premenstrual depressive change (ProPDC) were expected to report significantly higher intensity of stress during the premenstrual phase when compared both to their own intermenstrual phase and to the premenstrual phase of women who actually experience little or no premenstrual depressive change (NoProPDC). No other significant between-group or within-group differences were expected.

PART B

METHOD

CHAPTER I

SUBJECTS

Subjects were recruited from faculty, staff, and students of Simon Fraser University, the nursing staff of two major hospitals, and residents of the Greater Vancouver community by way of newsletters and informational pamphlets requesting women to participate in a study of changes often experienced over the menstrual cycle. Both women who do, and those who do not, experience menstrual cycle–related changes were invited to participate.

Of 83 women who began the study, 68 completed three months of daily symptom reporting and a further five provided two months of usable daily data. Women who failed to complete at least two full months of daily reporting included one who became pregnant during the study, four who withdrew from the study because they felt unable to maintain the time commitment required, and a further five whose reasons for not completing the study are unknown.

All women were screened for eligibility in this study according to the following inclusionary and exclusionary criteria:

1. 18 - 45 years old.
2. Regular menses during the past 6 months.
3. Menstrual cycle between 21 and 38 days in length.
4. No hormonal contraception for at least three months.
5. Not pregnant.
6. No anxiolytics, hormones, or neuroleptics during the course of the study.
7. No current DSM–III Axis I psychiatric diagnosis.

These criteria are based on those recommended by Haskett et al. (1980).

All women (n = 73) who provided either two or three complete months of daily rating data were classified according to both retrospective and prospective (daily rating) data with respect to

presence or absence of premenstrual depressive change.

Retrospectively Reported Premenstrual Depressive Change

Responses on the Premenstrual Assessment Form (PAF; see "Measures" chapter) were used to classify women according to whether or not they retrospectively perceived significant premenstrual depressive change.[1] The criteria by which this classification was made are those developed by Halbreich and Endicott (1982) for "PAF Major Depressive Syndrome" and "PAF Minor Depressive Syndrome" (see Tables 2 and 3) with two modifications: 1) as suggested by Youdale and Freeman (1987), the required severity of change from normal for inclusion in a diagnostic category was increased from 3 ("mild") to 4 ("moderate"); and 2) the final five items and item sets of the Associated Features (those in italics in Table 3) required for PAF Minor Depressive Syndrome were not included in the calculations. These were eliminated from the calculation of retrospective classification in order to maintain consistency in diagnostic procedures both retrospectively and prospectively.[2]

All women who met criteria for either PAF Major Depressive Syndrome or PAF Minor Depressive Syndrome were included in the group Retrospective Premenstrual Depressive Change (RetPDC). The remainder were classified as No Retrospective Premenstrual Depressive Change (NoRetPDC).

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[1]Throughout this document the term "no premenstrual depressive change" (or similar variations) is used to refer to all women whose reported changes in depressive symptomatology were not severe enough to include them in "premenstrual depressive change" groups. This is not intended, however, to deny the fact that most women in this study did report at least some premenstrual depressive changes (both retrospectively and prospectively).

[2]Inclusion of these items in the Daily Rating Form (used for prospective classification) would have lengthened this measure considerably. The value of the extra information in prospective diagnosis was not considered to outweigh the disadvantage of lengthening the Daily Rating Form.

Table 2: Criteria for PAF Major Depressive Syndrome .

A. 1. Depressed or low mood: **one** of the following five items must be rated as at least mild (rated 3 to 6): Feel depressed **or** Feel sad or blue **or** Feel lonely **or** Pessimistic outlook **or** Feel "empty"

or 2. Loss of interest or pleasure: **all** of the following four items must be rated as at least mild (rated 3 to 6): Less sexual interest **and** Avoid social activities **and** Want to be alone **and** Less leisure activities

or 3. Irritable: **one** of the following two items must be rated as at least mild (rated 3 to 6): Outbursts of irritability **or** Feel "at war"

B. If depressed: at least four of the following eight items, or item scales, must be rated as at least mild (rated 3 to 6): If irritable or loss of interest or pleasure only, at least five of the eight items must be rated as at least mild (rated 3 to 6):

1. Appetite change: Loss of appetite **or** Weight gain **or** Increased appetite
2. Sleep change: Hypersomnia **or** Trouble sleeping
3. Decreased energy
4. Psychomotor change
5. Less interest: Less sexual interest **or** Avoid social activities **or** Want to be alone **or** Less leisure activities
6. Self-deprecation: Guilt feelings **or** Decrease in self-esteem
7. Concentration difficulties
8. Suicidal ideation

Table 3: Criteria for PAF Minor Depressive Syndrome

A. 1. Depressed or low mood: **one** of the following five items must be rated as at least mild (rated 3 to 6): Feel depressed **or** Feel sad or blue **or** Feel lonely **or** Pessimistic outlook **or** Feel "empty"

or 2. Loss of interest or pleasure: **all** of the following four items must be rated as at least mild (rated 3 to 6): Less sexual interest **and** Avoid social activities **and** Want to be alone **and** Less leisure activities

or 3. Irritable: **one** of the following two items must be rated as at least mild (rated 3 to 6): Outbursts of irritability **or** Feel "at war"

B. If depressed: at least four of the following eight items, or item scales, must be rated as at least mild (rated 3 to 6): If irritable or loss of interest or pleasure only, at least five of the eight items must be rated as at least mild (rated 3 to 6):

1. Appetite change: Loss of appetite **or** Weight gain **or** Increased appetite
2. Sleep change: Hypersomnia **or** Trouble sleeping
3. Decreased energy
4. Psychomotor change
5. Less interest: Less sexual interest **or** Avoid social activities **or** Want to be alone **or** Less leisure activities
6. Self-deprecation: Guilt feelings **or** Decrease in self-esteem
7. Concentration difficulties
8. Suicidal ideation
9. *Feel tearful*
10. *Brood over events*
11. *Feel insecure*
12. *Irritability/Hostility: Tend to nag* **or** *Violent* **or** *Outbursts of irritability* **or** *Feel" "at war"* **or** *Intolerant/Impatient*
13. *Dependency: Feel passive* **or** *More childlike* **or** *Seek advice*

Prospectively Reported Premenstrual Depressive Change

All women were also classified on the basis of their reponses over either two or three months of daily ratings on the PAF–Daily Ratings Form (see "Measures" chapter). As discussed previously, the extensively used and accepted method of calculating significant premenstrual change from normal in depressive symptomatology from daily ratings data of this type inappropriately attributes ratio scale properties to data that are only ordinal. Therefore, an alternate method of calculating overall significant premenstrual change from normal in depressive symptomatology was devised.

In order to maintain consistency with the method of classification used retrospectively, calculations were performed to determine the presence or absence of PAF Major or Minor Depressive Syndrome on a *daily* basis across all of the two or three months of daily ratings data. For each woman, the *percentage* increase (from the intermenstrual to premenstrual phases) of days classified as Major/Minor Depressive Syndrome was calculated for each menstrual cycle. For the purposes of these calculations, the premenstrual phase was defined as the five days prior to onset of menstruation and the intermenstrual phase was defined as the remaining days of that menstrual cycle *excluding* the days during which menstruation occurred.

To illustrate: if a woman had a 30 day cycle in which menstruation occurred for five days, her premenstrual phase would consist of the five days immediately preceding the onset of menstruation and her intermenstrual phase would consist of the remaining 20 days (excluding menstruation). If she met criteria for PAF Major or Minor Depressive Syndrome on four of the five premenstrual days (80%), and also on four of the 20 intermenstrual days (20%), she would be considered to have a 60% increase (intermenstrually to premenstrually) in depressive symptomatology. Only women who showed this pattern of at least a 20% increase in at least two menstrual cycles were categorized as Prospective Premenstrual Depressive Change (ProPDC). All others were categorized as No Prospective Premenstrual Depressive Change (NoProPDC).

This process of dual classification yielded four distinct categories of women (see Table 4).

Accurate Retrospective Perceivers of Premenstrual Depressive Change (Ret/Pro)

This group (n = 11) was comprised of women who qualified for inclusion in either PAF Major or Minor Depressive Syndrome categories from retrospective (PAF) data (RetPDC) *and* showed evidence of at least a 20% increase, intermenstrually to premenstrually, in number of days on which PAF Major or Minor Depressive Syndrome categories could be assigned from Daily Rating Form data (ProPDC).

Inaccurate Retrospective Perceivers of Premenstrual Depressive Change (Ret/NoPro)

Twenty three women who qualified, retrospectively, for classification in PAF Major or Minor Depressive Syndrome categories (RetPDC) did not show subsequent evidence of at least a 20% increase, intermenstrually, to premenstrually, in depressive symptomatology from prospective (Daily Rating Form) data (NoProPDC). They were therefore classified as Inaccurate Retrospective Perceivers of Premenstrual Depressive Change (Ret/NoPro).

Inaccurate Retrospective Perceivers of No Premenstrual Depressive Change (NoRet/Pro)

A small number of women (n = 8) who did not retrospectively report sufficient premenstrual depressive change for classification as PAF Major or Minor Depressive Syndrome (NoRetPDC) did, however, show evidence of a 20% or greater increase, intermenstrually to premenstrually, in number of days on which significant depressive change from normal was reported from prospective daily ratings data (ProPDC). These women were therefore classified as Inaccurate Retrospective Perceivers of No Premenstrual Depressive Change (NoRet/Pro).

Table 4: Distribution of Subjects using Retrospective (Ret) and Prospective (Pro) Ratings of Premenstrual Depressive Change (PDC) as Grouping Variables

	RetPDC	NoRetPDC
ProPDC	Ret/Pro n = 11	NoRet/Pro n = 8
NoProPDC	Ret/NoPro n = 23	NoRet/NoPro n = 31

Accurate Retrospective Perceivers of No Premenstrual Depressive Change (NoRet/NoPro)

Women who met neither retrospective (NoRetPDC) nor prospective (NoProPDC) criteria for inclusion in premenstrual depressive change groups (n = 31) were classified as Accurate Retrospective Perceivers of No Premenstrual Depressive Change (NoRet/NoPro).

CHAPTER II

MEASURES

Background Information and Menstrual History

This questionnaire requested basic demographic information needed to describe the subjects in each group (see Appendix A). It also included questions about the respondent's menstrual history, menstrual cycle characteristics, and oral contraceptive use. The latter, menstrual cycle and contraceptive, questions were adapted from a Menstrual History Form developed by Endicott and associates.

Millon Clinical Multiaxial Inventory (MCMI)

The MCMI (Millon, 1983) is a 175-item self-report questionnaire that requires respondents to indicate whether each statement is "true" (if it describes them) or "false" (if it does not describe them).

The MCMI yields raw scores on eight scales reflecting basic personality patterns: Schizoid, Avoidant, Dependent, Histrionic, Narcissistic, Antisocial, Compulsive, and Passive-Aggressive; three scales which reflect severe pathology in the overall structure of personality: Schizotypal, Borderline, and Paranoid; six scales representing clinical symptom syndromes of moderate severity: Anxiety, Somatoform, Hypomanic, Dysthymic, Alcohol Abuse, and Drug Abuse; and three scales representing clinical symptom syndromes of marked severity: Psychotic Thinking, Psychotic Depression, and Psychotic Delusions. Raw scores on each scale are converted to base rate scores for normative comparison and assessment of pathology.

This measure was used both as a screening device for detection of current psychiatric disturbance that would qualify for diagnosis under DSM-III (American Psychiatric Association,

1980) Axis I criteria, and as a measure of personality patterns and the presence of pathological indicators.

Diagnostic Interview Schedule (DIS)

The Diagnostic Interview Schedule (DIS; Robins, Helzer, Croughan, & Ratcliff, 1981) is a structured interview schedule that was designed to facilitate diagnosis according to DSM-III criteria (American Psychiatric Association, 1980), the Feighner criteria (Feighner, Robins, Guze, Woodruff, Winokur, & Munoz 1972), and the Research Diagnostic Criteria (Spitzer et al., 1978). This measure was used as a screening device (in conjunction with responses on the MCMI) for detection of current DSM-III Axis I psychiatric disturbance. Specifically, women who achieved a base rate score of 75 ("presence of a trait or disorder") on any of the clinical symptom syndromes of the MCMI were then interviewed using the corresponding structured interview sections of the DIS. In no case was the presence of a DSM-III Axis I psychiatric disorder confirmed from interview data.

Premenstrual Assessment Form (PAF)

This is a 95-item checklist that was developed by Halbreich and associates (1982) to measure the presence and severity of changes in mood, behaviour and physical condition during the premenstruum (see Appendix A). Each symptom is rated for change on a six-point scale from 1 (not applicable, not present at all, or no change from usual level) to 6 (extreme change). Intermediate points on the scale are described as 2 - minimal change; 3 - mild change; 4 - moderate change; and 5 - severe change.

Subjects were asked to rate each item with respect to their experience of change and degree of change from their usual (nonpremenstrual) state or level of functioning during the previous

three premenstrual phases.

All women were categorized as Retrospective Perceivers of Premenstrual Depressive Change (RetPDC) or Retrospective Perceivers of No Premenstrual Depressive Change (NoRetPDC) on the basis of their responses to the PAF during the initial assessment period using classification criteria developed by Halbreich and Endicott (1982) for PAF Major or Minor Depressive Syndromes.

Menstrual Attitudes Questionnaire (MAQ)

The MAQ (Brooks-Gunn & Ruble, 1980b) is a 33-item self-report questionnaire (see Appendix A) that requires respondents to indicate, on a seven-point scale from "disagree strongly" to "agree strongly", their agreement or disagreement with each statement about menstruation. Scores are calculated for each of the following five attitude factors: 1) menstruation as a debilitating event; 2) menstruation as a bothersome event; 3) menstruation as a natural (positive) event; 4) anticipation and prediction of the onset of menstruation; 5) denial of any effect of menstruation.

Attributional Style Questionnaire (ASQ)

This measure was designed for use in the current study (see Appendix A) and was conceptually based on a questionnaire by Peterson, Semmel, von Baeyer, Abramson, Metalsky, and Seligman (1982) which measures individual differences in the use of attributional dimensions when making attributions for depressive symptoms. The adapted questionnaire that was used in this study consisted of a list of 15 feelings taken from those items of the PAF which load onto the PAF Major and Minor Depressive Syndromes categories and six items which express the opposite, more positive, feeling of six of the aforementioned items.

Subjects were asked to vividly imagine themselves experiencing each feeling state and to indicate the extent of causal influence (to a total of ten) which they feel "other people or circumstances" and their own "personality" would usually contribute to the presence of that feeling. The same list was then repeated with the instruction to vividly imagine experiencing that feeling during the premenstruum. Causal attribution estimates were then required for "other people or circumstances", "personality", *and* "menstrual phase", again, to a total of ten.

Scores (i.e., the percentages indicated) on each type of attribution were summated to give total scores on the following variables:

1. Usual situational attribution for negative feelings.
2. Usual personality attribution for negative feelings.
3. Usual situational attribution for positive feelings.
4. Usual personality attribution for positive feelings.
5. Premenstrual situational attribution for negative feelings.
6. Premenstrual personality attribution for negative feelings.
7. Premenstrual biological attribution for negative feelings.
8. Premenstrual situational attribution for positive feelings.
9. Premenstrual personality attribution for positive feelings.
10. Premenstrual biological attribution for positive feelings.

PAF Daily Ratings Form (PAF-DRF)

This measure was designed by Endicott and Halbreich (1982) for use in daily monitoring of the presence and severity of symptom changes experienced throughout the menstrual cycle. The present version (see Appendix A) has been adapted to include only the items of the PAF which load on both the PAF Major and Minor Depressive Syndrome categories.

All women were required to complete this questionnaire daily over a period of three menstrual cycles as a prospective measure of depressive symptomatology experienced.[1] Daily monitoring began on the day following the initial assessment period and ended on the last day of the third menstrual period.

Each item was rated with respect to the degree to which the individual had experienced the feelings or behaviours described in the item on that particular day on a six-point scale ranging from 1 (not at all) to 6 (extreme). Intermediary points were described as 2 - minimal; 3 - mild; 4 - moderate; and 5 - severe. The Daily Ratings Form also required women to note the days on which they were menstruating and the type and amount of any medication taken.[2] Subjects were instructed that, in the event that the rating form could not be completed on any particular evening, they should try to complete it as early as possible on the next day.

The Hassles Scale

This measure was adapted from the 117-item questionnaire developed by Kanner, Coyne, Schaefer, and Lazarus (1981) in which subjects are required to indicate the occurrence of any items which have "hassled" them in the past month. Respondents are also required to rate each hassle on a three-point scale of severity ranging from "somewhat" through "moderately," to "extremely" severe.

In order to convert this measure for use on a daily basis, items were combined to make broader categories and/or to include several items in one question. In addition, items that

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[1]Five of the women completed daily ratings over only two full menstrual cycles. However, they were included in analyses since their prospective group classifications were unambiguous (i.e., qualified as Prospective Premenstrual Depressive Change (ProPDC) in *both* of the menstrual cycles reported).

[2]This was required to ensure that any woman who began medications that were considered confounding to the purposes of the study (e.g., anxiolytics, antidepressants) could be dropped from the study.

overlapped with those on the PAF–DRF were excluded. The resultant scale (see Appendix A) consisted of 21 items which were rated as follows: 0 ("did not happen"), 1 ("happened but was not a hassle"), 2 ("minimal hassle"), 3 ("mild hassle"), 4 ("moderate hassle"), 5 ("severe hassle"), or 6 ("extreme hassle").

Subjects were required to complete the Hassles Scale daily with respect to hassles experienced (and their severity) during the previous 24 hours. Data from this scale yielded two scores:

1. **Occurrence:** this score represents a count of items that were endorsed as occurring (irrespective of the severity of stress experienced in conjunction with that occurrence) on any one day. This score was conceptualized as a measure of the number of stressors encountered for that day.
2. **Severity:** this score was devised by calculating the total of all Hassles scores that were greater than or equal to two (i.e., severity of a Hassle was perceived as being at least minimal). This was regarded as a measure of the total severity of subjective stress experienced for that day.

CHAPTER III

PROCEDURE

All women who volunteered to participate in the study were initially screened, either by phone or in person, to establish their eligibility for inclusion in the study. Those who met the inclusionary and exclusionary criteria (outlined in "Subjects" section) were scheduled for an appointment to meet with the investigator within the seven days immediately following cessation of their next menstrual period. The procedure was explained to them and they were required to sign a Consent Form (see Appendix A) indicating their understanding of the study as laid out in the Menstrual Cycle Study document (see Appendix A) and their willingness to participate.

The following measures were administered during the initial assessment period:

1. Background and Menstrual History Information.
2. Millon Clinical Multiaxial Inventory.
3. Diagnostic Interview Schedule (where applicable).
4. Premenstrual Assessment Form.
5. Menstrual Attitudes Questionnaire.
6. Attributional Style Questionnaire.

All women were asked to complete the PAF-DRF and the Daily Hassles Rating Scale on a daily basis over the following three menstrual cycles, beginning with the following day and ending with the last day of the third menstrual period.

On completion of daily rating of symptomatology, all women were categorized on the basis of their responses on both the initial retrospective accounts of premenstrual changes and their prospective daily rating data for the purposes of statistical analyses and hypotheses testing.

Missing Data

Despite the large amount of data requested for this study, relatively little data were missing overall. Where missing data occurred in background and menstrual history data, no attempt was made to estimate data points and analyses were completed using a reduced *n*. Two menstrual history variables (cycle length and menstrual flow) were thus analysed using an *n* of 71 while height was analyzed using an *n* of 72.

Missing data from the PAF were estimated by taking the mean of all other items required for the corresponding section of the diagnostic procedure. For example: if one item included in section A.2. of the diagnostic procedure for PAF Major Depressive Syndrome (see Table 2) was missing, then it was estimated as being the average of the remaining items in section A.2. Estimation of missing PAF data was required in only four cases and, in each case, the subject's classification as No Retrospective Premenstrual Depressive Change (NoRetPDC) was unchanged following inclusion of estimated data.

All subjects provided complete data on the MAQ, but two women each had two missing ASQ data points. These data were estimated from the mean of each of those items across all subjects.

A relatively tiny amount of PAF-DRF and Hassles Scale data was missing. All missing PAF-DRF data were for full days and were therefore not estimated. Instead, percentage of days classified as PAF Major or Minor Depressive Syndrome for any menstrual phase where data were missing was calculated using only the number of days where complete data were available. In one instance, this resulted in only two of the available three months of data being used, since all daily data were missing for one premenstrual phase. In a similar way, where Hassles Scale data were missing for an entire day, no estimates were made. However, when only some data were missing from any one day, estimates were based on the average rating given to that item over the

entirety of that menstrual phase (premenstruum or intermenstruum).

Statistical Analyses

Menstrual history and background information variables were analyzed for group differenes using two-way analyses of variance and chi-squares. All analyses were performed using BMDP Statistical Software (Dixon, Brown, Engelman, Frane, Hill, Jeenrich, & Toporek, 1983).

Hypotheses concerning group differences in psychological variables were tested using two-way analyses of variance. Hypotheses relating to measures of stressors and stress experienced were tested using four-way analyses of variance for between and within group factors. Statistically significant interactions from these analyses were tested for simple main effects by performing all possible pairwise comparisons using *t*-tests and appropriately adjusted (pooled) error terms for comparisons involving both between and within group factors.

Post-hoc analyses included exact replication of analyses performed for all variables with the exception that all women who were classified (in post-hoc investigations) as "depressed overall" were excluded from the analyses. Analyses of variance were also performed on all variables using "overall depression" as a third grouping variable. Finally, for the major psychological variables (personality characteristics and pathological indicators, attitudes toward menstruation, and attributional style), averaged *t*-tests were performed.

Familywise Error Rate

For the purposes of statistical analyses, background variables, psychological variables, and measures of stress were considered to constitute three separate families of variables. In order to correct for familywise error, the *p*-value required for statistical significance was adjusted in each family according to the Bonferroni procedure whereby the overall experiment-wise error rate ($p <$

.05) is divided by the number of variables in that family to give the p–value required for statistical significance. Specifically, analyses of background information variables required a p–value of .05/7 = .007 to be considered statistically significant and major psychological variable analyses required a p–value of .05/36 = .0014. Analyses of variance of measures of stress required a p–value of .05/2 = .025, while pairwise comparisons required a p–value of .05/6 = .008.

Post–hoc two–way and three–way analyses of variance involving psychological variables required a Bonferroni correction factor of 36 (p = .0014) before statistical significance was attained.[1] Finally, averaged t–tests for major psychological variables required a familywise corrected p–value of .0014 (.05/36) since the analytical procedure involved only one overall comparison per variable.

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[1]No further correction was deemed necessary since only one post–hoc hypothesis was investigated – that of possible contamination of results by including women in the study who were found to report consistently high levels of depressive symptomatology throughout the menstrual cycle.

PART C

RESULTS

CHAPTER I

HYPOTHESIZED RELATIONSHIPS

Background and Menstrual Cycle History

The women who completed this study ranged in age from 20 to 45 years with a mean age of 33.89 years (*S.D.* = 6.15). Their average usual length of menstrual cycle was 28.34 days (*S.D.* = 3.06), with an average menstrual flow of 5.25 days (*S.D.* = 1.31). Average age at menarche was 12.64 years (*S.D.* = 1.52) and average age when menses became regular was 14.38 years (*S.D.* = 4.38). The average height and weight of these women were 164.85 centimeters (*S.D.* = 7.37) and 60.51 kilograms (*S.D.* = 10.25).

There were no significant group differences in any of these or other background and menstrual cycle characteristics. Details of analyses of variance can be found in Tables B.1 to B.7 in Appendix B. Group means and standard deviations are presented in Table 5.

Other background and menstrual cycle variables of interest were unable to be tested statistically for group differences as the Expected Values from chi-square analyses were less than the required 5.00. However, Table 6 presents percentages of women in each group who reported various background and menstrual history characteristics.

Psychological Characteristics

Personality Style and Pathological Indicators: MCMI

Results of analyses of variance performed on measures of personality styles and pathological indicators are presented in Tables B.8 to B.28 in Appendix B. A summary table of group means and standard deviations for each variable is also provided in Table 7.

Table 5: Background and Menstrual Cycle History - Group Means and Standard Deviations

		Ret/Pro	Ret/NoPro	NoRet/Pro	NoRet/NoPro
		n = 11	*n* = 23	*n* = 8	*n* = 31
Age (years)	Mean	31.36	34.91	34.88	33.77
	S.D.	5.92	4.79	7.95	6.64
Cycle length (days)	Mean	28.09	27.83	29.13	*28.62
	S.D.	3.45	3.73	2.75	2.41
Menstrual flow (days)	Mean	4.73	5.30	***6.00	**5.23
	S.D.	1.19	1.11	1.63	1.38
Height (cms)	Mean	167.41	165.00	164.16	**164.01
	S.D.	7.75	5.77	2.69	4.98
Weight (kgs)	Mean	67.85	58.87	61.03	59.03
	S.D.	15.00	9.89	10.36	7.50
Age at menarche	Mean	12.78	12.19	12.67	12.92
	S.D.	1.60	1.13	1.31	1.75
Age when regular	Mean	13.53	13.46	13.07	15.70
	S.D.	2.71	3.01	1.79	5.74

* *n* = 29; ** *n* = 30; *** *n* = 7

Table 6: Background Variables: Percentages of each group represented

	Ret/Pro *n* = 11	Ret/NoPro *n* = 23	NoRet/Pro *n* = 8	NoRet/NoPro *n* = 31
Past menstrual problems	63.64	*45.45	50.00	**50.00
Past premenstrual problems	36.36	*45.45	50.00	**23.33
Usual dysmenorrhea	100.00	100.00	87.50	87.10
Dysmenorrhea last period	90.91	91.30	75.00	58.06
Previous oral contraceptive use	72.73	82.61	75.00	77.42
Mood changes from pill	27.27	52.17	37.50	16.13
At least one pregnancy	63.63	39.13	50.00	48.39
Psychiatric history (self)	18.18	26.09	12.50	16.13
Psychiatric history (family)	18.18	18.18	12.50	25.81

* n = 22; ** n = 30

Table 7: MCMI Scales - Group Means and Standard Deviations

		Ret/Pro	Ret/NoPro	NoRet/Pro	NoRet/NoPro
		n = 11	*n* = 23	*n* = 8	*n* = 31
Schizoid	Mean	46.64	36.30	25.88	36.90
	S.D.	23.53	19.38	17.41	17.37
Avoidant	Mean	50.82	36.30	22.75	27.81
	S.D.	25.67	22.85	24.21	19.95
Dependent	Mean	57.09	38.57	35.50	35.26
	S.D.	22.82	29.50	25.33	22.61
Histrionic	Mean	52.45	66.70	70.88	62.68
	S.D.	30.60	25.73	25.65	22.45
Narcissistic	Mean	59.36	64.09	70.13	63.35
	S.D.	19.58	20.35	22.50	17.23
Antisocial	Mean	55.45	55.30	59.88	57.48
	S.D.	17.41	21.37	19.32	16.12
Compulsive	Mean	66.55	65.22	67.13	71.32
	S.D.	10.31	13.13	4.79	8.88
Passive–Aggressive*	Mean	54.82	38.74	30.88	25.45
	S.D.	26.39	21.55	14.57	13.50
Schizotypal	Mean	48.36	50.35	32.13	44.45
	S.D.	14.17	14.78	23.55	16.59
Borderline*	Mean	64.27	53.43	40.25	40.65
	S.D.	13.21	19.44	27.66	18.38
Paranoid	Mean	55.18	54.70	53.88	51.29
	S.D.	16.78	18.89	15.25	15.39
Anxiety*	Mean	78.91	69.30	49.75	56.23
	S.D.	23.53	17.92	29.63	21.34
Somatoform	Mean	65.00	65.52	64.25	59.68
	S.D.	13.78	19.36	22.60	15.88

table continued

Table 7 continued:

		Ret/Pro *n* = 11	Ret/NoPro *n* = 23	NoRet/Pro *n* = 8	NoRet/NoPro *n* = 31
Hypomanic	Mean	49.00	40.83	33.63	26.84
	S.D.	28.97	32.59	24.66	23.46
Dysthymic	Mean	62.91	63.17	48.00	49.97
	S.D.	28.38	22.88	24.25	20.25
Alcohol Abuse	Mean	47.82	29.70	30.25	24.13
	S.D.	15.37	20.32	21.91	12.53
Drug Abuse	Mean	50.27	45.26	50.25	34.68
	S.D.	22.23	21.31	17.22	21.08
Psychotic Thinking	Mean	48.01	50.17	36.50	37.13
	S.D.	18.98	11.45	15.65	20.68
Psychotic Depression*	Mean	53.91	41.17	22.25	27.06
	S.D.	11.93	20.43	23.67	20.48
Psychotic Delusions	Mean	58.09	45.96	40.75	45.68
	S.D.	12.18	16.40	21.88	16.61
Overall Total*	Mean	120.73	112.13	108.88	108.45
	S.D.	11.29	8.69	1.81	7.89

* RetPDC > NoRetPDC; $p < .0014$

Analyses revealed significant main effects (following the appropriate Bonferroni correction) of retrospective perception of premenstrual depressive changes for Passive–Aggressive ($F(1,69) = 13.59$, $p < .0004$) and Borderline ($F(1,69) = 12.55$, $p < .0007$) personality scales, for Anxiety ($F(1,69) = 13.03$, $p < .0006$) and Psychotic Depression ($F(1,69) = 18.28$, $p < .0001$) clinical syndrome scales, and in overall total MCMI score ($F(1,69) = 11.82$, $p < .0010$). In all cases, women who retrospectively perceived significant premenstrual depressive change (RetPDC) also endorsed significantly greater levels of personality and clinical pathology than did women who retrospectively perceived little or no premenstrual depressive change (NoRetPDC). No significant main effects were evident for prospective reporting of premenstrual depressive change, and no significant interactions were revealed.

Attitudes Toward Menstruation: MAQ

Tables B.29 to B.33 in Appendix B show details of analyses of variance for each variable in this measure. Group means and standard deviations are summarized in Table 8 for ease of reference.

With the exception of a significant main effect of retrospective perception of premenstrual depressive change for "menstruation as a predictable event" (RetPDC > NoRetPDC; $F(1,69) = 17.81$, $p < .0001$), no main effects or interactions were statistically significant after the Bonferroni correction for familywise error was applied.

Causal Attributional Style: ASQ

Details of analyses of variance for each variable are presented in Tables B.34 to B.43 in Appendix B. Table 9 summarizes groups means and standard deviations for these variables.

Women who retrospectively perceived significant premenstrual depressive changes (RetPDC) made significantly less situational causal attributions for negative feelings experienced during the premenstruum (PM–Negative–Situation; $F(1,69) = 12.22$, $p < .0008$) and significantly more

Table 8: Menstrual Attitude Questionnaire Scales - Group Means and Standard Deviations

		Ret/Pro	Ret/NoPro	NoRet/Pro	NoRet/NoPro
		n = 11	*n* = 23	*n* = 8	*n* = 31
Debilitating	Mean	1.39	0.91	0.65	0.30
	S.D.	0.61	0.79	1.42	1.08
Bothersome	Mean	2.44	1.99	1.40	1.55
	S.D.	0.80	1.33	1.46	1.60
Positive	Mean	4.22	4.64	4.68	4.70
	S.D.	1.00	1.51	1.52	1.03
Predictable*	Mean	4.65	4.60	3.93	3.36
	S.D.	0.78	0.50	1.32	0.96
Denial of Effects	Mean	0.97	0.70	1.41	1.27
	S.D.	0.72	0.55	1.14	0.94

* RetPDC > NoRetPDC; $p < .0014$

Table 9: Attributional Style Questionnaire Scales - Group Means and Standard Deviations

		Ret/Pro	Ret/NoPro	NoRet/Pro	NoRet/NoPro
		n = 11	*n* = 23	*n* = 8	*n* = 31
Neg-Pers	Mean	90.00	97.87	79.75	79.00
	S.D.	23.82	24.08	40.53	29.22
Pos-Pers	Mean	40.27	39.61	39.75	36.39
	S.D.	8.33	9.99	8.88	8.19
Neg-Sitn	Mean	60.00	52.13	70.00	71.00
	S.D.	23.82	24.08	40.39	29.22
Pos-Sitn	Mean	19.73	20.39	20.25	23.61
	S.D.	8.33	9.99	8.88	8.19
PM-Neg-Pers	Mean	52.91	48.78	51.50	55.71
	S.D.	19.21	20.65	20.49	25.92
PM-Pos-Pers	Mean	34.55	37.78	36.75	34.74
	S.D.	13.00	11.29	7.55	9.01
PM-Neg-Sitn*	Mean	28.82	29.17	52.13	54.52
	S.D.	16.31	15.01	26.50	33.31
PM-Pos-Sitn	Mean	20.09	20.09	19.63	23.61
	S.D.	12.79	10.83	9.40	9.19
PM-Neg-Mens**	Mean	68.45	72.00	46.38	39.81
	S.D.	24.15	21.34	26.54	31.25
PM-Pos-Mens	Mean	5.36	1.96	3.63	1.61
	S.D.	6.31	3.70	5.21	3.50

* RetPDC < NoRetPDC; $p < .0014$
** RetPDC > NoRetPDC; $p < .0014$

menstrual-phase causal attributions for negative feelings in the premenstruum (PM-Negative-Menses; $F(1,69) = 13.92$, $p < .0004$) than did women who retrospectively perceived little or no premenstrual depressive change (NoRetPDC). No other main effects or interactions were statistically significant.

Stress Variables

Analyses of stress variables were performed only on data from subjects for whom three complete months of data were available. This resulted in an overall n of 68 with the following distribution: Ret/Pro $n = 11$; Ret/NoPro $n = 20$; NoRet/Pro $n = 8$; and NoRet/NoPro $n = 29$.

Details of analyses of variance for these variables are located in Appendix B (Tables B.44 and B.45).

Occurrence

Results of a two-way analysis of variance revealed no significant main effects for either retrospective or prospective perceptions of premenstrual depressive change, nor for menstrual cycle. There were, however, significant main effects for menstrual phase ($F(1,64) = 26.47$, $p < .0000$) with a higher occurrence of stressors being reported (in all groups) during the premenstrual phase when compared with the intermenstrual phase. With the exception of menstrual phase x prospective ratings ($F(1,64) = 17.34$, $p < .0001$), no interactions were statistically significant.

Subsequent pairwise comparisons revealed that, among women who prospectively report premenstrual depressive change (ProPDC), a significantly higher number of daily stressors were reported during the premenstrual phase when compared to the intermenstrual phase ($t(36) = 3.21$, $p < .0005$). No other simple main effects were statistically significant.

Details of pairwise comparisons are given in Table B.46 (Appendix B). Means and standard deviations for each group, menstrual phase, and cycle are displayed in Table 10. The menstrual phase x prospective ratings interaction is illustrated in Figure 2.

Intensity

Results of analyses of Intensity data revealed identical patterns to those observed in the Occurrence data. Specifically, significantly greater intensities of subjective stress were reported by all women overall during the premenstrual phase, when compared to the intermenstrual phase ($F(1,64) = 29.58$, $p < .0000$), and there was a significant interaction present between prospective ratings of premenstrual depressive change and menstrual phase ($F(1,64) = 23.14$, $p < .0000$). From Figure 3 it is evident that women who prospectively report premenstrual depressive change also reported significantly higher levels of subjective stress premenstrually, when compared both to their own intermenstrual reports and to the premenstrual reports of women who prospectively report little or no premenstrual depressive change.

Means and standard deviations for each group, menstrual phase, and cycle are displayed in Table 11.

Table 10: Occurrence of Stressors - Means and Standard Deviations for Group, Menstrual Phase, and Cycle

Cycle	Menstrual Phase		Ret/Pro n = 11	Ret/NoPro n = 20	NoRet/Pro n = 8	NoRet/NoPro n = 29
1	IM*	Mean	10.41	10.33	6.47	8.02
		S.D.	4.09	4.51	3.76	4.34
	PM**	Mean	11.07	11.32	8.45	7.91
		S.D.	4.35	4.90	4.89	4.20
2	IM	Mean	9.98	10.40	6.46	7.53
		S.D.	4.45	5.24	4.14	4.47
	PM	Mean	10.87	10.51	7.70	8.03
		S.D.	4.48	5.15	4.81	5.31
3	IM	Mean	10.11	10.69	7.57	8.57
		S.D.	5.13	4.90	4.25	4.94
	PM	Mean	11.13	10.01	9.45	8.56
		S.D.	5.36	5.24	4.39	5.22

* IM = Intermenstrual; ** PM = Premenstrual

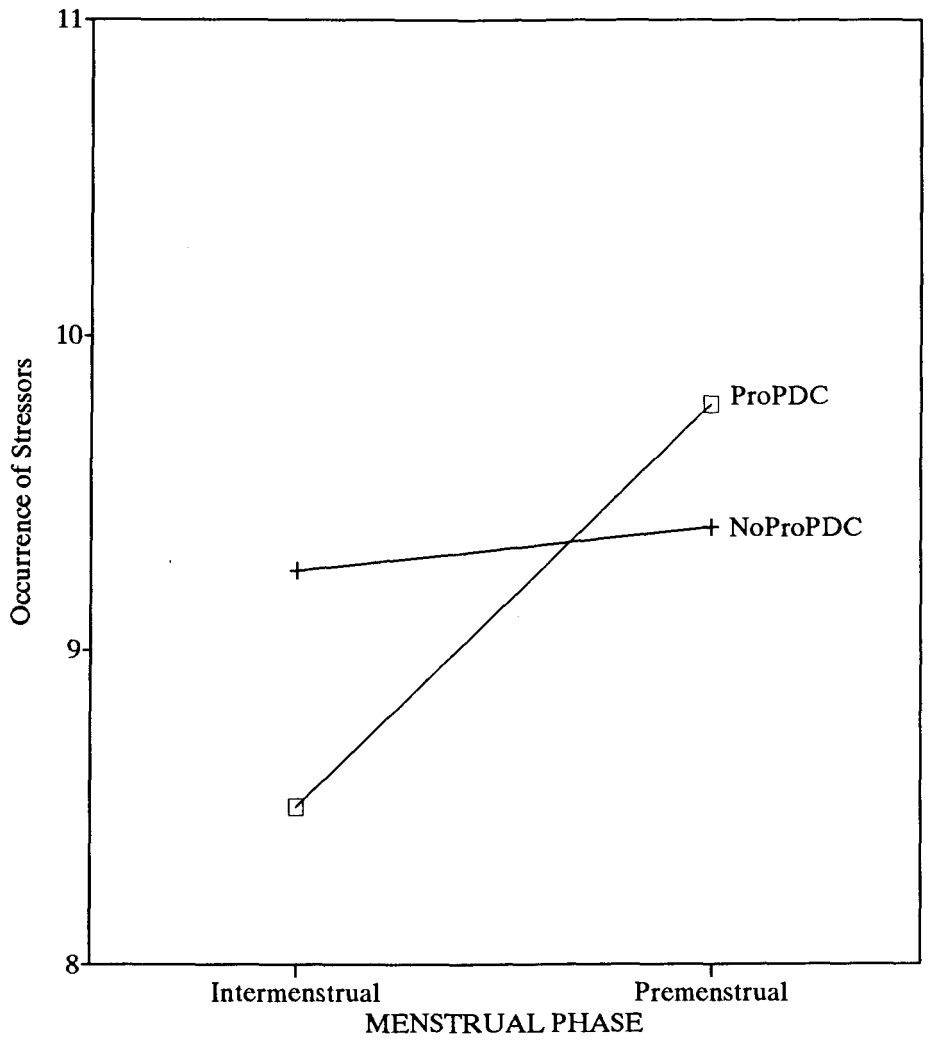

Figure 2: Occurrence of Stressors - Menstrual Phase x Prospective (Pro) Ratings Interaction

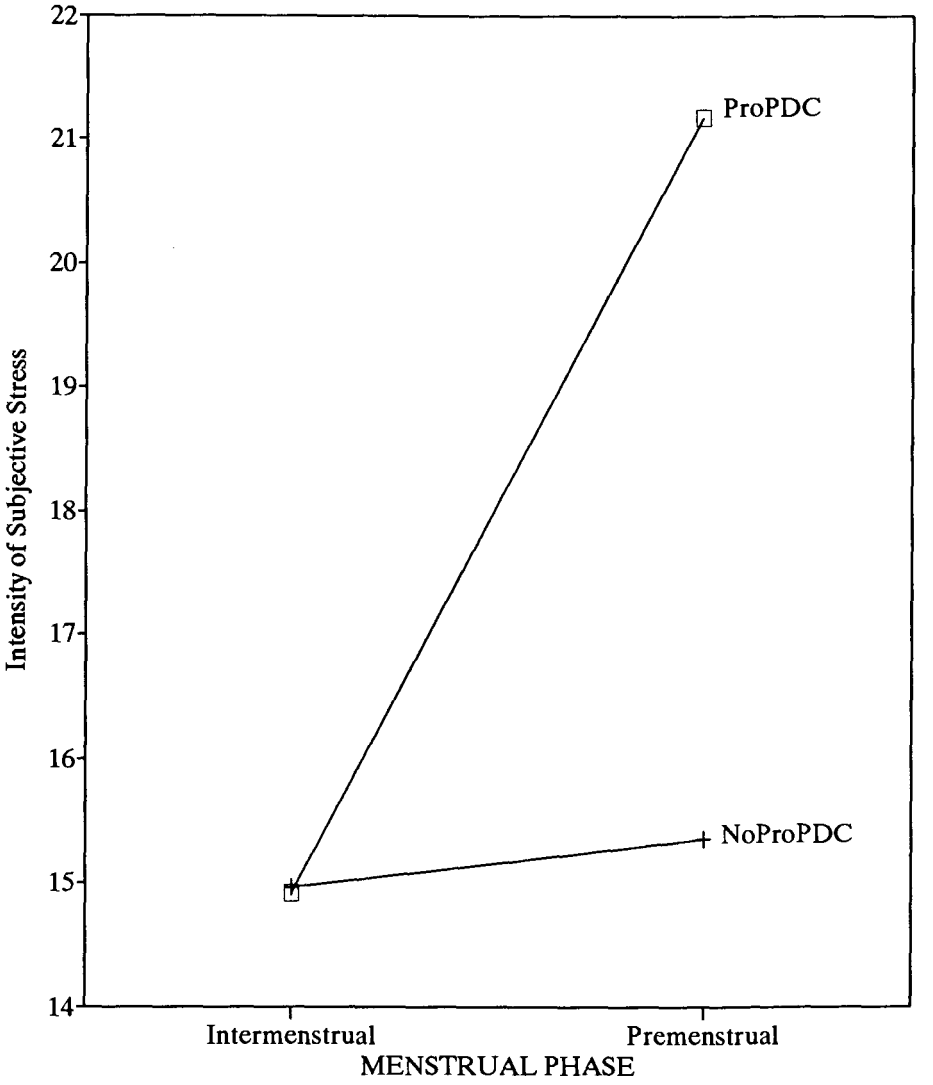

Figure 3: Intensity of Subjective Stress - Menstrual Phase x Prospective (Pro) Ratings Interaction

Table 11: Intensity of Subjective Stress - Means and Standard Deviations for Group, Menstrual Phase, and Cycle

Cycle	Menstrual Phase		Ret/Pro n = 11	Ret/NoPro n = 20	NoRet/Pro n = 8	NoRet/NoPro n = 29
1	IM*	Mean	19.05	17.17	10.32	13.05
		S.D.	10.98	12.52	6.80	12.22
	PM**	Mean	27.38	20.28	18.08	13.20
		S.D.	18.76	14.17	9.10	12.18
2	IM	Mean	20.58	17.24	8.26	10.54
		S.D.	16.34	14.05	5.42	11.65
	PM	Mean	24.84	17.85	13.48	12.21
		S.D.	23.70	15.27	8.02	12.42
3	IM	Mean	21.80	17.78	9.42	14.01
		S.D.	18.51	16.17	6.61	13.96
	PM	Mean	26.31	16.43	16.95	12.12
		S.D.	19.52	14.58	8.86	12.08

* IM = Intermenstrual; ** PM = Premenstrual

CHAPTER II

POST-HOC ANALYSES

Examination of daily ratings for all women in this study revealed that some women had a surprisingly high percentage of days during their intermenstrual phases when daily ratings for depressive change from normal met criteria for PAF Major/Minor Syndrome. Despite the fact that no subjects qualified, from initial screening measures, for a diagnosis of clinical depression, it appears that a number may, nevertheless, experience a notable degree of depressive symptoms for a significant portion of the intermenstrual phase. The question is then raised: what is the effect (if any) of inclusion of these "depressed" women in this research sample?

For all subjects, the average percentage of intermenstrual days on which ratings met criteria for PAF Major/Minor Depressive Syndrome was 18.45%. If all women who have an average of at least 30% "depressed" intermenstrual days ("depressed" group; n = 15) are removed from the subject pool, the remaining "nondepressed" women (n = 58) have an average of 8.65% "depressed" intermenstrual days. This method of grouping resulted in the distribution of subjects that is illustrated in Table 12.

Determination of the effect of inclusion of the "depressed" women in this study was attempted in three ways:

1. For each variable, all "depressed" women were removed from the data pool and analyses were repeated as described previously.
2. For each variable, analyses of variance were performed using "depression" as a third grouping variable. Because one cell (NoRet/Pro/DEP) of this 2 x 2 x 2 design was empty (see Table 12), the three-way interaction was not possible and was therefore excluded from the analysis.
3. For each of the major psychological variables (MCMI, MAQ, ASQ), the seven non-empty cells in Table 12 were treated as a one-way design and the error term from the one-way

Table 12: Distribution of Subjects using Retrospective (Ret) and Prospective (Pro) Ratings of Premenstrual Depressive Change (PDC) and Overall Depression (DEP) as Grouping Variables

	RetPDC		NoRetPDC	
	ProPDC	NoProPDC	ProPDC	NoProPDC
DEP	Ret/Pro/DEP n = 4	Ret/NoPro/DEP n = 8	NoRet/Pro/DEP n = 0	NoRet/NoPro/DEP n = 3
NoDEP	Ret/Pro/NoDEP n = 7	Ret/NoPro/NoDEP n = 15	NoRet/Pro/NoDEP n = 8	NoRet/NoPro/NoDEP n = 28

analysis was used in *t*-tests between the following pairs of groups: Ret/Pro/DEP with Ret/Pro/NoDEP; Ret/NoPro/DEP with Ret/NoPro/NoDEP; and NoRet/NoPro/DEP with NoRet/NoPro/NoDEP. The squares of these *t*'s were then averaged to yield an F (for each variable) to test for overall Depression effects. Equivalent averaged *t*-tests were not performed for stress variables because of the complex nature of the design (i.e., repeated measures).

Exclusion of Depressed Subjects

Background and Menstrual Cycle History

As in previous analyses, no significant differences were observed among groups in background and menstrual cycle variables.

Personality Style and Pathological Indicators: MCMI

The pattern of results obtained for personality style and pathological indicators was not dissimilar to that obtained in previous analyses. Specifically, there were, once again, significant main effects of retrospective perception of premenstrual depressive change for Borderline personality and Anxiety and Psychotic Depression clinical syndrome scales. However, both Passive-Aggressive personality scale and Overall Total MCMI score failed to reveal the significant main effects which were seen in previous analyses (RetPDC vs. NoRetPDC). No other main effects or interactions were statistically significant following the appropriate Bonferroni correction for familywise error.

Attitudes Toward Menstruation: MAQ

Analyses of menstrual attitude variables revealed no significant main effects or interactions. However, the one previously significant main effect for "menstruation as a predictable event" (RetPDC > NoRetPDC) was close to the *p*-value of .0014 required for significance in post-hoc

analyses.

Causal Attributional Style: ASQ

The previously significant main effect for PM-Neg-Mens (RetPDC > NoRetPDC) was duplicated in post-hoc analyses, however, the previously observed significant main effect for PM-Neg-Sitn (RetPDC < NoRetPDC) was not duplicated. As before, all other main effects and interactions failed to reach statistical significance.

Stress Variables

The pattern of results obtained previously for both Occurrence and Intensity data was repeated identically in post-hoc analyses, with significant main effects observed for menstrual cycle phase (Premenstrual > Intermenstrual), and significant interactions observed between menstrual phase and prospective ratings.

Inclusion of Depression as a Grouping Variable

Background and Menstrual Cycle History

Once again, no significant group differences in these variables were observed.

Personality Style and Pathological Indicators: MCMI

With the exception of a main effect of Depression (DEP > NoDEP) for both Avoidant personality style and Psychotic Thinking clinical syndrome scale, no main effects or interactions were statistically significant.

Attitudes Toward Menstruation: MAQ

All main effects and interactions failed to reach statistical significance.

Causal Attributional Style: ASQ

No main effects or interactions were statistically significantly, however, it is notable that the main effect of retrospective perception of premenstrual depressive change for the attribution of negative feelings occurring during the premenstruum being made to the menstrual phase (RetPDC > NoRetPDC) came close to significance.

Stress Variables

Analyses of both Occurrence and Intensity data showed the same significant relationships as previously seen (main effects of menstrual phase and menstrual phase x prospective ratings interactions), but, in both cases, additional significant relationships were also observed. Specifically, a significant main effect of Depression (DEP > NoDEP) was evident for both Occurrence and Intensity data, and a significant interaction between menstrual phase and prospective ratings was also present in both Occurrence and Intensity data.

Subsequent analysis of the simple effects involved in two-way interactions revealed reports of a significantly higher Occurrence of stressors and Intensity of stress experienced during the Premenstrual phase when compared to the Intermenstrual phase by women who prospectively report significant premenstrual depressive change (ProPDC). No other simple main effects were statistically significant.

Finally, there was a significant three-way interaction for Intensity data among Menstrual phase, Prospective ratings, and Depression. This is illustrated in Figure 4.

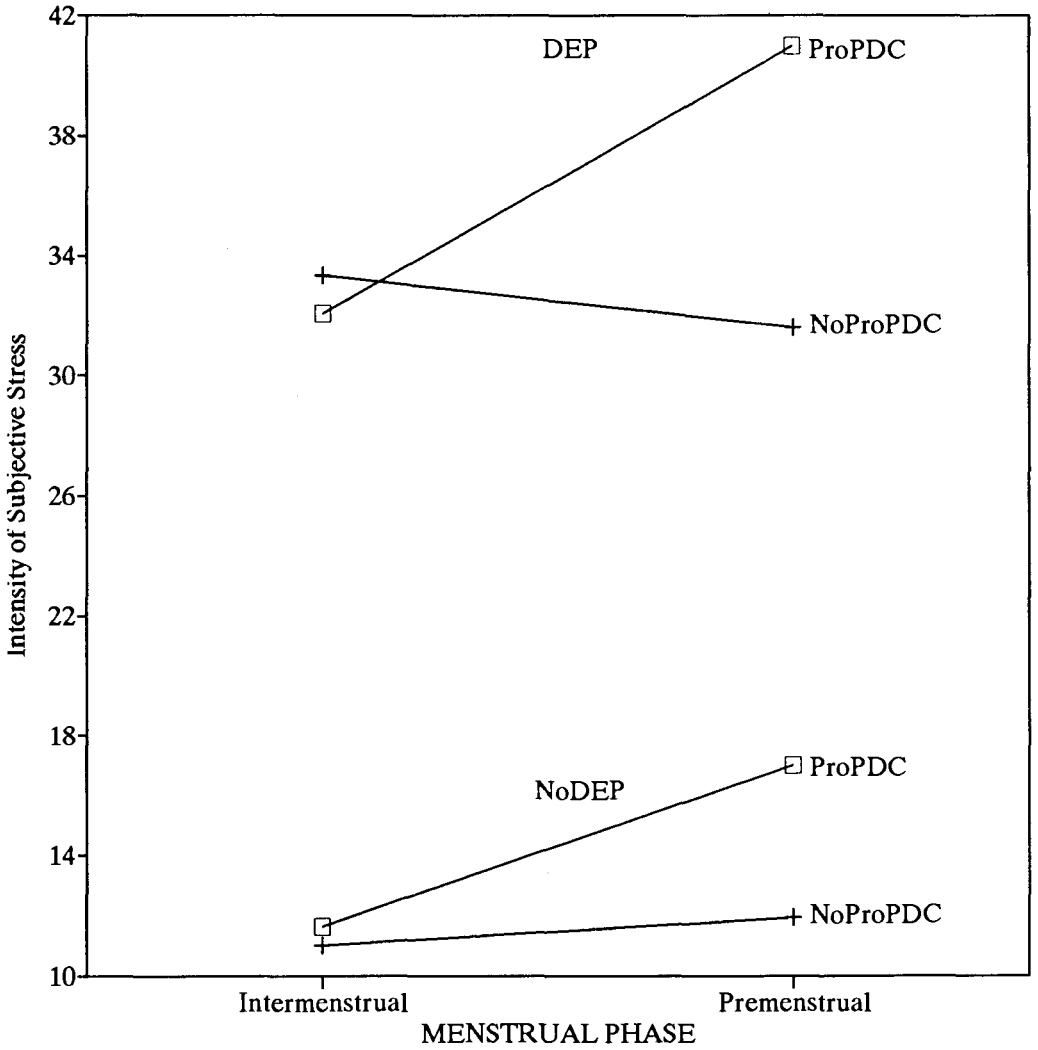

Figure 4: Intensity of Subjective Stress - Prospective (Pro) Ratings x Menstrual Phase x Depression (DEP) Interaction

Averaged *t*-tests

Averaged *t*-tests (as described previously) revealed no significant differences between the depressed groups and the nondepressed groups on any of the psychological characteristics examined (MCMI, MAQ, ASQ).

PART D

DISCUSSION

CHAPTER I

SOME METHODOLOGICAL COMMENTS

Accuracy of Retrospective Perceptions of Symptomatology and Asymptomatology

The present study underscores the importance of ensuring prospective confirmation of retrospective accounts of premenstrual symptomatology. Of 34 women who initially reported a magnitude of premenstrual change that fulfilled diagnostic criteria, 23 subsequently failed to confirm those changes on a daily basis in at least two of three menstrual cycles. Furthermore, eight women, who retrospectively reported little or no premenstrual depressive change, subsequently met criteria for diagnosis from prospective ratings in at least two out of three menstrual cycles. Where previous researchers have either included these women in asymptomatic groups by failing to secure prospective confirmation of "asymptomatic controls" or, when retrospective claims of asymptomatology were disconfirmed, have excluded these women entirely from the subject pool (e.g., McMillan & Pihl, 1987), the present research included these women in the "symptomatic" group.

It is debatable, of course, whether these women can be truly considered to warrant a "diagnosis" of premenstrual depressive change since they are apparently unaware of their systematic premenstrual increase in depressive symptomatology and are, thus, hardly likely to identify themselves for consideration of such a diagnosis. However, they *may* be aware of "intermittent depressive episodes" that they have never connected, temporally, with the menstrual cycle. In the event that they should experience these as sufficiently disruptive to seek medical or psychological help, they would doubtless benefit from knowledge of this temporal connection in terms of management of what otherwise may seem to be unpredictable depressive "jags". As long as this group of women remain either ignored or slotted into "other" diagnostic groups in menstrual cycle research, medical and psychological health care providers will likely remain

unaware of their existence and, consequently, fail to consider this temporal connection when it is not identified by the woman seeking assistance.

The present study also brings into question both the validity of research findings based on retrospective data alone, and the wisdom of continuing to include retrospective assessment techniques in clinical diagnostic settings (as implicitly endorsed by DSM-III-R). From Table 4 it is evident that, when retrospective reports are used as a predictor of subsequent prospective reports, the proportion of "hits" to "misses" is considerably less than ideal. Of 34 women who would be diagnosed as premenstrually symptomatic from retrospective data, only 11 were confirmed as such by prospective data, leaving 23 "false positives". Similarly, of 39 women who reported little or no premenstrual depressive changes retrospectively, only 31 confirmed those reports prospectively, leaving eight women (almost 20%) as "false negatives". If one accepts that a prospective measure of premenstrual symptomatology reasonably accurately reflects actual change (i.e., is a valid criterion measure), then this calls into question the validity of findings from research that has used retrospective assessment only.

Calculation of a validity index of retrospective assessment from the present data reveals a correlation between the two measures of $\phi = 0.135$. A chi-square test of independence indicates that one cannot reject the hypothesis that these two measures are independent of each other ($\chi^2(1) = 1.32$, $p > .25$). In other words, there is not sufficient evidence to assert, with confidence, that these two measures are related to one another. These statistics are obviously applicable only to the measures used in the present study. Nevertheless, it is likely that a similarly low level of predictive ability may be associated with other retrospective measures of premenstrual symptomatology.

The clinical implications of this apparently poor degree of association between retrospective and prospective measurement of premenstrual symptomatology are twofold. From a diagnostic perspective, one can question the assertion made earlier in the present study that retrospective

measures provide "valuable initial screening information" when used in conjunction with a prospective measure. With a "hit" rate of only 11 out of 34 for retrospective diagnosis of premenstrual depressive change ("true positives"), the utility of including a retrospective measure in a clinical setting in order to make a positive diagnosis "pending confirmation" is questionable. Although the proportion of "true negatives" (31 out of 39) that retrospective assessment yields is considerably more impressive than the proportion of "true positives", a "miss" rate of almost 20% for retrospective diagnosis of "no premenstrual depressive change" may justify excluding the measure even as a "screening out" device.

The implications for intervention are also worthy of note in this context. The continued use of retrospective measures as "screening out" devices, will preclude both successful identification of the fourth group in this study (those who retrospectively report little or no premenstrual depressive change but prospectively qualify for diagnosis as premenstrually symptomatic) and, in the event that it may be required, appropriate intervention for these women. Thus, there may be clinical situations where the costs of retrospective "screening" data may outweigh the potential benefits.

Nevertheless, even in the event that retrospective measures might be excluded from clinical assessment situations in a mental health or medical setting, the continued inclusion of retrospective measures in research endeavours is crucial in order to enable us to more fully understand the dynamics of psychological variables in both actual and perceived premenstrual symptomatology.

Criteria for Severity of Change Required for Inclusion in Premenstrually Symptomatic Groups

As discussed previously, both the diagnostic procedure of choice and the severity required for inclusion in premenstrually symptomatic groups has been an issue of contention and remains so. The 1983 NIMH guideline of a 30% increase in symptomatology has been adopted by many researchers, but has been applied in a variety of divergent ways including the erroneous use of

ordinal scale data as though it were on a ratio scale.

The procedure used in this study attempted to circumvent this pitfall by requiring a 20% increase (intermenstrually to premenstrually) in the proportion of days on which a diagnosis of "premenstrual depressive change" could be made from daily data. Although this percentage of increase is 10% less than that used in previous research, it was chosen because it resulted in a distribution of group membership that most closely matched that attained when the more common method was applied. Specifically, while final groups used in this study included 11 women in Ret/Pro; 23 women in Ret/NoPro; eight women in NoRet/Pro; and 31 women in NoRet/NoPro, the distribution resulting from the method commonly used with the PAF Daily Rating Form (a 30% increase in average symptomatology) would have been Ret/Pro = 17; Ret/NoPro = 16; NoRet/Pro = 13; and NoRet/NoPro = 25. Thus, stringency of diagnostic criteria was essentially sacrificed for comparability of results with other research. Nevertheless, it is apparent that this, and other research endeavours, have failed to accurately employ the criterion of a 30% increase in symptomatology that was recommended by the NIMH conference delegates in 1983.

CHAPTER II

MAJOR PSYCHOLOGICAL HYPOTHESES

This research represents an exploratory investigation of relationships between premenstrual depressive change and various psychological variables that have been previously studied in the contexts of either actual premenstrual change or perceived premenstrual change, but not in the context of both simultaneously. It was suggested that the failure to consider both contexts together may have obscured other explanatory hypotheses for both the perception and the existence of premenstrual symptomatology. The major psychological hypotheses were guided by the four major theoretical approaches and results will be discussed accordingly.

The "Psychodynamic" Hypothesis

The psychodynamic hypothesis suggests that women who experience premenstrual depressive change (ProPDC) would regard menstruation as significantly more negative ("debilitating" and "bothersome") and significantly less "positive" and ineffectual ("denial of effects") than would women who do not experience premenstrual depressive change (NoProPDC). No such significant differences were apparent in this study.

The "Psychosomatic" Hypothesis

The psychosomatic hypothesis suggests that women who experience premenstrual depressive change (ProPDC) would show significantly more evidence of neurotic personality style and other pathological indicators than would women who do not experience premenstrual depressive change (NoProPDC). Once again, the predicted main effect was not observed.

The "Stereotypic Beliefs" Hypothesis

The stereotypic beliefs hypothesis predicts that women who retrospectively report premenstrual depressive change (RetPDC) would regard menstruation as being significantly more "debilitating" and "predictable" and significantly less ineffectual ("denial of effects") than would women who retrospectively report little or no premenstrual depressive change (NoRetPDC). This hypothesis was partially supported by a significant main effect of retrospective reports (RetPDC > NoRetPDC) for menstruation as a predictable event.

The "Attribution/Labelling" Hypothesis

The attribution/labelling hypothesis predicts that women who retrospectively report premenstrual depressive change (RetPDC) would make significantly more biological (menstrual cycle) causal attributions in relation to premenstrual negative moods and significantly fewer personality or situational causal attributions than would women who retrospectively report little or no premenstrual depressive change (NoRetPDC). This hypothesis was supported in the present study by a significant main effect of retrospective reports (RetPDC > NoRetPDC) for menstrual phase causal attributions for premenstrual negative feelings, and a significant main effect for retrospective reports in the opposite direction (RetPDC < NoRetPDC) for situational causal attributions for premenstrual negative feelings.

Overall Depression as an Influencing Factor

As discussed previously, the existence of a number of women in this study who showed prospective evidence of a relatively high percentage of intermenstrual "depressive" days brings into question the "purity" of these results. Observed main effects may have been due to the influence of the depressed women rather than to differences in retrospective perceptions of premenstrual

depressive change. However, all three methods of determining this influence suggest that the results are not affected by the inclusion of these women.

The first method (exclusion of all depressed women from analyses) generally yielded findings that mirrored original results. In some cases (e.g., menstruation as a debilitating event), previously significant main effects were non-significant, but were only just so. In other cases, main effects that were significant in original analyses were clearly no longer significant. However, given the decreased cell sizes in post-hoc analyses, and the concomitant loss of power, it is not surprising to see less robust findings disappear. Of importance in this context is the observation that no previously insignificant main effects were observed to be significant in post-hoc analyses for either retrospective or prospective reports.

The second method of investigation of depression as a confounding variable yielded generally non-significant results with the exception of a main effect of depression for both Avoidant personality style and Psychotic Thinking clinical syndrome (both previously non-significant variables), and a main effect of retrospective reports for menstrual phase attributions being made for premenstrual negative moods that was close to significance.

Finally, the third method of post-hoc analysis (averaged *t*-tests) yielded non-significant results for all variables.

In general then, there is no support for the suggestion that overall depression may have been a confounding factor in these results. Significant results in post-hoc analyses do not present a markedly contrasting picture to those achieved originally and the frequent failure of post-hoc analyses to yield significant results for previously significant variables can be attributed to the loss of power, in post-hoc analyses, due to decreased cell sizes.

However, there is one notable exception - that of significant main effects for depression in two pathological indicator variables. Since the majority (12 of 15) of depressed women

retrospectively reported premenstrual depressive change (RetPDC), it is possible that the presence of depressed women in the study may have masked true population differences in the extent of endorsement of symptoms suggesting these personality and pathological indicators and thereby confounded potential significant main effects of retrospective reporting for Avoidant personality style and/or Psychotic Thinking clinical syndrome. Nevertheless, main effects of retrospective reports for these variables were not evident in analyses where depressed women were excluded (although the reduction in power may also have masked a true difference). It is likely, then, that the depressed women in this study do, indeed, display more characteristics of Avoidant personality style and Psychotic Thinking. However, despite the high representation of the depressed women in the group of retrospective perceivers of premenstrual depressive change, there is no evidence to suggest that observed main effects of retrospective reports for other major psychological variables are due to the depression factor since no other main effects of depression (or interactions) were evident in post-hoc analyses (including averaged *t*-tests).

Psychological Variables and Actual Premenstrual Depressive Change

Although the first two of the present study's hypotheses were merely guided by previous psychodynamic and psychosomatic approaches to menstrual cycle research and were in no way intended to provide definitive tests of these approaches, it is nevertheless clear that they receive no support from this research. As always, in cases of failure to refute the null hypothesis, one must first consider the possibility of Type II errors due to inadequate sample sizes. For all relevant variables, however, main effects of prospective reports were all far from reaching significance at the .05 level (see Tables B.8 to B.33) and, indeed, with few exceptions, would have been non-significant even in the absence of the Bonferroni correction for familywise error.

What factors might account for the lack of predicted group differences for personality and pathological indicators and attitudes toward menstruation? Again, one can always question the

comparability of measures used in previous research with those used in the present study. Nevertheless, if these hypothesized relationships were robust, they would surely be evident across divergent measures of the same variables. The present research, however, found no indication that personality style or attitudes toward menstruation are related to actual premenstrual symptomatology.

Perhaps the most obvious difference between early research investigating these hypotheses and the present study, is a methodological one. The present study defined "actual" premenstrual depressive change as that which is evident from prospectively reported data, irrespective of concordance with retrospective accounts. In contrast, previous researchers have tended to draw conclusions regarding relationships between actual premenstrual change and psychological variables of interest from unconfirmed retrospective accounts of premenstrual symptomatology. While some proportion of their symptomatic groups may well have confirmed, prospectively, their retrospective accounts, others would doubtless have failed to do so. Thus, much of the research that has purported to investigate *actual* symptomatology and psychological variables has, in fact, investigated retrospective *perceptions* of symptomatology and psychological variables and is more aptly included under the "stereotypic beliefs" approach (in the case of attitudes toward menstruation) or a "personality style and reporting of symptomatology" approach (in the case of personality research).

Cognitive Styles and the Retrospective Perception of Premenstrual Depressive Change

Although, once again, this research was not intended as a rigorous test, the results do offer support for both the stereotypic beliefs approach and the attributional/labelling approach. Although predicted main effects of retrospective reporting were non-significant for both menstruation as a debilitating event and denial of effects of menstruation, a significant predicted main effect was evident for menstruation as a predictable event.[1] It is likely then, that while women who

[1]However, it is notable that main effects for menstruation as a debilitating effect and denial of effects of menstruation would both have been significant in their predicted directions in

retrospectively perceive premenstrual depressive change may not necessarily experience menstruation as more debilitating or less ineffectual than others who retrospectively perceive no such change, they, nevertheless, may pay attention to their menstrual state more closely and are thus able to predict onset of menses more accurately. Presumably, if one perceives menstruation as a predictable event, one also sees the premenstruum as a predictable event and may thus also be more likely to use that as a referent in conjunction with daily living. This "skill" of greater predictive powers may be more aptly described as a superior awareness of menstrual cycle phase, presumably as a result of a belief that it is of importance to the individual. Issues surrounding avoidance (or intention) of pregnancy or psychological comfort in sexual activity notwithstanding, the question then becomes, why do some women attach a greater level of importance to their menstrual cycle than others?

Examination of the attributional styles data may shed some tentative light on this issue. Differences were evident, in the present study, in the attributional styles of women in relation to their retrospective perceptions of premenstrual depressive symptomatology. While no between-group differences were apparent for attributional styles ("biological"/menstrual phase, personality, or situational) with respect to either positive or negative feelings experienced in general, significant main effects of retrospective reporting were apparent for both situational causal attributions (RetPDC < NoRetPDC) and menstrual phase causal attributions (RetPDC > NoRetPDC) for premenstrual negative feelings. Thus, women who retrospectively perceive premenstrual depressive change tend to appeal to a type of "internal" locus of control (menstrual phase) when explaining premenstrual negative feelings, while women who retrospectively perceive little or no premenstrual depressive change turn toward an "external" locus of control (situational factors) when attributing cause for similar feelings. These results are consistent with those of Koeske and Koeske (1975) and Koeske (1975) who found that biology was considered important for explaining negative moods occurring premenstrually.

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[1](cont'd) the absence of the Bonferroni correction.

It is not surprising then, that if a woman believes that negative feelings which are coincident with the premenstruum are actually *caused* by her premenstrual state, she will likely be more aware of her menstrual phase in order to anticipate when she should begin assigning less attributional weight to personality and situational factors in relation to these feelings. Furthermore, she is likely to pay selective attention to those negative feelings and perhaps recall them selectively (and more predominantly) in the context of premenstruum-related questions about negative feelings, even when they have not, in fact, increased in frequency or duration in relation to nonpremenstrual phases of her cycle. In contrast, women who favour a situational attribution for negative feelings would have less reason to predict the premenstruum and would be less able to use the premenstruum as a salient referent when required to recall the frequency and intensity of negative feelings. Perhaps recall in the context of situational events (e.g., final exams) would result in an increase in recall of negative feelings for these women.

It is interesting to note that no main effects of prospective reporting (or interactions of both grouping variables) were evident for either attitudes toward menstruation or causal attributional style. This would suggest that, while both of these psychological variables may play a part in retrospective perceptions of symptomatology, they may be irrelevant to the occurrence of *actual* premenstrual depressive change.

CHAPTER III

STRESS VARIABLES

Occurrence of Stressors

It was hypothesized that no significant differences would be observed, either between- or within-groups, in number of daily stressors encountered in the premenstrual and intermenstrual phases of the menstrual cycle. Results, however, did not support this hypothesis. Instead, there was a significant main effect for menstrual phase (Premenstrual > Intermenstrual) and a significant menstrual phase x prospective ratings interaction in which the ProPDC group reported significantly more stressors during the premenstrual phase than they did during the intermenstrual phase.

Intensity of Subjective Stress

It was hypothesized that women who experience premenstrual depressive change (ProPDC) would report significantly higher intensity of subjective stress during the premenstrual phase when compared both to their own intermenstrual phase, and to the premenstrual phase of women who experience little or no premenstrual depressive change (NoProPDC). No other between-group or within-group differences were expected.

The observed menstrual phase x prospective reporting interaction provides support for this hypothesis, however, the presence of a significant main effect for menstrual cycle (Premenstrual > Intermenstrual) was unexpected.

Overall Depression as an Influencing Factor

As with the major psychological variables, post-hoc analyses were conducted to determine the effect, if any, of including women in this study who showed evidence of dysphoria throughout the entire menstrual cycle. Once again, both methods of analysis revealed no evidence to suggest that overall depression was a confounding factor.

When all depressed women were excluded from analyses, the pattern of results obtained in original analyses were repeated identically for both Occurrence and Intensity data. With depression included as a third grouping variable, the same significant relationships were observed once again, but with the addition of a significant main effect of depression (DEP > NoDEP) for both variables, and a significant three-way interaction of menstrual phase, prospective ratings, and depression for intensity data.

The results of these post-hoc analyses indicate that, while depression appears to have influenced the overall magnitude of both occurrence and intensity data (as evidenced by the main effect of depression for both variables), it has not confounded original significant relationships since these were also evident both when depressed women were excluded from the analyses and when they were included as a third grouping variable. As can be seen from the three-way interaction (Figure 4), the depressed women reported significantly more subjective stress both premenstrually and intermenstrually than the nondepressed women, but the pattern of the two-way interaction for menstrual phase and prospective ratings remains essentially the same for both depressed and non-depressed women.

All women in this study, regardless of grouping status, tended to report both a higher incidence of stressors and a greater intensity of subjective stress during the premenstruum than they did during the intermenstruum. However, individual analyses of the significant interactions revealed that the only group to significantly do so was the ProPDC group (see Figures 2 and 3) while the NoProPDC group, in contrast, reported only a minimal increase, intermenstrually to premenstrually, in reports of both occurrence of stressors and intensity of subjective stress. In the case of both variables, then, it is possible that the significant overall main effect observed for menstrual phase may well have been an artifact of the menstrual phase x prospective ratings interaction.

With respect to intensity data, the results were as predicted and suggest that the presence of premenstrual depressive symptomatology may influence one's ability to cope with perceived stressors and, thus, increase the degree to which the stressful event impacts on the individual. Previous research has found that depressed patients rate life events as more unpleasant than do non-depressed subjects (Schless, Schwatrz, Goetz, & Mendels, 1974; Lewinsohn & Tarkington, 1979; Hammen & Cochrane, 1981). Support for the present results is also seen in a recent study by Schmidt, Grove, Hoban, & Rubinow (1990) that found that prospectively confirmed menstrual-related mood disordered women reported a significant increase in intensity of unpleasantness of life events during the premenstruum versus the intermenstruum when compared with prospectively confirmed non-depressed control subjects,

The appearance, in the present study, of a similar pattern of results for occurrence of stressors is less easily explained. Since the actual occurrence of stressors was conceptualized, in the present study, to be an objective measure of stress encountered, this finding is doubley surprising. Clearly, if these stressors do occur randomly across the menstrual cycle, then some other factors are at play in the systematic reporting of their increased occurrence premenstrually.

Since the obvious difference between this group (ProPDC) and the other (NoProPDC) is their actual increase in depressive symptomatology premenstrually, one could suggest that their depressive affect is contributing to a perceptual distortion of events in the environment. However, closer examination of the stressors that were available for identification in the present study also raises the question of their actual degree of "objective occurrence". Items such as "interpersonal difficulties", "concern about future", and "difficulty with decisions" are perhaps not able to be as objectively evaluated as intended. It is possible that the increased depression experienced premenstrually by the ProPDC may have indeed distorted their perception of the occurrence of stressors, but it may also have contributed to the occurrence of those stressors. Clearly, if one is depressed, one is more likely to experience interpersonal difficulties, have difficulty with decisions, and perhaps even be more likely to experience concern about the future.

Although the intermenstrual to premenstrual increase in occurrence of stressors was statistically significant both overall and for the ProPDC group, one can also question the clinical significance of this finding: even in the group with the greatest intermenstrual to premenstrual increase (ProPDC), the actual change in mean number of daily stressors was from 8.50 intermenstrually to 9.78 premenstrually out of a possible choice of 21 potential stressors. However, the more recent and similar results obtained by Schmidt et al. (1990) lend some credence to the veracity of the present study's findings.

Schmidt and his colleagues administered Lewinsohn's Pleasant and Unpleasant Events Schedule (in a modified format using 111 items) to 40 women with prospectively confirmed menstrual-related mood disorders and 20 prospectively confirmed asymptomatic women during both the follicular (intermenstrual) and late luteal (premenstrual) phases of one menstrual cycle. Fifteen women from each group were retested over one menstrual cycle, two to three months after the initial testing.

Results with respect to occurrence of negative life events revealed significant main effects for menstrual phase (premenstrual > intermenstrual) and for diagnosis (mood-disordered > asymptomatic), and a menstrual phase x diagnosis interaction in which the mood-disordered women reported a significantly higher occurrence of negative life events in the premenstrual phase when compared to the intermenstrual phase. However, this interaction also revealed that mood-disordered women reported a significantly higher occurrence of negative life events in the premenstrual phase than did the asymptomatic women (but not in the intermenstrual phase).

Thus, the main effect of menstrual phase for occurrence of stressors in the present study was duplicated in Schmidt and his colleagues' work, as was the interaction between menstrual phase and diagnosis of actual premenstrual depressive change. Differences in results of the studies are apparent, however, in both Schmidt et al.'s significant main effect for diagnosis and their significant simple main effect for diagnostic group in the premenstrual phase.

Examination of the means in Schmidt et al.'s research sheds some explanatory light on these differential results. Where the present study's significantly different means were, in reality, not strikingly different (as discussed above), the intermenstrual to premenstrual difference in means for mood-disordered women in Schmidt et al.'s study was more obviously both statistically and clinically significant: averaged test-retest means were as follows - mood-disordered: premenstrual = 38.8; intermenstrual = 20.58; asymptomatic: premenstrual = 12.84; intermenstrual = 12.33. Given these figures, it is not surprising that both a main effect for diagnosis and a simple main effect for diagnosis at the premenstrual phase were observed.

It is likely then, that the apparently clinically insignificant results in the present study are worthy of consideration as reflections of real differences in the reporting of occurrence of stressors across the menstrual cycle.

Schmidt et al. (1990) concluded that

> symptoms of menstrual-related mood disorders may best be conceptualized as occurring in an experiential state that is characterized by both affective and cognitive components....While the role of life events in the experience of symptoms of menstrual-related mood disorders is unclear, the ability of life events to modulate symptoms is frequently reported. Our data suggest that reported changes in the impact of life events may as much reflect the state-related change in perception of life events as they do a direct effect of altered or stressful life circumstances. (pp. 233-234)

Results of the present study lend support to these conclusions, but offer no further explanatory assistance beyond the suggestion that depressive affect may serve to colour one's perception of specific environmental events as potential stressors and/or interact with environmental events to create stressors from otherwise nonstressful events.

CHAPTER IV

IMPLICATIONS FOR INTERVENTION AND FUTURE RESEARCH

The present research findings must be regarded with some caution pending confirmation from future research endeavours. Membership was small for both the Ret/Pro and NoRet/Pro groups and the measures used were exploratory indicators (e.g., MCMI, ASQ) that were chosen as much for expedience in administration as they were for their exactness of reflection of the constructs in question. Nevertheless, the results are encouraging and suggest that more detailed research may illuminate significant relationships.

Ideally, future research would include a larger subject pool of ProPDC women which would increase the membership of both the Ret/Pro and NoRet/Pro groups and perhaps reveal other main effects and/or interactions that may have been masked in the present research due to decreased statistical power. The use of multidimensional assessment of variables of interest would also provide clearer indications of the veracity of the present results. For example, a range of personality measures may be incorporated, along with an unmodified Attributional Style Questionnaire to investigate attributional styles across the three dimensions of internality, stability, and globality. Finally, the use of the complete Hassles and Uplifts Questionnaire would allow investigation of menstrual cycle variation in the perception of positive life stressors as well as the more negative ones investigated in this study.

Confirmation of these results would provide valuable information for use in intervention with both women who complain of premenstrual depressive symptomatology but are unable to confirm these changes prospectively, and women who are able to confirm changes as reported. For the former group, intervention may be most importantly informational: the data provided from prospective daily rating of symptomatology could be used directly as self-generated evidence that refutes the perception that they experience a cyclical increase of depressive symptomatology coincident with the premenstruum. Subsequent intervention may then focus on exploration of

characterological traits, menstrual attitudes, and/or attributional styles which may contribute to the belief that such a pattern exists.

For the latter group, self-generated daily ratings of both depressive change and stress variables may again be useful in fostering a "self-help" attitude to their depressive episodes. If the perception of an increase in both stress and stressors is seen to be related to an increase in depressive symptomatology, intervention may be directed toward coping techniques for stress experienced and self-awareness with respect to the interaction of depressive affect and environmental events. Obviously, other interventions may also be recommmended for these women, whether they be directed toward such factors as diet and exercise or, ultimately, toward some biochemical or hormonal treatment regime. However, to the extent that less invasive psychological interventions can be implemented and proven effective, such measures should be attempted before more invasive measures are taken.

Finally, as alluded to earlier, there is a further group that may benefit from the information available from daily ratings of depressive symptomatology and stress variables: those who retrospectively report little or no symptomatology but for whom prospective data reveal significant increases in depressive symptoms premenstrually. Awareness of their recurrent menstrually-related changes and the possible relationship of these changes to the perception of increased occurrence of stressors and intensity of stress may provide them with some added sense of personal control during those episodes.

Perhaps the most important finding of this study is that of the importance of a factorial approach to menstrual cycle research that incorporates both women who fail to confirm complaints of premenstrual symptomatology and the generally forgotten fourth group, those who are inaccurate in their retrospective perceptions of little or no premenstrual depressive symptomatology. Although no significant interactive effects were evident in this study with respect to major psychological variables investigated, future research with more subjects may well illuminate

differences between these and other groups. Such differences, were they revealed, may provide valuable clues to psychological interventions (when necessary) with both groups.

APPENDIX A

BACKGROUND AND MENSTRUAL HISTORY INFORMATION

IDENTIFICATION NUMBER..... **DATE**.....

Age..... Date of Birth .....

Current Weight..... Current Height(in inches).....

Highest weight ever (excluding pregnancy).....

Are you currently on any regular medication?

.....Yes .....No
If "yes", please indicate type of medication .....

A. HISTORY OF MENSTRUATION:

1. Age at onset of first menstrual period .....years.....months

2. Age when menstrual periods became regular .....years.....months

3. Number of pregnancies (whether carried full term or not) .....

4. Number of miscarriages/abortions .....

5. Have you ever sought treatment or taken anything for menstrual problems

   .....No .....Yes (please specify).....

   .....

6. Have you ever sought treatment or taken anything for Premenstrual problems (e.g., depression, headaches, breast pain)?

   .....No .....Yes (please specify).....

   .....

B. CHARACTERISTICS OF MOST RECENT MENSTRUAL CYCLE:

1. Date most recent menstrual period began .....day.....month

2. Number of days of flow (if still flowing, note this).....days

3. How heavy was the flow as compared with your usual menses? (please check one):

   .....Average flow .....Heavier than usual .....Lighter than usual

GO ON TO NEXT PAGE

4. Did your last menses start when it was expected? (please check one):

.....Yes, started when expected or within 2 days of expected date

.....No, was more than 2 days later than expected (.....days late)

.....No, was more than 2 days earlier than expected (.....days earlier)

5. Did you have dysmenorrhea (cramps or other pain) during your last menses? (please check one):

.....Absent .....Minimal .....Moderate .....Severe

C. GENERAL MENSTRUAL CYCLE CHARACTERISTICS:

1. Any disruptions in your established menstrual pattern during the past six months?

No..... Yes (please specify).....

.....

2. Regularity of cycle length during the past six months: (A cycle is timed from the first day of menses to the first day of next menses)

.....always between 21 and 38 days in length during the past 6 months

.....at least one cycle during the past 6 months was shorter than 21 days i.e., ...days

.....at least one cycle during the past 6 months was longer than 38 days i.e., ...days

3. Usual cycle length during the past 6 months (if regular) .....days

4. Usual duration of flow of menses:

.....2 days or less .....3 to 5 days .....6 days or more

5. Average intensity of flow of menses:

.....light (mostly spotting)

.....average (2–3 days of bleeding with 1–2 days of subsequent spotting)

.....heavy (4–5 days of bleeding with or without subsequent spotting)

GO ON TO NEXT PAGE

6. Dysmenorrhea (cramps or pain) during menses:

.....Never .....Rarely .....Sometimes .....Usually

Severity of pain:

.....Never any pain .....Minimal .....Moderate .....Severe

7. Onset of menses is usually:

.....gradual (spotting for a day)

.....light (continuous but light flow)

.....sudden (immediate full flow)

8. Can you generally predict the exact time of menses (e.g., know when you will start within an hour or that night)?

.....No .....Yes, within a day .....Yes, within a few hours

How can you usually tell?.....

.....

.....

D. PREMENSTRUAL CHANGES:

1. Do you usually notice changes in your mood, behaviour or physical condition premenstrually (the days before you start menses)?

.....None at all (SKIP TO "**HISTORY OF ORAL CONTRACEPTIVE USE**")

.....Slight .....Moderate .....Severe

2. How noticeable are your premenstrual changes?

.....Vague and barely noticeable

.....Clear-cut and apparent

3. How do they end?

.....Gradually

.....Abruptly

GO ON TO NEXT PAGE

4. When do your premenstrual changes end?

.....prior to the first day of menses

.....during the first day of menses

.....during the first few days of menses

E. HISTORY OF ORAL CONTRACEPTIVE USE:

1. Did you ever or do you now use oral contraceptives?

.....Never used .....Yes (please specify – note age and duration of all periods of oral contraceptive use. Note brand name, if you remember)

.....

.....

2. Did you notice any apparent effects on your mood when using oral contraceptives?

.....No .....Yes (please describe) .....

.....

.....

F. HISTORY OF PSYCHIATRIC CONTACT:

1. Have you ever received a psychiatric diagnosis?

.....No .....Yes If "yes", please indicate diagnosis (if known), when diagnosis was given, and any treatment you received (e.g., medication, hospitalization, psychotherapy):

.....

.....

2. Has any member of your immediate family ever received a psychiatric diagnosis?

.....Yes .....No

If "yes", please indicate diagnosis (if known): .....

.....

P A F

IDENTIFICATION NUMBER.....

INSTRUCTIONS:

Please focus on the physical, behavioural and mood changes which have taken place during the **PAST THREE PREMENSTRUAL PHASES**, even if the changes did not last throughout the entire premenstrual phase.

The premenstrual phase consists of the **SEVEN DAYS BEFORE THE ONSET OF MENSTRUATION**.

Think about any changes which you experience premenstrually. Then consider each item and decide whether it describes a new condition or change which **USUALLY** has occurred during your last three premenstrual periods. Circle the appropriate number to indicate the severity of change from usual self.

For example, you may become anxious premenstrually **OR**, if you are mildly anxious most of the time, the anxiety may become more severe during the premenstrual period. Both types of change should be noted.

DEFINITIONS OF THE RATINGS OF SEVERITY OF CHANGE FROM USUAL NONPREMENSTRUAL STATE

1. Not applicable, not present at all, or no change from usual level
2. Minimal change (only slightly apparent to you, others would probably not be aware of change)
3. Mild change (definitely apparent to you and perhaps to others who know you well)
4. Moderate change (clearly apparent to you and/or others who know you well)
5. Severe change (very apparent to you and/or others who know you well)
6. Extreme change (the degree of change in severity is so different from your usual state that it is very apparent to you **OR** even people who do not know you well might notice)

1 - No change;
2 - Minimal change;
3 - Mild change;
4 - Moderate change;
5 - Severe change;
6 - Extreme change.

	Changes Present During Premenstrual Period	Usual Level of Change During Last Three Premenstrual Periods
1.	Have rapid changes in mood (e.g., laughing, crying, angry, happy) all within the same day	1 2 3 4 5 6
2.	Have decreased energy or tend to fatigue easily	1 2 3 4 5 6
3.	Have decreased ability to coordinate fine movements, poor motor coordination or clumsiness	1 2 3 4 5 6
4.	Feel anxious or more anxious	1 2 3 4 5 6
5.	Sleep too much or have difficulty getting up in the morning or from naps	1 2 3 4 5 6
6.	Have a feeling of malaise (i.e., general, nonspecific bad feeling or vague sense of mental or physical ill health)	1 2 3 4 5 6
7.	Feel jittery or restless	1 2 3 4 5 6
8.	Have loss of appetite	1 2 3 4 5 6
9.	Have pain, tenderness, enlargement, or swelling of breasts	1 2 3 4 5 6
10.	Have headaches or migraines	1 2 3 4 5 6
11.	Be more easily distracted (i.e., attention shifts easily and rapidly)	1 2 3 4 5 6
12.	Tend to have accidents, fall, cut self, or break things unintentionally	1 2 3 4 5 6
13.	Have nausea or vomiting	1 2 3 4 5 6
14.	Show physical agitation (e.g., fidgeting, hand wringing, pacing, can't sit still)	1 2 3 4 5 6

GO ON TO NEXT PAGE

1 - No change;
2 - Minimal change;
3 - Mild change;
4 - Moderate change;
5 - Severe change;
6 - Extreme change.

	Changes Present During Premenstrual Period	Usual Level of Change During Last Three Premenstrual Periods
15.	Have feelings of weakness	1 2 3 4 5 6
16.	Feel that you just "can't cope" or are overwhelmed by ordinary demands	1 2 3 4 5 6
17.	Feel insecure	1 2 3 4 5 6
18.	Have "flare-ups" of allergy, breathing difficulties, stuffy feeling, or watery discharge from the nose (specify)	1 2 3 4 5 6
19.	Feel depressed	1 2 3 4 5 6
20.	Have periods of dizziness, faintness, vertigo (room spinning), ringing in the ears, numbness, tingling of skin, trembling, lightheadedness (specify)	1 2 3 4 5 6
21.	Tend to "nag" or quarrel over unimportant things	1 2 3 4 5 6
22.	Think of what it would be like to do something to self, like crash the car, wish to go to sleep and not wake up, or have thoughts of death or suicide	1 2 3 4 5 6
23.	Feel less desire to talk or move about (it takes effort to do so)	1 2 3 4 5 6
24.	Become more forgetful	1 2 3 4 5 6
25.	Feel dissatisfied with personal appearance	1 2 3 4 5 6
26.	Become violent with people or things (e.g., deliberately break things, hit someone)	1 2 3 4 5 6

GO ON TO NEXT PAGE

1 - No change;
2 - Minimal change;
3 - Mild change;
4 - Moderate change;
5 - Severe change;
6 - Extreme change.

	Changes Present During Premenstrual Period	Usual Level of Change During Last Three Premenstrual Periods					
27.	Take naps during the day or have an overwhelming desire to do so	1	2	3	4	5	6
28.	Feel sense of unreality, like in a dream, unreal, etc	1	2	3	4	5	6
29.	Feel pounding of heart or have rapid heartbeat	1	2	3	4	5	6
30.	Get more enjoyment or excitement out of little things	1	2	3	4	5	6
31.	Have difficulty concentrating	1	2	3	4	5	6
32.	Feel confused	1	2	3	4	5	6
33.	Have lowered judgement (i.e., realize judgement was less good than usual when looking back on decisions made during the premenstrual period	1	2	3	4	5	6
34.	Feel passive, want others to make decisions, to take charge, etc	1	2	3	4	5	6
35.	Have an increased feeling of well being	1	2	3	4	5	6
36.	Have a lack of self-control	1	2	3	4	5	6
37.	Tend to become more childlike	1	2	3	4	5	6
38.	Tend to feel or be tearful, weep, or cry	1	2	3	4	5	6
39.	Feel need to urinate more frequently or have an increased amount of urine	1	2	3	4	5	6
40.	Become constipated	1	2	3	4	5	6
41.	Tend to be self-indulgent in use of time, spending money, eating, etc	1	2	3	4	5	6

GO ON TO NEXT PAGE

1 - No change;
2 - Minimal change;
3 - Mild change;
4 - Moderate change;
5 - Severe change;
6 - Extreme change.

	Changes Present During Premenstrual Period	Usual Level of Change During Last Three Premenstrual Periods
42.	Have episodes of impulsive behaviour	1 2 3 4 5 6
43.	Tend to smoke more, drink more alcohol or use "drugs of abuse" (e.g., "pot", "speed", etc.)	1 2 3 4 5 6
44.	Feel under stress	1 2 3 4 5 6
45.	Pick at, bite or scratch skin, or bite fingernails	1 2 3 4 5 6
46.	Have mood swings from high to low or low to high	1 2 3 4 5 6
47.	Tend to become "hysterical" if something upsets you	1 2 3 4 5 6
48.	Have guilt feelings	1 2 3 4 5 6
49.	Feel "empty"	1 2 3 4 5 6
50.	Have outburst of "irritability" or bad temper	1 2 3 4 5 6
51.	Feel sad or blue	1 2 3 4 5 6
52.	Have tired legs (weak, sore, tremble	1 2 3 4 5 6
53.	Tend to have backaches, joint and muscle pains or stiffness	1 2 3 4 5 6
54.	Family or friends know "she is in one of her moods today"	1 2 3 4 5 6
55.	Feel "at war" on awakening or have complaints or outbursts about old irritants	1 2 3 4 5 6
56.	Act spiteful	1 2 3 4 5 6

GO ON TO NEXT PAGE

1 - No change;
2 - Minimal change;
3 - Mild change;
4 - Moderate change;
5 - Severe change;
6 - Extreme change.

	Changes Present During Premenstrual Period	Usual Level of Change During Last Three Premenstrual Periods
57.	Feel lonely	1 2 3 4 5 6
58.	Urinate less frequently or in lesser amounts	1 2 3 4 5 6
59.	Have weight gain	1 2 3 4 5 6
60.	Tend to be intolerant or impatient or to lose the ability to respond to or understand the faults, needs, or errors of others	1 2 3 4 5 6
61.	Tend to be overtalkative	1 2 3 4 5 6
62.	Have relatively steady abdominal heaviness, discomfort, or pain	1 2 3 4 5 6
63.	Have increased sexual activity or interest (fantasy, with self, with others)	1 2 3 4 5 6
64.	Have trouble sleeping	1 2 3 4 5 6
65.	Have intermittent pain or cramps in the abdomen	1 2 3 4 5 6
66.	Have a decrease in self-esteem (i.e., don't feel good about self or feel a failure)	1 2 3 4 5 6
67.	Tend to blame others for problems (personal, at home, work, school, etc)	1 2 3 4 5 6
68.	Have increase in activity, organization, efficiency, or involvement socially, at home or work	1 2 3 4 5 6
69.	Tend to brood over unpleasant events	1 2 3 4 5 6
70.	Have skin problems such as acne, pimples, etc	1 2 3 4 5 6

GO ON TO NEXT PAGE

1 - No change;
2 - Minimal change;
3 - Mild change;
4 - Moderate change;
5 - Severe change;
6 - Extreme change.

	Changes Present During Premenstrual Period	Usual Level of Change During Last Three Premenstrual Periods
71.	Have edema, swelling, puffiness, or "water retention"	1 2 3 4 5 6
72.	Stay at home more	1 2 3 4 5 6
73.	Have less sexual interest or activity (fantasy, self, others)	1 2 3 4 5 6
74.	Tend to avoid social activities	1 2 3 4 5 6
75.	Feel bloated	1 2 3 4 5 6
76.	Have lowered performance, output, efficiency or ease, in tasks at work, at home, or with hobbies, etc	1 2 3 4 5 6
77.	Miss time at work because of premenstrual changes	1 2 3 4 5 6
78.	Want to be alone	1 2 3 4 5 6
79.	Feel a lack of inspiration and creativity	1 2 3 4 5 6
80.	Crave specific foods (sweets, bread, chocolate, pickles, etc.) (specify)	1 2 3 4 5 6
81.	Have an increase in appetite or tend to eat more	1 2 3 4 5 6
82.	Feel worse in morning	1 2 3 4 5 6
83.	Pay less attention to physical appearance	1 2 3 4 5 6
84.	Feel cold and/or more sensitive to temperature change	1 2 3 4 5 6

GO ON TO NEXT PAGE

1 - No change;
2 - Minimal change;
3 - Mild change;
4 - Moderate change;
5 - Severe change;
6 - Extreme change.

Changes Present During Premenstrual Period	Usual Level of Change During Last Three Premenstrual Periods
85. Have bursts of energy or feel more energetic	1 2 3 4 5 6
86. Become more sensitive to, or intolerant of, personal rejection of self or one's work	1 2 3 4 5 6
87. Feel more affectionate	1 2 3 4 5 6
88. Tend to seek advice more often, or about simple matters	1 2 3 4 5 6
89. Have pessimistic outlook	1 2 3 4 5 6
90. Drink more coffee, tea, or cold drinks with caffeine (cola, rootbeer, etc)	1 2 3 4 5 6
91. Feel pain or discomfort during intercourse	1 2 3 4 5 6
92. Do less housework (cleaning, care of clothes, etc.)	1 2 3 4 5 6
93. Spend less time at leisure activities (hobbies, TV, reading)	1 2 3 4 5 6
94. Have "flare up" or appearance of cold sores, diarrhea, belching, spontaneous bruises, varicose veins, chest pain, hemorrhoids, tingling, epilepsy ("fits"), sensitivity of skin to sun specify)	1 2 3 4 5 6
95. Have an increase in eye problems or changes in vision (e.g., sty, redness, watering, mistiness, discomfort, sensitivity to light) (specify)	1 2 3 4 5 6

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In order to obtain a good comparison of your premenstrual state, as compared to your usual state, it would be helpful to have a narrative description of the differences, if any, between these two times.

M A Q

IDENTIFICATION NUMBER.....

INSTRUCTIONS:

Using the scale which appears below, please indicate, by circling the appropriate number beside each statement, the exent to which you agree or disagree with the following statements.

1	2	3	4	5	6	7
DISAGREE STRONGLY			NEITHER DISAGREE NOR AGREE			AGREE STRONGLY

1.	A woman's performance in sports is not affected negatively by menstruation.....	1	2	3	4	5	6	7
2.	I feel as fit during menstruation as I do during any other time of the month.....	1	2	3	4	5	6	7
3.	Menstruation is something I just have to put up with.....	1	2	3	4	5	6	7
4.	The recurrent monthly flow of menstruation is an external indication of a woman's general good health.....	1	2	3	4	5	6	7
5.	Most women show a weight gain just before or during menstruation.....	1	2	3	4	5	6	7
6.	Cramps are bothersome only if one pays attention to them.....	1	2	3	4	5	6	7
7.	Women are more tired than usual when they are menstruating.....	1	2	3	4	5	6	7
8.	Women just have to accept the fact that they may not perform as well when they are menstruating.....	1	2	3	4	5	6	7
9.	Menstruation provides a way for me to keep in touch with my body.....	1	2	3	4	5	6	7
10.	Menstruation is a reoccurring affirmation of womanhood.....	1	2	3	4	5	6	7

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1	2	3	4	5	6	7
DISAGREE STRONGLY			NEITHER DISAGREE NOR AGREE			AGREE STRONGLY

11.	My own moods are not influenced in any major way by the phase of my menstrual cycle	1	2	3	4	5	6	7
12.	I barely notice the minor physiological effects of my menstrual periods	1	2	3	4	5	6	7
13.	I expect extra consideration from my friends when I am menstruating	1	2	3	4	5	6	7
14.	I realize that I cannot expect as much of myself during menstruation compared to the rest of the month	1	2	3	4	5	6	7
15.	In some ways, I enjoy my menstrual periods	1	2	3	4	5	6	7
16.	I can tell my period is approaching because of breast tenderness, backache, cramps, or other physical signs	1	2	3	4	5	6	7
17.	Others should not be critical of a woman who is easily upset before or during her menstrual period	1	2	3	4	5	6	7
18.	The physiological effects of menstruation are normally no greater than other usual fluctuations in physical state	1	2	3	4	5	6	7
19.	I don't believe my menstrual period affects how well I do on intellectual tasks	1	2	3	4	5	6	7
20.	Men have a real advantage in not having the monthly interruption of a menstrual period	1	2	3	4	5	6	7
21.	Menstruation is an obvious example of the rhythmicity which pervades all of life	1	2	3	4	5	6	7
22.	I am more easily upset during my menstrual periods than at other times of the month	1	2	3	4	5	6	7
23.	A woman who attributes her irritability to her approaching menstrual period is neurotic	1	2	3	4	5	6	7

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	1	2	3	4	5	6	7
	DISAGREE STRONGLY			NEITHER DISAGREE NOR AGREE			AGREE STRONGLY

24.	I don't allow the fact that I'm menstruating to interfere with my usual activities	1	2	3	4	5	6	7
25.	I hope it will be possible some day to get a menstrual period over within a few minutes	1	2	3	4	5	6	7
26.	Menstruation allows women to be more aware of their bodies	1	2	3	4	5	6	7
27.	I have learned to anticipate my menstrual period by the mood changes which precede it	1	2	3	4	5	6	7
28.	Women who complain of menstrual distress are just using that as an excuse	1	2	3	4	5	6	7
29.	Menstruation can adversely affect my performance in sports	1	2	3	4	5	6	7
30.	Avoiding certain activities during menstruation is often very wise	1	2	3	4	5	6	7
31.	The only thing menstruation is good for is to let me know I'm not pregnant	1	2	3	4	5	6	7
32.	Most women make too much of the minor physiological effects of menstruation	1	2	3	4	5	6	7
33.	Premenstrual tension/irritability is all in a woman's head	1	2	3	4	5	6	7

A S Q

IDENTIFICATION NUMBER.....

INSTRUCTIONS:

On the following pages you will find a list of different feelings. Please try to vividly imagine yourself experiencing each of these feelings and then decide, using the scale below, the extent to which you feel it would be due to each of the following:

1. yourself (i.e. your personality)

2. other people or circumstances

PLEASE NOTE THAT THE TWO ESTIMATES SHOULD ADD UP TO 10

EXAMPLES:
a) if you think that one or the other would likely be *totally* responsible for that feeling then rate that one "10" and rate the other one "0".

b) if you feel that one or the other would likely be *mostly* responsible but not completely, then rate that one, say, "8" and rate the other one "2".

	FEELING	ESTIMATES OF CAUSAL INFLUENCE
1.	You have little energy and you feel tired and weak	Personality .....
		Other people or circumstances .....
		10
2.	You feel pessimistic	Personality .....
		Other people or circumstances .....
		10
3.	You feel fidgety, agitated and restless	Personality .....
		Other people or circumstances .....
		10
4.	You are feeling happy	Personality .....
		Other people or circumstances .....
		10

GO ON TO NEXT PAGE

5. You are having difficulty concentrating

Personality .....

Other people or circumstances .....

10

6. You are feeling guilty

Personality .....

Other people or circumstances .....

10

7. You feel depressed

Personality .....

Other people or circumstances .....

10

8. Your self-esteem is high

Personality .....

Other people or circumstances .....

10

9. You are feeling irritable and bad-tempered

Personality .....

Other people or circumstances .....

10

10. You feel sad

Personality .....

Other people or circumstances .....

10

11. You feel "at war" with the world

Personality .....

Other people or circumstances .....

10

12. You feel like being sociable

Personality .....

Other people or circumstances .....

10

GO ON TO NEXT PAGE

13. You are having trouble sleeping

Personality .....

Other people or circumstances .....

10

14. You feel lonely

Personality .....

Other people or circumstances .....

10

15. Your self-esteem is low

Personality .....

Other people or circumstances .....

10

16. You feel at peace with the world

Personality .....

Other people or circumstances .....

10

17. You have lowered sexual interest

Personality .....

Other people or circumstances .....

10

18. You feel like avoiding social activities

Personality .....

Other people or circumstances .....

10

19. You feel calm, restful, and contented

Personality .....

Other people or circumstances .....

10

20. You feel like being alone

Personality .....

Other people or circumstances .....

10

21. You are feeling optimistic

Personality .....

Other people or circumstances .....

10

GO ON TO NEXT PAGE

On the following pages you will find the same list of feelings.
This time please try to vividly imagine yourself experiencing these feelings **DURING THE WEEK BEFORE YOU ARE DUE TO BEGIN MENSTRUATING** and then decide, using the scale below, the extent to which you think that feeling would be due to each of the following:

1. yourself (i.e., personality)
2. other people or circumstances
3. your menstrual phase

AGAIN, PLEASE NOTE THAT THE THREE ESTIMATES SHOULD ADD UP TO 10
EXAMPLES:
a) you may feel that one is totally responsible ("10") and the other two not at all responsible ("0" and "0").

b) one may be almost completely responsible (e.g., "9") with another having *some* influence (e.g., "1") and the third having no influence ("0").

c) one may be about half responsible ("5") with another one somewhat less responsible (e.g., "3") and the third one even less responsible ("2").

	FEELING	ESTIMATES OF CAUSAL INFLUENCE
1.	You have little energy and you feel tired and weak	Personality .....
		Other people or circumstances .....
		Menstrual phase .....
		10
2.	You feel pessimistic	Personality .....
		Other people or circumstances .....
		Menstrual phase .....
		10
3.	You feel fidgety, agitated and restless	Personality .....
		Other people or circumstances .....
		Menstrual phase .....
		10

GO ON TO NEXT PAGE

4. You are feeling happy

Personality .....

Other people or circumstances .....

Menstrual phase .....

10

5. You are having difficulty concentrating

Personality .....

Other people or circumstances .....

Menstrual phase .....

10

6. You are feeling guilty

Personality .....

Other people or circumstances .....

Menstrual phase .....

10

7. You feel depressed

Personality .....

Other people or circumstances .....

Menstrual phase .....

10

8. Your self-esteem is high

Personality .....

Other people or circumstances .....

Menstrual phase .....

10

9. You are feeling irritable and bad-tempered

Personality .....

Other people or circumstances .....

Menstrual phase .....

10

GO ON TO NEXT PAGE

10. You feel sad

Personality .....

Other people or circumstances .....

Menstrual phase .....

10

11. You feel "at war" with the world

Personality .....

Other people or circumstances .....

Menstrual phase .....

10

12. You feel like being sociable

Personality .....

Other people or circumstances .....

Menstrual phase .....

10

13. You are having trouble sleeping

Personality .....

Other people or circumstances .....

Menstrual phase .....

10

14. You feel lonely

Personality .....

Other people or circumstances .....

Menstrual phase .....

10

15. Your self-esteem is low

Personality .....

Other people or circumstances .....

Menstrual phase .....

10

GO ON TO NEXT PAGE

16. You feel at peace with the world

Personality .....

Other people or circumstances .....

Menstrual phase .....

10

17. You have lowered sexual interest

Personality .....

Other people or circumstances .....

Menstrual phase .....

10

18. You feel like avoiding social activities

Personality .....

Other people or circumstances .....

Menstrual phase .....

10

19. You feel calm, restful, and contented

Personality .....

Other people or circumstances .....

Menstrual phase .....

10

20. You feel like being alone

Personality .....

Other people or circumstances .....

Menstrual phase .....

10

21. You are feeling optimistic

Personality .....

Other people or circumstances .....

Menstrual phase .....

10

DAILY RATING FORM

IDENTIFICATION NUMBER.....

DATE STARTED..... **DATE ENDED.....**

INSTRUCTIONS:

There are 22 items listed on the following pages.

1. Start your ratings in the column with the correct day of the week for the first day's ratings.

2. Rate *each item each day* for a total of 22 items.

3. Make the ratings each evening before going to sleep.

4. If you have taken any medication on that day, please note this and indicate on the last page the type and amount of medication taken.

5. The ratings for each item should indicate the degree to which you experienced the fellings or behaviours described in the item on that particular day.

6. The levels of severity for rating each item are given at the top of each page.

7. Each form will last for one week's ratings (the first one completed may last for less than a week depending on the day of the week on which you begin ratings).

8. It is usually a good idea to "post" the ratings where you will see them each evening (e.g., on the closet door, on the door of the medicine cabinet, on the night table beside the bed).

9. If you forget to make the ratings on any evening, try to do it as early as possible on the next day.

10. Please include the date started and date ended on the top of this page.

PLEASE BE SURE TO RATE A TOTAL OF 22 ITEMS DAILY

SEVERITY: 1=Not at all; 2=Minimal; 3=Mild; 4=Moderate; 5=Severe; 6=Extreme

		DAY OF THE WEEK						
		MON	TUE	WED	THU	FRI	SAT	SUN
1.	Have decreased energy or tend to fatigue easily	___	___	___	___	___	___	___
2.	Sleep too much or have difficulty getting up in the morning or from naps	___	___	___	___	___	___	___
3.	Have loss of appetite	___	___	___	___	___	___	___
4.	Show physical agitation (e.g. fidgeting, hand wringing, pacing, can't sit still)	___	___	___	___	___	___	___
5.	Feel depressed	___	___	___	___	___	___	___
6.	Think of what it would be like to do something to self, like crash the car, wish to go to sleep and not wake up, or have thoughts of death or suicide	___	___	___	___	___	___	___
7.	Feel less desire to talk or move about (it takes an effort to do so)	___	___	___	___	___	___	___
8.	Have difficulty concentrating	___	___	___	___	___	___	___
9.	Have guilt feelings	___	___	___	___	___	___	___
10.	Have outburst of "irritability" or bad temper	___	___	___	___	___	___	___
11.	Feel sad or blue	___	___	___	___	___	___	___
12.	Feel "at war" on awakening or have complaints or outbursts about old irritants	___	___	___	___	___	___	___
13.	Feel lonely	___	___	___	___	___	___	___
14.	Have weight gain	___	___	___	___	___	___	___
15.	Have trouble sleeping	___	___	___	___	___	___	___
16.	Have a decrease in self-esteem (i.e., don't feel good about self or feel a failure)	___	___	___	___	___	___	___

GO ON TO NEXT PAGE

SEVERITY: 1=Not at all; 2=Minimal; 3=Mild; 4=Moderate; 5=Severe; 6=Extreme

		DAY OF THE WEEK						
		MON	TUE	WED	THU	FRI	SAT	SUN
17.	Have less sexual interest or activity (fantasy, self, others)	___	___	___	___	___	___	___
18.	Tend to avoid social activities	___	___	___	___	___	___	___
19.	Want to be alone	___	___	___	___	___	___	___
20.	Have an increase in appetite or tend to eat more	___	___	___	___	___	___	___
21.	Have a pessimistic outlook	___	___	___	___	___	___	___
22.	Spend less time at leisure activities	___	___	___	___	___	___	___
	ARE YOU MENSTRUATING?	___	___	___	___	___	___	___
	HAVE YOU TAKEN ANY MEDICATION TODAY?	___	___	___	___	___	___	___

GO ON TO NEXT PAGE

If you have taken any medication during the day, please indicate what kind and the amount taken (e.g., Tylenol #1, 2 tablets, twice during the day). Continue on the back of this page if necessary.

MON.....

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TUE.....

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WED.....

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THU.....

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FRI.....

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SAT.....

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SUN.....

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HASSLES SCALE

IDENTIFICATION NUMBER.....

DATE STARTED..... **DATE ENDED:**.....

INSTRUCTIONS:

Hassles are irritants that can range from minor annoyances to fairly major pressures, problems, or difficulties. They can occur few or many times.

Listed on the following pages are a number of ways in which a person can feel hassled.

Each evening, after you have completed the Daily Ratings Form, please read each item on the Hassles Scale and decide if that hassle happened to you **IN THE PAST 24 HOURS**. If it has, then please choose the level of severity (from the SEVERITY SCALE below) which best describes that hassle and write the appropriate number in the space on the right hand side in that day's column.

If a particular event has **NOT** happened to you in the past 24 hours then write in a "0" for that day beside that item.

SEVERITY SCALE

0 = Did not happen.
1 = Happened but was not a hassle.
2 = Minimal hassle.
3 = Mild hassle.
4 = Moderate hassle.
5 = Severe hassle.
6 = Extreme hassle.

SEVERITY RATINGS: 0=Didn't happen; 1=Not a hassle; 2=Minimal; 3=Mild; 4=Moderate; 5=Severe; 6=Extreme.

	HASSLES	DAY OF THE WEEK						
		MON	TUE	WED	THU	FRI	SAT	SUN
1.	Financial worries (e.g., not enough money for basics; debts; job insecurity).....	___	___	___	___	___	___	___
2.	Ill-health or health concerns (i.e., your own or others').....	___	___	___	___	___	___	___
3.	Concern about the future (e.g., health, job, retirement, relationships).....	___	___	___	___	___	___	___
4.	Household maintenance (e.g., cleaning, cooking, shopping, yardwork, care of pets).....	___	___	___	___	___	___	___
5.	Problems at work (e.g., over-worked, dissatisfaction).....	___	___	___	___	___	___	___
6.	Too many responsibilitites, interruptions, demands from others or things to do.....	___	___	___	___	___	___	___
7.	Silly mistakes, forgetfulness, accidents.....	___	___	___	___	___	___	___
8.	Difficulty with decisions, or regrets about past decisions.....	___	___	___	___	___	___	___
9.	Interpersonal difficulties (e.g., with parents, children, friends, lover, co-workers, customers/clients).....	___	___	___	___	___	___	___
10.	Concerns about weight, physical appearance, self-image.....	___	___	___	___	___	___	___
11.	Not enough time (e.g., for shopping, recreation, relaxation, family, friends).....	___	___	___	___	___	___	___
12.	Concerns about personal safety.....	___	___	___	___	___	___	___
13.	Concerns about smoking, alcohol, or drug use (self or others).....	___	___	___	___	___	___	___

GO ON TO NEXT PAGE

SEVERITY RATINGS: 0=Didn't happen; 1=Not a hassle; 2=Minimal; 3=Mild; 4=Moderate; 5=Severe; 6=Extreme.

	HASSLES	DAY OF THE WEEK						
		MON	TUE	WED	THU	FRI	SAT	SUN
14.	Concerns about own interpersonal effectiveness (e.g., fear of confrontation, rejection, being exploited; prejudice or discrimination; inability to express self).....	___	___	___	___	___	___	___
15.	Concerns about weather, noise, crime, neighbourhood, trafic, pollution or other environmental events (e.g., news events).....	___	___	___	___	___	___	___
16.	Social obligations (e.g., house guests, social functions).....	___	___	___	___	___	___	___
17.	Not seeing enough of family, friends, etc.....	___	___	___	___	___	___	___
18.	Too much time on your hands or wasting time.....	___	___	___	___	___	___	___
19.	Legal problems.....	___	___	___	___	___	___	___
20.	Concerns about inner conflicts.....	___	___	___	___	___	___	___
21.	Other (please specify)							
	.....	___	___	___	___	___	___	___

MENSTRUAL CYCLE STUDY

The study in which you are being asked to participate is investigating changes in various phenomena which some women experience over their menstrual cycle.

If you agree to participate in this study you will be required to complete a number of questionnaires and then to monitor, daily, various behaviours and events over three consecutive menstrual cycles.

Your participation in this study is voluntary and you may withdraw from the study at any time. Your name will not be used on the data collected and confidentiality is assured. The data collected from this study will be used only by the researcher.

There is a relatively lengthy time commitment involved in data collection (three months in total) and it is important that you be prepared to complete a rating schedule (which takes about 5 to 10 minutes) on a daily basis for that period of time.

If you are interested, detailed feedback will be given at the end of the study with respect to the results of your own daily monitoring. Results of the entire study will also be made available to those who are interested.

This study has been approved by the Ethics Committee of Simon Fraser University and is being conducted under the supervision of Dr. Richard J. Freeman of the Psychology Department, Simon Fraser University.

CONSENT FORM

I have read the procedural details of this study as outlined in the document entitled "Menstrual Cycle Study".

I understand the procedure and I also understand that I may withdraw from the study at any time.

My signature below certifies that I consent to participate in this study.

NAME:.....

SIGNATURE:.....

DATE:.....

APPENDIX B

Table B.1: ANOVA - Age

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	19.30022	0.51	0.4782
Prospective	1	20.55800	0.54	0.4642
R x P	1	74.14650	1.95	0.1667
Error	69	37.95168		

Table B.2: ANOVA - Length of Menstrual Cycle

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	11.37959	1.19	0.2789
Prospective	1	2.01301	0.21	0.6477
R x P	1	0.19517	0.02	0.8868
Error	69	9.55099		

Table B.3: ANOVA - Length of Menstrual Flow

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	4.64976	2.77	0.1006
Prospective	1	0.11574	0.07	0.7936
R x P	1	5.81381	3.46	0.0671
Error	69	1.67788		

Table B.4: ANOVA - Height

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	9.57259	2.00	0.1616
Prospective	1	3.49112	0.73	0.3958
R x P	1	2.73181	0.57	0.4523
Error	69	4.78099		

Table B.5: ANOVA - Weight

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	739.70573	1.54	0.2195
Prospective	1	2009.64004	4.17	0.0450
R x P	1	813.50648	1.69	0.1982
Error	69	481.85321		

Table B.6: ANOVA - Age at Menarche

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	189.79812	0.57	0.4511
Prospective	1	55.91539	0.17	0.6821
R x P	1	354.44974	1.07	0.3040
Error	69	330.44712		

Table B.7: ANOVA - Age when Cycle Regular

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	1562.12333	0.58	0.4477
Prospective	1	3218.57778	1.20	0.2769
R x P	1	3582.07109	1.34	0.2516
Error	69	2679.25009		

Table B.8: ANOVA - MCMI; Schizoid Personality Pattern

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	1393.90440	3.85	0.0537
Prospective	1	1.66198	0.00	0.9462
R x P	1	1564.43371	4.32	0.0413
Error	69	361.95652		

Table B.9: ANOVA - MCMI; Avoidant Personality Pattern

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	4584.60167	9.27	0.0033
Prospective	1	306.68091	0.62	0.4337
R x P	1	1313.22509	2.66	0.1078
Error	69	494.53398		

Table B.10: ANOVA - MCMI; Dependent Personality Pattern

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	2125.57254	3.32	0.0728
Prospective	1	1207.71255	1.89	0.1741
R x P	1	1146.24034	1.79	0.1853
Error	69	640.21010		

Table B.11: ANOVA - MCMI; Histrionic Personality Pattern

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	711.21979	1.12	0.2927
Prospective	1	125.23498	0.20	0.6577
R x P	1	1726.39329	2.73	0.1031
Error	69	632.53980		

Table B.12: ANOVA - MCMI; Narcissistic Personality Pattern

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	344.89063	0.94	0.3363
Prospective	1	14.36525	0.04	0.8439
R x P	1	452.94768	1.23	0.2711
Error	69	367.94700		

Table B.13: ANOVA - MCMI; Antisocial Personality Pattern

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	149.35844	0.44	0.5099
Prospective	1	22.14450	0.07	0.7994
R x P	1	17.21876	0.05	0.8227
Error	69	340.32194		

Table B.14: ANOVA - MCMI; Compulsive Personality Pattern

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	153.21921	1.43	0.2356
Prospective	1	28.23336	0.26	0.6092
R x P	1	104.69131	0.98	0.3261
Error	69	107.01869		

Table B.15: ANOVA - MCMI; Passive-Aggressive Personality Pattern

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	4752.77476	13.59	0.0004
Prospective	1	1585.33217	4.53	0.0368
R x P	1	389.31927	1.11	0.2951
Error	69	349.74817		

Table B.16: ANOVA - MCMI; Schizotypal Personality Pattern

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	1679.95633	6.12	0.0159
Prospective	1	702.21941	2.56	0.1144
R x P	1	366.76632	1.34	0.2519
Error	69	274.70022		

Table B.17: ANOVA - MCMI; Borderline Personality Pattern

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	4646.56371	12.55	0.0007
Prospective	1	373.91887	1.01	0.3185
R x P	1	432.65782	1.17	0.2835
Error	69	370.35407		

Table B.18: ANOVA - MCMI; Paranoid Personality Pattern

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	76.13470	0.27	0.6045
Prospective	1	32.33406	0.12	0.7355
R x P	1	15.09967	0.05	0.8174
Error	69	281.15606		

Table B.19: ANOVA - MCMI; Anxiety Clinical Syndrome

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	6117.07739	13.03	0.0006
Prospective	1	33.56900	0.07	0.7900
R x P	1	886.63856	1.89	0.1739
Error	69	469.63330		

Table B.20: ANOVA - MCMI; Somatoform Clinical Syndrome

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	149.10247	0.48	0.4893
Prospective	1	56.26461	0.18	0.6707
R x P	1	88.98509	0.29	0.5930
Error	69	308.52193		

Table B.21: ANOVA - MCMI; Hypomanic Clinical Syndrome

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	2956.15549	3.88	0.0528
Prospective	1	767.39654	1.01	0.3188
R x P	1	6.60218	0.01	0.9261
Error	69	761.15033		

Table B.22: ANOVA - MCMI; Dysthymic Clinical Syndrome

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	2710.37333	5.20	0.0257
Prospective	1	17.09042	0.03	0.8569
R x P	1	9.94336	0.02	0.8906
Error	69	521.55335		

Table B.23: ANOVA - MCMI; Alcohol Abuse Clinical Syndrome

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	1835.17046	6.49	0.0131
Prospective	1	2015.27997	7.12	0.0095
R x P	1	493.87880	1.75	0.1908
Error	69	282.92014		

Table B.24: ANOVA - MCMI; Drug Abuse Clinical Syndrome

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	385.71153	0.88	0.3522
Prospective	1	1452.85706	3.30	0.0735
R x P	1	382.41256	0.87	0.3543
Error	69	439.72305		

Table B.25: ANOVA - MCMI; Psychotic Thinking Clinical Syndrome

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	2081.02754	6.83	0.0110
Prospective	1	25.21946	0.08	0.7745
R x P	1	7.24864	0.02	0.8779
Error	69	304.83619		

Table B.26: ANOVA - MCMI; Psychotic Depression Clinical Syndrome

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	7182.53866	18.28	0.0001
Prospective	1	215.11356	0.55	0.4619
R x P	1	1056.04869	2.69	0.1057
Error	69	392.95050		

Table B.27: ANOVA - MCMI; Psychotic Delusions Clinical Syndrome

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	1064.52832	3.86	0.0535
Prospective	1	178.09430	0.65	0.4244
R x P	1	998.14786	3.62	0.0613
Error	69	275.85710		

Table B.28: ANOVA - MCMI; Overall Total Score

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	827.08277	11.82	0.0010
Prospective	1	278.98419	3.99	0.0498
R x P	1	229.06343	3.27	0.0747
Error	69	69.96149		

Table B.29: ANOVA - MAQ; Menstruation as a Debilitating Event

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	6.29713	6.54	0.0128
Prospective	1	2.30985	2.40	0.1260
R x P	1	0.05433	0.06	0.8130
Error	69	0.96302		

Table B.30: ANOVA - MAQ; Menstruation as Bothersome

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	7.53640	5.19	0.0259
Prospective	1	0.28580	0.20	0.6588
R x P	1	1.25325	0.86	0.3563
Error	69	1.45336		

Table B.31: ANOVA - MAQ: Menstruation as a Positive Event

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	0.91495	0.58	0.4482
Prospective	1	0.70525	0.45	0.5053
R x P	1	0.54061	0.34	0.5596
Error	69	1.57243		

Table B.32: ANOVA - MAQ; Menstruation as a Predictable Event

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	13.28335	17.81	0.0001
Prospective	1	1.31063	1.76	0.1894
R x P	1	0.88892	1.19	0.2788
Error	69	0.74603		

Table B.33: ANOVA - MAQ; Denial of Effects of Menstruation

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	3.48609	5.05	0.0278
Prospective	1	0.61006	0.88	0.3503
R x P	1	0.06244	0.09	0.7645
Error	69	0.68992		

Table B.34: ANOVA - ASQ; Negative-Personality Scale

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	2907.46582	3.61	0.0615
Prospective	1	173.80081	0.22	0.6436
R x P	1	254.75080	0.32	0.5755
Error	69	804.84216		

Table B.35: ANOVA - ASQ; Positive–Personality Scale

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	48.07200	0.61	0.4380
Prospective	1	55.60247	0.70	0.4044
R x P	1	24.97522	0.32	0.5757
Error	69	78.99297		

Table B.36: ANOVA - ASQ; Negative–Situation Scale

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	2857.75723	3.56	0.0635
Prospective	1	161.80925	0.20	0.6551
R x P	1	269.74258	0.34	0.5642
Error	69	803.68998		

Table B.37: ANOVA - ASQ; Positive-Situation Scale

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	48.07200	0.61	0.4380
Prospective	1	55.60247	0.70	0.4044
R x P	1	24.97522	0.32	0.5757
Error	69	78.99297		

Table B.38: ANOVA - ASQ; Premenstrual-Negative-Personality Scale

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	104.40102	0.20	0.6568
Prospective	1	0.02373	0.00	0.9947
R x P	1	238.27413	0.45	0.5024
Error	69	524.19144		

Table B.39: ANOVA - ASQ; Premenstrual-Positive-Personality Scale

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	2.39712	0.02	0.8810
Prospective	1	5.17979	0.05	0.8259
R x P	1	94.33482	0.89	0.3493
Error	69	106.23298		

Table B.40: ANOVA - ASQ; Premenstrual-Negative-Situation Scale

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	8115.08906	12.22	0.0008
Prospective	1	25.87128	0.04	0.8441
R x P	1	14.20507	0.02	0.8841
Error	69	664.02257		

Table B.41: ANOVA - ASQ; Premenstrual-Positive-Situation Scale

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	32.10690	0.30	0.5851
Prospective	1	54.42178	0.51	0.4776
R x P	1	54.63797	0.51	0.4767
Error	69	106.72413		

Table B.42: ANOVA - ASQ; Premenstrual-Negative-Menstrual Phase Scale

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	10099.82860	13.92	0.0004
Prospective	1	31.33633	0.04	0.8360
R x P	1	350.74460	0.48	0.4893
Error	69	725.76001		

Table B.43: ANOVA - ASQ; Premenstrual-Positive-Menstrual Phase Scale

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	14.86663	0.82	0.3694
Prospective	1	100.69712	5.53	0.0216
R x P	1	6.67274	0.37	0.5470
Error	69	18.21350		

Table B.44: ANOVA - Occurrence of Stressors

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	572.31210	4.85	0.0313
Prospective	1	2.67294	0.02	0.8809
R x P	1	4.48133	0.04	0.8461
Error	64	118.06190		
Cycle	2	8.86048	1.37	0.2583
C x R	2	10.64385	1.64	0.1974
C x P	2	1.69815	0.26	0.7697
C x R x P	2	0.20728	0.03	0.9685
Error	128	6.47681		
Menstrual Phase	1	39.94110	26.47	0.0000
M x R	1	3.42549	2.27	0.1368
M x P	1	26.16536	17.34	0.0001
M x R x P	1	3.70302	2.45	0.1221
Error	64	1.50879		
C x M	2	0.73478	0.31	0.7309
C x M x R	2	0.73282	0.31	0.7309
C x M x P	2	2.14757	0.92	0.4017
C x M x R x P	2	3.07653	1.32	0.2719
Error	128	2.33823		

Table B.45: ANOVA - Intensity of Subjective Stress

Source	Degrees of Freedom	Mean Square	F	Tail Prob.
Retrospective	1	50.15.89101	5.14	0.0267
Prospective	1	664.47103	0.68	0.4123
R x P	1	562.19515	0.5806	0.4506
Error	64	975.56852		
Cycle	2	81.53999	2.05	0.5542
C x R	2	23.60109	0.59	0.5542
C x P	2	9.88191	0.25	0.7805
C x R x P	2	19.96125	0.50	0.6068
Error	128	39.80144		
Menstrual Phase	1	882.91399	29.58	0.0000
M x R	1	0.50575	0.02	0.8968
M x P	1	690.57615	23.14	0.0000
M x R x P	1	18.98203	0.64	0.4281
Error	64	29.84799		
C x M	2	49.28555	1.97	0.1434
C x M x R	2	18.68855	0.75	0.4755
C x M x P	2	28.65179	1.15	0.3210
C x M x R x P	2	5.78871	0.23	0.7936
Error	128	24.99108		

Table B.46: Pairwise Comparisons - Menstrual Phase x Prospective Reports of Premenstrual Depressive Change (ProPDC) - Occurrence of Stressors

Comparison	Mean	*S.D.	*t*	df	*p*-value
ProPDC PM	9.78				
vs ProPDC IM	8.50	1.23	3.21	36	0.0028
NoProPDC PM	9.39				
NoProPDC IM	9.25	1.23	0.54	96	0.5904
ProPDC PM	9.78				
vs NoProPDC PM	9.39	7.73	0.19	**66	0.8499
ProPDC IM	8.50				
vs NoProPDC IM	9.25	7.73	-0.36	**66	0.7199
ProPDC PM	9.78				
vs NoProPDC IM	9.25	7.73	0.25	**66	0.8034
ProPDC IM	8.50				
vs NoProPDC PM	9.39	7.73	-0.43	**66	0.6686

* Obtained by pooling appropriate ANOVA error terms;
** Satterthwaite df (rounded to the next integer)

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