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THE IMPACT OF SEX ROLE, LIFE STRESS, ORAL CONTRACEPTIVES,

AND PAIN MEDICATIONS ON PREMENSTRUAL DISTRESS

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THE IMPACT OF SEX ROLE, LIFE STRESS, ORAL CONTRACEPTIVES,
AND PAIN MEDICATIONS ON PREMENSTRUAL DISTRESS

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ABSTRACT

THE IMPACT OF SEX ROLE, LIFE STRESS, ORAL CONTRACEPTIVES, AND PAIN MEDICATIONS ON PREMENSTRUAL DISTRESS

By

Barbara Ann Foley

One hundred female volunteers (mean age = 26.1) participated in this study which explored the relationship of sex role, stressful life experiences and use of both oral contraceptives (OC's) and pain medications to premenstrual distress (PMS). A stepwise multiple regression was performed on eight variables; 31% of the variance in PMS was predicted by the combined effects of oral contraceptives, negative life experiences in the past six months and negative life experiences in the past month. Results indicated that 1) Feminine sex-typed women reported experiencing greater PMS than all other women; 2) Negative life experiences in the past six months were significantly related to PMS; 3) Women taking OC's reported fewer premenstrual symptoms than those not taking OC's; and 4) Women taking medications for PMS did not report less PMS than women not taking these medications. Results are discussed as are implications for future research.

ACKNOWLEDGEMENTS

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CHAPTER I

Introduction and Review of Literature

This study is designed to examine the impact of femininity, stressful life experiences, use of oral contraceptives, and use of pain medications, on the experience of premenstrual distress through the use of self-report inventories.

During their fertile years, menstruation is a biological fact for women. Many women also experience menstrually-related distress. Frank (1931) termed menstrual symptoms which occur prior to menstruation "premenstrual tension" (PMT). Recent researchers have named this group of affective, cognitive and physical symptoms the "premenstrual syndrome" or "PMS."

A vast array of symptoms are referred to when speaking of PMS. According to Clare (1979), and Rubinow and Roy-Byrne (1984), a woman is only defined as having premenstrual syndrome if the symptoms or complaints recur premenstrually at every cycle, symptoms are relieved with the onset of the menstrual flow, and there are no permanent complaints similar to the symptoms described in the premenstrual phase during other phases of the menstrual cycle. Labrum (1983) and Rees (1953) include the following to be among the symptoms manifested by women experiencing PMS: depressed mood, fatigue, headaches, tension, irritability, anxiety, insomnia, nausea or vomiting, thirst, fluid retention, dizziness, breast enlargement and tenderness, edema (commonly referred to as water-weight gain), altered sexual drive, and increased appetite. Evidence for psychosomatic disorders such as migraine, rhinitis (inflammation of the mucous membranes of the nose), and asthma have also been found (Carroll & Steiner, 1978; Ruble, 1977; Steiner & Carroll, 1977).

The most comprehensive presentation of premenstrual symptomatology may be found in Labrum (1983) who claims that the changes found in PMS manifest

themselves physically, affectively, perceptually, cognitively and behaviorally. Labrum proposes that 60% of healthy women experience at least one or more of the premenstrual symptoms in Table 1. Lark (1984) supports this contention by stating that PMS may affect almost all organ systems in the body and also affects all aspects of a woman's life.

INSERT TABLE I ABOUT HERE

Sex Role Stereotypes and Premenstrual Syndrome

Discrepancy exists in the research on sex role stereotypes. Expectation, attribution and learned behaviors influence how a woman will interact with the environment prior to or during menstruation. These areas have prompted extensive research.

Expectation of premenstrual and menstrual symptomatology appears to be influential in the lives of women. In a study done by Ruble (1977), menstrual histories taken from subjects enabled experimenters to determine the onset of menstruation. Subjects were then informed they were in a particular phase of the menstrual cycle. Those women who believed themselves to be premenstrual reported more premenstrual symptoms than those who were not informed of this. Women who believed they were intermenstrual did not report experiencing any symptoms. The results of this study indicate that there is an expectation that one will experience distress at specific times in specific phases. Research by Paige (1973) further suggests that the depression and distress experienced by some women may be due to the negative cultural attitudes that surround menstruation, and specifically, menstrual blood.

Attribution and learned behaviors also need to be considered when discussing sex role stereotypes and PMS. Since the discomforts women experience prior to and

Table 1

Changes Found in PMS

Physical	Affective	Perception, cognition, behavior
Change in sleep patterns	Feelings of well-being	Difficulty thinking in a rational way
Worsening of sinus symptoms	Excitement	Forgetfulness
Irritated eyes	Increased sexual drive	Hypersensitivity to sounds, sight and touch
Difficulty using contact lenses	Heightened creativity	Stimulus overload
Reduction of hearing or temporary deafness	Feelings of intimacy	Clumsiness
Mouth sores, ulcers and dryness	Bursts of increased energy	Difficulty with fine movements
Bleeding from the nose	Irritability, anger, aggressive feelings	Increased risk of accidents (in home, industry, motor vehicle)
Acne	Paranoid ideation	
Darkness under the eyes	Depression (can be severe, with suicidal feelings)	
Swelling and tenderness of breasts	Tension (like a stretched wire about to snap)	
Breathlessness	Frequent mood changes	
Feeling of suffocation	Feeling unhappy (nothing makes the patient feel good)	
Palpitations		
Rapid heartbeat		
Crushing chest pain	Feelings of and fear of losing control	
Worsening of asthma symptoms	Crying spells	
Bloating of the abdomen	Feeling overstimulated and oversensitive and feeling guilty about feelings, behavior and interactions with others	
Constipation or diarrhea		
Pelvic heaviness		
Rectal pressure		
Feeling of pressure in the bladder	Obsessive compulsive behavior	
Need to pass urine more frequently, urgency		
Easy bruising and welting of skin		
Itching and burning of skin (especially face, hands, abdomen, genital area)		
Hair falling out		
Muscle weakness, aching and cramping		
Pain, swelling and stiffness of joints (especially hands, shoulders, knees, ankles)		
Backache		
Craving for sweets, sweet foods, chocolate or just for more food in general		
A sense of internal shaking		
Swings between a feeling of being energetic and of being fatigued		

during menstruation are quite common at other times, they may be common reactions to stress. In this way, impending menstruation and menstruation itself may be a scapegoat for some women; irritability or bodily discomfort experienced prior to or during menstruation may be attributed to the menstrual cycle and not to everyday stress (Paige, 1973). Rodin (1976) disputes this position. This researcher claims that when a menstruating woman attributes her autonomic nervous system arousal and frustration on a task to her menstrual symptoms, she may show greater effectiveness on a task when compared to equally aroused, nonmenstruating women, and equally as well as non-distressed women. Women would experience a positive performance effect instead of a negative performance effect possibly due to this attributive process. It is also possible, that a nonmenstruating woman might attribute irritability or bodily discomfort to the tension she may have experienced on the job.

Because there appears to be a relationship between menstruation and femininity, it is likely that a woman's reaction to impending menstruation may covary with her feelings about her own femininity and the socially prescribed feminine role. Rejection of this feminine role might influence menstrually-related distress. Paige (1973) claims that premenstrual symptoms are highly likely when a women has accepted her conventional female (stereotypic) role. Foley (1983) conducted a similar study which hypothesized that sex-typed women (feminine females) would report experiencing a greater amount of premenstrual and menstrual distress than all other sex role groups. No relationship was found, however, between sex role and endorsement of menstrually-related symptoms. Berry and McGuire (1972) also attempted to find a relationship between PMS and a woman's acceptance or rejection of traditional, stereotyped social and sexual roles. Although a very low correlation was found, the results indicate that women who score lower on a role acceptance scale experience higher levels of PMS and

dysmenorrhea (painful menstruation). Since stereotypic beliefs shape our expectations of others and our expectations of ourselves, one must consider PMS from the perspective of the society or the culture which defines stereotypic feminine social roles. These social roles may influence and instruct women as to what they should feel prior to and during menstruation (May, 1975).

Stress and the Menstrual Cycle

Bodily changes in women may be influenced by many factors. An area which has been heavily researched is that of stress, a frequently overlooked, yet inherent part of our American lifestyle. Current research indicates that it is the primary cause of death in the United States as it plays a role in numerous diseases formerly believed to be biologically based. These include cancer, cardiovascular diseases (such as hypertension, atherosclerosis, heart attacks, stroke, etc.), respiratory diseases (asthma, emphysema, tuberculosis), gastrointestinal disorders (such as ulcers), and various other physiological manifestations in the human body (Allen, 1983, chap. 2).

The definition of stress has broadened over the years. There are several definitions which are widely accepted. Selye (1946) describes stress as "...the nonspecific response of the body to any demand made upon it to adapt whether that demand produces pleasure or pain." Hinds (1980) more thoroughly defines stress as

> ...a construct that defines the interaction between a change demand (stressor) and our adaptation (reaction) to that demand. The stimulus demand can be an external or internal event or condition, as long as we biopsychosocially perceive the change demand as a threat to the current structural integrity of any self system (p. 2).

Both of these definitions state that stress is a physiological response which aids the body in adaptation to internal or external demands. Although we frequently refer to mental conditions such as anxiety, frustration, etc. as stress, such cognitive responses are actually stressors; stress is our physical reaction to the events we are processing cognitively (the stressors). Therefore, stress may be

manifested as a physiological reaction caused by one's mental state; this mind-body interaction is the basis for psychosomatic illness, as stress alters the activity of all organ systems in the body (Allen, 1983). When the brain perceives a stressor, a biochemical message is sent from the hypothalamus to the pituitary gland. The pituitary secretes adrenocorticotrophic hormone (ACTH) which is responsible for the fight or flight response in stress. ACTH stimulates the adrenal glands to secrete corticoids, one of which is adrenalin; when adrenalin is secreted, muscles become tense and blood pressure and blood sugar levels rise in preparation for fight or flight (Goldberg, 1978, p. 24).

Recent stress research has focused on women and their menstrually-related symptoms. Physiological changes occur in all menstruating women, but they vary in magnitude due to individual variations in biological processes. Many women may be hypersensitive to menstrually-related changes because they consider menstruation an inconvenience, because they may want or fear pregnancy, or because they resent the sociocultural taboos which surround this phenomena (Taylor, 1979). Differential sensitivity to the psychological and physiological events of menstruation may contribute as much to the variance that occurs as do the physiological events themselves.

Much research has been conducted in the area of mood changes associated with the menstrual cycle. Mood changes are due to an interaction between biochemical and psychological factors. Clare (1979, 1983) and Clare and Cairnes (1978) suggest that such mood changes are due to interactions between hormonal changes, negative life circumstances, interpersonal stress, individual personality and social maladjustment. These authors claim that negative life circumstances such as marital strife and interpersonal conflict are potential stressors which may be compounded by the hormonal changes which occur premenstrually.

Biological/Biochemical Changes During the Menstrual Cycle

In order to study research in the area of PMS, it is important to understand

the physiological processes which characterize the menstrual cycle. Concise descriptions of the average mentrual cycle may be found in Lark (1984) and Steiner and Carroll (1977). These authors state that the endometrium, hypothalamus, adrenal cortex, ovaries, and pituitary gland interact and are responsible for ovulation and menstruation. On the first day of menstruation, estrogen and progesterone levels are very low. In response to this, a follicle stimulating hormone (FSH), is produced by the hypothalamus. FSH stimulates the development of the ovarian follicles and causes these follicles to begin producing estrogen. At mid-cycle (day 14), estrogen secretion rises to its peak, which stimulates an increased blood supply to the uterus as well as a thickening of the uterine lining. A surge of lutenizing hormone (LH) simultaneously occurs with a decrease in FSH and ovulation occurs. The corpus luteum produces high levels of estrogen and progesterone, hence this phase of the cycle is termed the luteal phase. Secretion of progesterone decreases six days prior to menstruation if fertilization has not occurred and the ovarian secretion of estrogen also begins to fall at this time. The corpus luteum decays, and menstruation begins (Norris, 1983).

Hormonal Correlates of Stress and Menstruation

Several investigators explain PMS as being attributable to hormonal fluctuations or deficiencies. Research on the physiological factors of PMS has primarily concentrated on three specific groups of hormones: 1) the ovarian hormones, estrogen and progesterone, 2) the pituitary hormone, prolactin, and 3) the renin-angiotensin-aldosterone system (Carroll & Steiner, 1978; O'Brien, Craven, & Selby, 1979; Osborn, 1981).

Research on the ovarian hormones is inconsistent. PMS has been suggested to be caused by either an abundance of estrogen, a deficiency of progesterone, or a physiological reaction to the withdrawal of either hormone (Steiner & Carroll, 1977). A concentration of estrogen and progesterone in the bloodstream is believed to be the reason why many women experience mood shifts prior to or during the

menstrual cycle. Some of the experiences confirmed during the ovulatory phase are spurts of activity (Labrum, 1983) and feelings of greater self-satisfaction and self-sufficiency (Dan, 1976; Ivey & Bardwick, 1968). Benedek and Rubinstein (1939) tested progesterone and found that it induces drowsiness and causes a slight decrease in both depression and anxiety. Levels of this hormone are high premenstrually (four to seven days prior to menstruation) so it may be expected that women will report a significant increase in fatigue as well as difficulty concentrating at this time (Moos, 1985).

Dalton (1977, p. 61) also discusses progesterone as being responsible for premenstrual changes. She claims that a "menstrual controlling center" in the hypothalamus may be implicated in premenstrual symptoms because the hypothalamus is easily influenced by cerebral stimuli. This would explain why a woman's menstrual cycle is altered during stressful situations, and why the duration and intensity of menstruation also increase. Dalton further suggests that progesterone may be the cause of menstrual symptomatology. She claims that during each phase of the menstrual cycle, there is a feedback mechanism; one particular premenstrual feedback mechanism is the "progesterone feedback pathway" from the uterus to the hypothalamus and pituitary which Dalton believes causes PMS. Estrogen is the second ovarian hormone which has been implicated in PMS. According to Benedek and Rubinstein (1939), levels of estrogen are high during the follicular or ovulatory phase when the uterine lining thickens. As estrogen levels gradually increase, women have been recorded as experiencing heightened sexual arousal, an increased tendency toward heterosexual interactions and contact, and feelings of well-being.

A second hypothesis for the premenstrual syndrome is that of excessive production of prolactin, a pituitary hormone. Elevated levels of prolactin and prostaglandins during the second half of the menstrual cycle may cause insufficient production of progesterone by the corpus luteum. Prior research has indicated that

prolactin levels increase during stress so it is likely that even mild psychological stress during the latter half of the menstrual cycle (the days preceding menstruation) may cause a rise in prolactin level and contribute to premenstrual symptomatology (Strecker, 1981). Prolactin is secreted by the pituitary and a prolactin-inhibiting factor (PIF) is secreted by the hypothalamus. During stress, hypothalamic levels of PIF appear to be depleted, which also inhibits progesterone secretion by the luteal cells. The hypothesis of a faulty progesterone feedback pathway would explain why progesterone levels are usually low during the luteal phase and why many women suffer from PMS. McNeilly and Chard (1974) and Steiner and Carroll (1977) also published data addressing the controversy surrounding prolactin levels during menstruation or ovulation. They found that a great deal of variability exists between women with respect to the amount of prolactin they secrete. Further research needs to be conducted on prolactin and other hormones to determine their effects upon the menstrual cycle in women.

PMS has also been linked to the renin-angiotensin-aldosterone system which causes sodium and water retention. Sundsfjord and Aakvaag (1970) found that plasma angiotensin II levels during the follicular phase of the menstrual cycle were twice as high as the concentration of plasma angiotensin II during the luteal phase. These authors suggest that sodium loss through the kidneys comes from an increased secretion of progesterone, which in turn leads to a greater amount of aldosterone being secreted. Dalton (1964) has corroborated and elaborated upon these findings. Aldosterone is secreted by the adrenal cortex and its function is to facilitate sodium retention by the kidneys. Progesterone is also found in the adrenal cortex; its function opposes aldosterone as it increases sodium excretion. It is therefore possible that a deficiency in progesterone and an excess of aldosterone leads to premenstrual water and sodium retention. Since aldosterone

secretion increases during stress, this could account for the observed increases in premenstrual symptom severity during stressful times.

Another occurrence in the luteal phase which has stimulated research is alveolar ventilation. This is another physiological correlate of the menstrual cycle in that progesterone causes the carbon dioxide content in the lungs to fall. Damas-Mora, Davies, Taylor, and Jenner (1980), determined that the decrease in concentration of carbon dioxide in the lungs occurs early in the luteal phase. These findings suggest that susceptibility to psychosomatic symptoms increases premenstrually. Stress during this phase would increase ventilation at a time when women's carbon dioxide levels were already lower than normal.

In addition to the three groups of hormones cited above, fatty acids in the body are also influenced by stress. Such fatty acids are termed prostaglandins. There are many different prostaglandins in the human body which affect a wide variety of physiological processes, and some may be found in the menstrual fluid of females. These prostaglandins induce contractions of the uterus to aid in fertilization by helping the sperm reach the Fallopian tubes. They also aid in the disintegration of the endometrium (Curtis, 1979, p. 588, 656, 657).

An interesting relationship exists between the synthesis of prostaglandins and stress. Several studies have found an increase in plasma prostaglandins during stressful situations. In research done by Hanukoglu (1977), it has been suggested that prostaglandins are the first mediators of stress as they are synthesized and released from every tissue in the human body which might become stressed. They are also transported through the blood and can stimulate the anterior pituitary to release ACTH (adrenocorticotrophin), a hormone that stimulates the adrenal glands and is considered to be one of the most important hormones in the stress response.

Oral Contraceptives and Non-Steroidal Anti-Inflammatory Drugs

Since the 1960's, oral contraceptives (OC's) have been prescribed by

physicians both as a means of birth control and as treatment for dysmenorrhea (painful menstruation). To understand the current controversy in the literature surrounding OC use and premenstrual symptomatology, it is important to investigate the hormonal action of oral contraceptives. Oral contraceptives disrupt the normal hormonal sequence of the uterine lining thereby inhibiting endometrial growth; the endometrium does not develop fully and closely resembles a proliferative state. Since this particular state has a low prostaglandin synthesizing capacity (Singh, Baccarini, & Zuspan, 1975), there is a reduction in both prostaglandin production and volume of menstrual fluid (Chan, 1983). Limited research (Chan & Dawood, 1980; Chan & Hill, 1978) appears to support lowered prostaglandins in women taking combination oral contraceptives (progesterone and estrogen) than in women who are not taking them.

Numerous researchers have attempted to show a relationship between use of OC's and premenstrual symptoms. The results are inconclusive, although several trends may be noted. Some studies indicate that OC use alleviates or diminishes premenstrual symptoms. Moos (1968a, 1968b) found that women who were not using oral contraceptives experienced greater cyclical symptoms, both menstrually and premenstrually, especially on the negative affect, pain, behavior change and impaired concentration subscales of the MDQ. These results are consistent with Silbergeld, Brast, and Noble (1971) who found that oral contraceptives increased the regularity of length of the menstrual cycle (women were reported as experiencing shorter, more regular cycles), as well as relieved some mentrually-related symptoms such as those related to pain (backache, cramps, muscle stiffness, etc.), irritability, and behavioral change (such as staying at home or in bed). In addition to the alleviation of the above symptoms, women also reported painful/tender breasts, increased water retention, nausea and vomiting. This study indicated that oral contraceptives may reduce some symptoms, but also facilitate others. The

researchers claim that their results might be attributed to the high dosages of Enovid (an oral contraceptive) administered and indicated that future studies should take this into consideration. Other researchers (Cullberg, 1972; Kutner & Brown, 1972) have found that premenstrual symptoms were increased by estrogen oral contraceptives and decreased by those containing progesterone. This is consistent with Stephenson, Denney and Aberger (1983) who claimed that it is necessary to examine the levels of estrogen and progesterone in particular types of oral contraceptives prior to obtaining conclusive results between OC use and the alleviation of premenstrual symptoms.

In addition to steroidal oral contraceptives such as estrogen and progesterone, nonsteroidal anti-inflammatory drugs (NSAIDS) have also been used to alleviate menstrual and premenstrual symptoms. Some authors claim that such arylpropionic acids are becoming the preferred method of treatment due to the fact that many women may not wish to use oral contraception. Exposure to the metabolic effects of daily oral contraceptives is therefore believed to be unnecessary for the treatment of menstrually-related distress. NSAIDS are ideal for women who do not desire birth control as they relieve menstrual cramps and other symptoms associated with dysmenorrhea (both prior to and during the actual menstrual flow). Ibuprofen and naproxen are the NSAIDS most commonly used to treat such menstrually-related difficulties in women (Chan, 1983, Chan, Dawood, & Fuchs, 1981; Hanson, 1972). When compared to aspirin (Rosenwaks, et al., 1981), ibuprofen and naproxen were clearly superior in reducing symptoms associated with menstruation (Chan, 1983; Corson & Bolognese, 1978).

Femininity and PMS Endorsement by Women

For years, it has been believed that sex-typed individuals typify mental health. Individuals who are sex-typed, however, can only respond with the limited number of options available to them in order to deal with certain situations.

Therefore, sex-typed individuals are either unable, or unwilling to act in a cross-sex-typed manner even if this behavior may technically be more adaptive in that particular situation. Androgynous individuals, however, are not restricted in their behavior by an inability or a refusal to use cross-sex-typed behaviors. Androgynous people have both sex-typed and cross-sex-typed behaviors in their repertoire of responding, which enables them to adapt to any situation that may arise (Bem, 1975; Bem & Lenney, 1976). As described by Friedman (1979), the term "androgyny" means that

> any person can potentially develop an identity that integrates the positive traits traditionally assigned either to 'masculinity' (independence, self-reliance, rational thought, analysis, mechanical proficiency, etc.) or to 'femininity' (nurturance, cooperativeness, intuition, synthesis, emotion, sensitivity, etc.)...Anatomy is not destiny in the androgynous world.

Bem (1974, 1975) proposes that when a person internalizes specific behaviors deemed appropriate by a specific culture, the development of a gratifying repertoire of possible behaviors is quite limited. Therefore, it is reasonable to classify the androgynous individual as being one who is more self-actualized (Ginn, 1975), more competent, and more flexible in social situations because this person may switch roles appropriately, as demanded by the situation (Jones, Chernovetz, & Hansson, 1978).

Several researchers have alluded to a possible relationship between sex roles and premenstrual distress. Because women who embody traditional feminine sex roles have a tendency to score higher on conformity, one might expect these women to report menstrual experiences which conform to traditional stereotypic expectations. According to these stereotyped expectations, menstruation is an unpleasant experience, causing disruptive bodily changes and discomfort. Sex-typed females should therefore report greater premenstrual and menstrual distress. Continuing with this line of reasoning, one would also expect that because

androgynous and cross-sex-typed (masculine) females do not conform to the sex role stereotypes prescribed by society, they would not conform to societal stereotypes concerning their experiences of menstruation. Hence, one would expect them to report less experience of discomfort premenstrually and during menstruation than sex-typed women.

Stressful Life Events and Premenstrual Syndrome

Although many descriptive studies have focused on the etiology of PMS and its possible link to stressful life situations, the results are inconclusive. The emphasis of most studies is usually on PMS as a combination of physiological as well as psychological symptoms which may be mediated by situational variables.

Selye (1974, 1976) has proposed that there is a stress factor in disease and that the stress response may be triggered by certain events which force the body to adapt to changing conditions. Therefore, life change events have the capacity to make a person more susceptible to psychosomatic diseases.

Potentially stressful life change events or psychosocial stressors and their relationship to menstrually-related symptoms have only recently been the focus of empirical research (Sommer, 1978). Much criticism has been directed towards such research primarily because life change events have typically been regarded as having the same meaning and impact upon all individuals (Sarason, deMonchaux, & Hunt, 1975). This idea has been challenged by researchers who claim that stress reactions are mediated by individual characteristics (Cassel, 1976; Rahe, 1978). Jordan and Meckler (1982) studied the relationship between the readjustment required by life change events and the occurrence of symptoms of dysmenorrhea (painful menstruation). They hypothesized that levels and severity of dysmenorrhea would be modified by the presence of a strong social support system; when the level of support was high, there would not be any relationship between life change and severity of dysmenorrhea. In contrast, when the level of support

was low, there would be a significant relationship between life change and dysmenorrhea. Analyses indicated statistically significant correlations for both high and low support groups. These findings suggest that dysmenorrhea is influenced by individual characteristics.

Research conducted by Osmun, Steiner, and Haskett (1982) focused on possible psychosocial factors influencing premenstrual syndrome. The outcome of this study revealed that women with positive or favorable psychosocial environments may experience severe PMS, perhaps just as severe as those women without such environments. Many of the researchers who have studied the relationship between menstruation, social support systems and negative life events have suggested that statistically significant results could possibly be due to the large sample sizes in such studies (Jordan & Meckler, 1982; Osmun, Steiner, & Haskett, 1982; Sarason, deMonchaux, & Hunt, 1975).

Three similar studies have addressed the relationship between premenstrual and menstrual symptoms, negative life events and neuroticism. Coppen and Kessel (1963) found that premenstrual symptoms were significantly related to a measure of neuroticism, whereas menstrual symptoms were not. An opposing view is that of Stephenson, Denney, and Aberger (1983). In their study, subjects were asked to complete a menstrual symptom questionnaire, a personality inventory and a survey of life experiences. Analysis of the data obtained in this study indicated that both menstrual pain and menstrual backache were related to neuroticism and negative life changes. These results support Johnson and Sarason (1978) who found that negative life changes are related to the number of menstrually-related symptoms endorsed by subjects. Although a significant relationship was found, the results may have been influenced by the fact that the authors did not differentiate between premenstrual and menstrual symptoms.

Several researchers have addressed the concept of stress and its relationship to menstruation. Dalton (1977) postulates that a "menstrual controlling center" in

the hypothalamus influences premenstrual symptoms. One week prior to menstruation, cyclical activity of the adrenal cortex and the ovarian hormones increases. Cerebral stimuli may strongly influence the hypothalamus which influences premenstrual symptoms. This appears feasible as an explanation of why the duration and intensity of menstruation and its related physiological manifestations tend to increase during stressful situations. Carrie (1981), however, found a very slight correlation between stressful life events and menstrual cycle symptoms among women who were currently menstruating. The author postulates that any possible correlation between the two may be due to the influence of life stress on general health status, rather than its direct influence on the menstrual cycle. The present study will attempt to eliminate some of the circularity and inconclusiveness in the body of literature which currently exists on sex roles, PMS and stress.

Experimental Hypotheses

Four main hypotheses will be tested in this study to determine the relationship between sex role, life stress, use of oral contraceptives, use of pain medications, and premenstrual distress. The hypotheses are:

1. Women who embody a feminine sex role will report experiencing a greater amount of premenstrual distress than all other women.

2. Women who report experiencing a high amount of life stress will report experiencing greater premenstrual distress than all other women.

3. Women who are taking oral contraceptives will report fewer premenstrual symptoms than those who are not taking oral contraceptives.

4. Women who are currently taking prescription and non-prescription medications for premenstrual discomfort will report experiencing less premenstrual distress than women who are not taking such medications.

CHAPTER II

Method

Subjects

Participants were 100 nulliparous female students residing on campus at Michigan State University. All subjects volunteered to participate in this study.

Demographics

Age. The mean age of the participants was 26.1 with a range of 18-39 years.

Ethnic Background. The sample was representative of 5 races: 48% were White or Caucasian, 41% were Black or Afro-American, 8% were Oriental or Asian American, 2% were Mexican American or Chicano, and 1% were Puerto Rican or Other Latin American.

Religion. The religious background of the sample was as follows: 43% were Protestant (Baptist, Presbyterian, Methodist, Lutheran, etc.), 41% were Catholic, 8% were Buddhist, 5% were Jewish, and 3% were Agnostic.

Marital Status. Eighty-eight percent of the sample were single, 7% were engaged, and 5% were divorced. None of the women participating in the study had children.

Contraceptive Use and Method of Choice. Of the 100 women sampled, 71% were using some method of contraception. Forty-two percent used oral contraceptives, 15% used the diaghragm, 8% used the vaginal sponge, 3% used an intrauterine device (IUD), 2% used a condom alone, and 1% used spermicidal foam or jelly with a condom.

Menstrual History. Ninety-six percent of the women in this study stated that their menstrual cycle was regular. Four percent did not respond. The number of days of the menstrual cycle ranged from 21-38 days with a mean of 29.4. Menstrual flow ranged from 3-7 days with a mean of 5.1.

Prescription and Non-Prescription Medications. Two percent of the sample used prescription medications for premenstrual discomfort. Ninety-eight percent did not. Use of non-prescription medications was higher; 38% used some type of medication. The five non-prescription medications of choice and their corresponding usage rates were as follows: 14% used aspirin, 14% used acetaminophen, 6% used Midol (which contains 454 mg aspirin, 14.9 mg cinnamedrine hydrochloride and 32.4 mg caffeine), 3% used ibuprofen (an anti-inflammatory, prostaglandin inhibitor), and 1% used diuretics.

Recruitment Procedures

Subjects in this study were volunteers from campus residence halls. An advertisement appeared in The State News, the Michigan State University newspaper, once a week for six weeks. The same advertisement appeared once a week for six weeks in the graduate dormitory mailing, the Owen-Van Hoosen Newsletter. Announcements were also posted in the 22 dormitories which house women undergraduate students on campus. The newspaper advertisement and dormitory announcement read as follows:

ATTENTION

WOMEN   WANT TO LEARN MORE ABOUT YOURSELF?

WHAT: Spend 20 minutes filling out several anonymous questionnaires addressing personality characteristics, body awareness and life experiences of women

WHO & WHERE: Women from campus residence halls are being asked to participate

MORE INFORMATION: Female students interested in finding out more about this study can call and leave a message for BARB at 355-3845.

When subjects telephoned about participating in the study, they received a pre-recorded message asking them to leave their first name and telephone number. Subjects were contacted the next day about participating and a convenient day and time was arranged for administration of the questionnaires.

Measures

The most commonly used instrument for assessing sex role is the Bem Sex Role Inventory (BSRI, 1974; revision, 1977). This self-report measure contains sixty personality characteristics; twenty are stereotypically masculine (e.g. ambitious, assertive, aggressive); twenty are stereotypically feminine (e.g. gentle, understanding, affectionate), and twenty are neutral, non-sex-specific items (e.g. faithful, conceited, happy). Subjects indicate how they view themselves on a particular trait using a seven-point Likert scale from one, "Never or almost never true" to seven, "Always or almost always true." The BSRI is based on the premise that sex-typed persons use culturally appropriate behaviors to rate themselves. Therefore, it is expected that traditionally sex-typed people will try to keep their behavior consistent with what they believe is masculine or feminine in their culture.

The BSRI was originally administered to 444 male and 279 female students in an introductory psychology course at Stanford University. It was also administered to 117 male and 77 female paid volunteers at Foothill Junior College. These two administrations provided normative data for the BSRI. Internal consistency was measured by separately computing a masculinity, femininity, androgyny, and social desirability score. All three scores (masculinity, femininity, and androgyny) were found to be highly reliable. Near-zero correlations were found between these measures and the social desirability score. This confirmed the belief that these scores did not measure a general tendency to respond in a socially desirable direction. All four scores were found to be highly reliable over a four week period in the Stanford sample: (masculinity-$r=.90$; femininity-$r=.90$; androgyny-$r=.93$; social desirability-$r=.89$).

One of the most large-scale research efforts in the area of menstrual symptomatology was done by Moos (1968) using the Menstrual Distress Questionnaire (MDQ). The MDQ was the second measure used in the present study.

The questionnaire asked the respondent to describe the symptoms she experienced four days prior to her most recent menstrual cycle. These symptoms are separated into three distinct phases of the cycle; menstrual flow, one week prior to menstrual flow (premenstrual), and the remainder of the cycle (postmenstrual). The symptom ratings ranged from one to six with one being "no experience of the symptom" and six being "acute or partially disabling."

Correlations and factor analyses were performed on the 47 symptoms of the MDQ as reported by a normative sample of 839 women. Eight symptom clusters were found to occur in each phase of the menstrual cycle as a result of these analyses. These groups were appropriately named in order to be an adequate reflection of the major content of the symptom clusters. They are as follows:

1. The pain scale includes symptoms normally associated with dysmenorrhea (painful menstruation). This scale includes such items as muscle stiffness, headache, cramps, backache, fatigue, and general aches and pains.

2. The negative affect scale reflects symptoms normally associated with the premenstrual syndrome (PMS), such as crying, loneliness, anxiety, restlessness, irritability, mood swings, depression, and tension.

3. The water retention scale includes such items as weight gain, painful breasts, and swelling.

4. The autonomic reactions scale includes items such as dizziness or faintness, cold sweats, nausea or vomiting, and hot flashes.

5. The behavior change scale encompasses a vast array of symptoms such as lowered school or work performance, taking naps or staying in bed, staying at home, avoiding social activities, and decreased efficiency.

6. Symptoms such as insomnia, forgetfulness, confusion, lowered judgment, difficulty concentrating, distractibility, accidents, and lowered motor coordination are on the concentration scale.

7. The arousal scale indicates the positive feelings experienced by some women during the menstrual cycle such as orderliness, excitement, affectionate, feelings of well-being, and bursts of energy or activity.

The control scale is composed of symptoms very rarely experienced during menstruation, which may reflect a person's tendency to complain, regardless of whether or not they experience these symptoms. This scale includes such items as feelings of suffocation, chest pains, ear ringing, heart pounding, numbness or tingling, and blind spots or fuzzy vision. Internal consistencies for the above scales were .74, .89, .67, .66, .73, .82, .72, and .53, respectively. Intercorrelations of these symptom scales ranged from .18 to .63.

The Life Experiences Survey (LES; Sarason, Johnson, and Siegel, 1978) was the third measure used in the present study. This self-report questionnaire assessed events which the subject had experienced in the past year. There are two sections; the first is a list of 47 life events which may be potentially stressful. Three blank spaces are also included so that the respondent can write in specific events which have been particularly stressful for him or her. Section two contains 10 events which are directed toward use with a student population. These events refer to the academic environment and the stressors which may be experienced in such an environment. The authors based the LES on The Schedule of Recent Experiences (SRE: Holmes and Rahe, 1967). The latter is based on the premise that all life changes, whether they are desirable or not, are stressful. The authors of the LES regarded this as a potential fault of the SRE. They therefore assess positive, negative and total life changes on the LES.

Subjects are asked to rate the impact of the event on their lives for a time period of 0-6 months and 7 months to 1 year. Ratings are made on a seven-point Likert scale and range from extremely negative (-3) to extremely positive (+3), with no impact being a zero.

The LES was originally administered to 345 students enrolled in introductory psychology courses at the University of Washington during the fall quarter of 1975. Significant differences between males and females were found on positive, negative and total life change scores. To determine the reliability of the survey, two test-retest studies were conducted with 34 and 58 students respectively, five to six weeks apart. The relationship between the scores for both administrations was determined by computing Pearson product-moment correlations. The test-retest correlations were as follows: .19 and .53 for positive change; .56 and .88 for negative change, and; .63 and .64 for total change. All the reliability coefficients were significant at the .001 level.

In addition to including a cover letter which explained the study and obtained informed consent from the subjects (see Appendix A), several modifications were made of the three measures to be used in this study. The names of the MDQ and the BSRI were changed to avoid negative or stereotyped responses. The Bem Sex Role Inventory was changed to the "Personal Characteristics Questionnaire" (see Appendix B) and the Menstrual Distress Questionnaire was changed to the "Body Awareness Questionnaire" (see Appendix C). A modified version of the MDQ was administered as subjects were not asked to report their experience of menstrual or intermenstrual distress as neither was assessed in this study; the MDQ was solely used as a measure of premenstrual symptomatology. In addition, the Life Experiences Survey was changed to ask subjects about stressful experiences in the past month and in the past 6 months. Also, several items on the LES were excluded which pertained to male subjects, currently being married, and having children (See Appendix D). In addition, demographic information was collected from subjects, as well as information on menstrual cycle regularity and use of medications to alleviate premenstrual distress (see Appendix E).

Procedures

After administration, the BSRI yielded a Femininity score and a Masculinity score for each person. These scores were obtained by adding up the person's ratings of the twenty feminine characteristics and dividing by twenty, the number of feminine items. If items were omitted, the divisor was changed accordingly. The Masculinity score was calculated in the same manner.

The MDQ yielded subscale scores for the premenstrual phase of the cycle on each of the eight scales. In addition to individual subscale scores, a total premenstrual score was also calculated.

The LES yielded a positive change score and a negative change score. The positive change score was obtained by adding the subject's ratings for events they indicated as positive experiences. A negative change score was obtained in a similar manner, by summing the subject's ratings for experiences they perceived as negative. Four scores were obtained in this manner: total positive experiences for both the past month and the past six months, and total negative experiences for both the past month and past six months.

Data Analysis

A step-wise multiple regression was performed on the four variables to be studied (Sex Role, Life Stress, Oral Contraceptive Use, and Use of Prescription and Non-Prescription Medications to alleviate premenstrual discomfort), to determine their impact on premenstrual distress. A correlation matrix was also created to determine the relationship between the variables under study. These statistical routines were provided by the Statistical Package for the Social Sciences (SPSS; Nie, Hull, Jenkins, Steinbrenner, and Bent, 1975).

CHAPTER III

Results

<u>Major Findings</u>

To statistically analyze the data in this study, a stepwise multiple regression was performed. The variables were not entered in a predetermined order; instead, the computer entered them in order of their influence on the dependent variable (total PMS score on the <u>MDQ</u>). The variables entered in the following order: use of oral contraceptives (Pill), negative life experiences in the past six months (Six Month Neg), negative life experiences in the past month (Past Month Neg), use of prescription and non-prescription medications for relief of premenstrual symptoms (PMS Meds), total masculinity score on the <u>BSRI</u> (Total Masc), total femininity score on the <u>BSRI</u> (Total Fem), positive life experiences in the past month (Past Month Pos), and positive life experiences in the past six months (Six Month Pos). Table 2 presents the results of the stepwise regression. Analysis of the data in-

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INSERT TABLE 2 ABOUT HERE

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dicates that PMS was predicted by the combined effects of oral contraceptives, negative life experiences in the past six months and negative life experiences in the past month. Thirty-one percent of the variance in PMS was attributable to these three variables ($R^2 = .31$). The impact of each of these alone was also significant, with the probabilities being .000, .001, and .046 respectively. Use of oral contraceptives was the major contributor ($r^2 = .20$). Negative life experiences in the past six months added somewhat to the prediction (r^2 change $= .08$), as did negative life experiences in the past month (r^2 change $= .03$). The remaining five

Table 2

Stepwise Regression of Predictor Variables on PMS

STEP	VARIABLE	SIGNIFICANCE	MULTIPLE R	R^2	R^2 CHANGE
1	Pill	.000	.45	.20	.20
2	Six Month Neg	.001	.53	.28	.08
3	Past Month Neg	.046	.56	.31	.03
4	PMS Meds	.059	.58	.34	.03
5	Total Masc	.185	.59	.35	.01
6	Total Fem	.033	.62	.38	.03
7	Past Month Pos	.510	.62	.38	.01
8	Six Month Pos	.723	.62	.38	.00

independent variables explained the additional 8% of the variance, with the largest contributor being total femininity score on the BSRI.

In summary, 39% of the variance was explained by the eight variables in the multiple regression. The first three independent variables entered (Pill, Six Month Neg and Past Month Neg), predicted 31% of the total variance for PMS. The remaining five variables (PMS Meds, Total Masc, Total Fem, Past Month Pos, Six Month Pos), contributed 8% to the variance.

Hypothesis 1. Hypothesis one stated that women who embody a feminine sex role will report experiencing a greater amount of premenstrual distress than all other women. A correlation matrix of the criterion variables indicated a correlation of .17 ($\underline{p}$ <.05) between femininity and PMS. Although the hypothesis was supported and the findings were significant, these results should be interpreted cautiously as the correlation was small. In addition, there was also a .49 and a .40 correlation, respectively, between femininity and negative life experiences in the past 6 months and femininity and negative life experiences in the past month. Both were significant at the .001 level.

Hypothesis 2. This hypothesis stated that women who report experiencing a high amount of life stress will report experiencing greater premenstrual distress than all other women. Support for this hypothesis was found on one measure of stress; negative life experiences in the past six months were significantly related to premenstrual distress, $\underline{r}$ = .27, $\underline{p}$ < .05. Correlations of .01, .11 and .02 were found between positive life experiences in the past month, negative life experiences in the past month, and positive life experiences in the past six months and premenstrual distress, respectively.

Hypothesis 3. Hypothesis three stated that women who are taking oral contraceptives will report fewer premenstrual symptoms than those who are not taking oral contraceptives. This hypothesis was supported. A correlation matrix of

the criterion variables indicated a correlation of .45 ($\underline{p}$ < .001) between oral contraceptive use and premenstrual symptoms. This indicates that women who take oral contraceptives report experiencing less premenstrual distress than those women who are not taking oral contraceptives.

Hypothesis 4. Hypothesis four, which stated that women who are currently taking prescription and non-prescription medications for premenstrual discomfort will report experiencing less premenstrual distress than women who are not taking such medications, was not supported. A correlation of -.24 was found between taking medications and premenstrual distress ($\underline{p}$ > .05). The findings were in the hypothesized direction although the correlation was not significant. This indicates that women in this study who take prescription and non-prescription medications do not report experiencing less premenstrual distress.

Ancillary Findings

A correlation matrix was created to examine the relationships between the eight subscales of the Menstrual Distress Questionnaire. These subscales were as follows: pain, water retention, autonomic reactions, negative affect, impaired concentration, behavior change, arousal and a control scale. Considering these subscales, Table 3 indicates that there was a significant relationship between the

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subscales of the MDQ. Most of these were significant at the .05 level. High correlations were found in the present study on the following MDQ subscales as can be seen in Table 4: concentration and the control scale, concentration and pain, concentration and arousal, pain and negative affect, and concentration and negative affect. The correlations of these subscales were .57, .54, .54, .52 and .51,

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INSERT TABLE 4 ABOUT HERE

Table 3

Average Intercorrelations of Eight <u>MDQ</u> Scales
(Moos, 1968; n = 839)

MDQ Scale		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Pain	(1)	--	.38	.41	.59	.51	.58	.25	.42
Water Retention	(2)		--	.22	.44	.36	.33	.23	.26
Autonomic Reactions	(3)			--	.32	.38	.34	.18	.42
Negative Affect	(4)				--	.63	.58	.36	.35
Impaired Concentration	(5)					--	.57	.32	.39
Behavior Change	(6)						--	.21	.32
Arousal	(7)							--	.28
Control	(8)								--

Table 4

Average Intercorrelations of Eight <u>MDQ</u> Scales
(Present Study; n = 100)

MDQ Scale		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Pain	(1)	--	.38*	.35*	.52*	.54*	.30*	.47*	.41*
Water Retention	(2)		--	.13	.49*	.22*	.27*	.37*	.21*
Autonomic Reactions	(3)			--	.14	.32*	.21*	.07	.31*
Negative Affect	(4)				--	.51*	.35*	.33*	.27*
Impaired Concentration	(5)					--	.49*	.54*	.57*
Behavior Change	(6)						--	.41*	.51*
Arousal	(7)							--	.44*
Control	(8)								--

* $p < .05$

respectively ($\underline{p} < .001$). Table 3 and Table 4 show that similar correlations were obtained by Moos (1968) and the present study on pain and negative affect, pain and impaired concentration, and pain and water retention. The correlations were .59 and .52, .51 and .54, and .38 for the normative sample and the group under investigation, respectively.

A separate analysis was conducted on the eight subscales of the MDQ as well as overall PMS score as obtained by the Menstrual Distress Questionnaire. As seen

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in Table 5, the correlations ranged from .40 to .79. It should be noted, however, that each subscale was included in the total PMS score.

INSERT TABLE 6 ABOUT HERE

Table 6 compares the differences between the means and standard deviations for the BSRI norms and the present study. A two-tailed $\underline{t}$- test of the differences between means was calculated for Femininity and Masculinity. The results were significant for both (Femininity: $\underline{t}$ (338) = 2.97; $\underline{p} < .01$; Masculinity: $\underline{t}$ (338) = 2.64, $\underline{p} < .01$). The results indicate that the mean Masculinity and Femininity scores of the females in the present sample were higher than those in the original study done by Bem (1974).

Table 5

Correlations of Overall PMS Score with MDQ Subscales

MDQ SCALE	OVERALL PMS SCORE*
Pain	.77
Water Retention	.58
Autonomic Reactions	.40
Negative Affect	.76
Impaired Concentration	.79
Behavior Change	.64
Arousal	.67
Control	.67

*All correlations are significant at the .001 level

NOTE: Overall PMS score includes the eight MDQ subscales

Table 6

Means and Standard Deviations for Females on
the Femininity and Masculinity Scales of the BSRI

BSRI Scale	Present Study n = 100		Bem (1974) n = 340	
	Mean	SD	Mean	SD
Femininity	5.36	.76	5.05	.53
Masculinity	5.07	.79	4.79	.66

Table 7

Means and Standard Deviations for Female
Respondents on the Life Experiences Survey (LES)

LES Score	Present Study n = 100		Sarason, Johnson, and Siegel (1978) n = 171	
	Mean	SD	Mean	SD
Positive	7.82	5.8	9.57	6.66
Negative	9.51	10.52	7.04	7.9

The difference between means was also calculated for the <u>LES</u> normative sample and the present study as may be seen in Table 7. A two-tailed <u>t</u>- test for

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both positive and negative life experiences indicated a significant difference between the means for both positive life experiences, $\underline{t}$ (269) = -2.27, $\underline{p} < .05$ and negative life experiences, $\underline{t}$ (269) = 2.04, $\underline{p} < .05$. These results indicate that the females in the present study experienced fewer positive and more negative life experiences than the normative sample.

CHAPTER IV

Discussion

The findings of this study indicate that there is a relationship between femininity, life stress, use of oral contraceptives and the experience of premenstrual distress. Two hypotheses were fully supported and one was supported on a single measure of stress by the present study. The fourth did not receive empirical support. The major findings, as well as a discussion of several methodological considerations and implications for future research will be presented here.

Hypothesis 1

Past research has shown that learned behaviors, expectation and attribution may contribute to how women relate to their environments, etc. prior to menstruation (Ruble, 1977). In the present study, women high in femininity reported experiencing greater premenstrual distress than all other women in this study.

Society has traditionally placed sex-typed (feminine) women in a subordinate position to other sex role groups. Therefore, the results obtained here might support this conditioning process; stereotyped females may meet societal expectations by reporting greater premenstrual symptoms, not necessarily because they are actually experiencing them, but because they are fulfilling the particular role society has placed them in. Paige (1973) also supports the findings of the present study and claims that a woman's feelings about her own femininity may covary with societal expectations of that role. She contends that acceptance of a stereotyped feminine role may be an impetus for greater premenstrual symptoms.

Other research, however, does not support these findings. Foley (1983) hypothesized that femininity was related to greater endorsement of menstrually-related symptoms. This relationship was not supported, perhaps due to extraneous

variables impacting upon the study. In addition, Berry and McGuire (1972) found a small but significant correlation between rejection of the traditional stereotyped female role and PMS. Their findings revealed that higher levels of PMS and dysmenorrhea were experienced by women who scored lower on a role acceptance scale.

The findings in the literature to date are very inconclusive. Although the present study contributes to what is known about femininity and the experience of premenstrual symptoms, further research should be conducted in this area to clarify the strength of this relationship.

Femininity and Stress

High correlations were found in the present study between femininity and negative life experiences in both the past month and the past six months. This relationship may be explained in several different ways. It is possible that women high in femininity view stressful or negative life experiences as having greater impact upon their lives than do women lower in femininity; this might possibly be due to the influences of past conditioning, either through parents, family, friends or life events. Such women may have been rewarded in the past for a traditional feminine role, therefore, they may not necessarily be encountering more life stress, but may just be reacting to it differently. In our society, sex-stereotyped women such as this may also not be meeting up to societal expectations which favor or reward more assertive and/or aggressive behavior not traditionally considered feminine. Perhaps women high in femininity dwell on stressful life experiences whereas women low in femininity do not because the latter group wishes to achieve in our fast-paced world where more masculine or androgynous behaviors are rewarded. Therefore, women high in femininity may also experience greater stress (negative life experiences) due to the dissonance created by differences in self and societal expectations. Another possible explanation of the

relationship found between femininity and life stress could be that women who are not high in femininity experience stress at the moment, whereas women high in femininity somatize stress until it manifests itself as a physical ailment, perhaps even as PMS.

Hypothesis 2

Taylor (1979) challenges the notion that all stress has the same meaning and impact upon all individuals. This researcher claims that the physiological changes that occur during the menstrual cycle do occur in all women, but the manifestations of stress and of premenstrual distress do vary due to individual differences. Variances in sensitivity to incidences of everyday stress, as well as differences in the physiological and psychological manifestations of premenstrual distress, may be a contributing factor in the variance that occurs between women.

The literature indicates that all life experiences (positive and negative) may be perceived as stressful to an individual, depending upon individual perceptions of that particular event. Support was found on one measure of stress for the hypothesized relationship between stressful life experiences and premenstrual distress in this study; negative life experiences in the past six months were found to be significantly related to premenstrual distress. Neither positive life experiences in the past month or past six months, nor negative life experiences in the past month were significantly related to premenstrual distress. These findings appear plausible when one considers the fact that questionnaire administration took place 3-5 weeks after Spring Break. Therefore, it seems likely that fewer stressful life experiences in the past month would be reported by the subjects in this study.

Some stress research tends to support the findings of the present study, although the literature is conflicting. Johnson and Sarason (1978) studied life stress and its relationship to menstrually-related symptoms. These researchers found that high endorsement of menstrually-related symptoms was significantly related

to life stress or negative life changes. Carrie (1981) also found a small significant correlation between stress and the physiological manifestations of the menstrual cycle in currently menstruating women. This researcher suggests that this correlation may have been due to a relationship between stress and current health status rather than stress and the menstrual cycle.

Jordan and Meckler (1982) do not support the findings of the present study and claim that individual characteristics are more influential in the experience of dysmenorrhea and menstrually-related distress than are negative life experiences. These researchers hypothesized that such symptoms would be mediated by a strong support network; the greater the support, the fewer symptoms experienced. The findings of their study, however, indicated that both high and low degrees of support might influence menstrually-related symptoms, as statistically significant correlations were found in both support groups. Therefore the researchers claim that individual characteristics as well as support systems influence dysmenorrhea. A similar study was conducted on social support systems which hypothesized that psychosocial environments might influence the experience of PMS (Osmun, Steiner, & Haskett, 1982). Results of this study showed that both positive and negative psychosocial environments may contribute to PMS.

Continuing with this line of reasoning, other researchers (Clare, 1983; Clare & Cairnes, 1978) suggest that the hormonal changes which occur premenstrually may interact with interpersonal stress, negative life circumstances and social maladjustment to further influence premenstrual symptoms. Several of the authors cited above (Jordan & Meckler, 1982; Osmun, Steiner, & Haskett, 1982; Sarason, deMonchaux, & Hunt, 1975) suggest that the results of these studies might be attributed to large sample sizes and that further research needs to be conducted in this area to ascertain if the results obtained in these studies are due to the influences of the variables above or simply to the number of subjects in the sample.

Hypothesis 3

Results of the present study indicated a high correlation between women taking oral contraceptives and PMS as compared to women who were not taking them; females using OC's experienced fewer premenstrual symptoms than women who were not taking them. Research on oral contraceptives which supports the results of this study was done by Silbergeld, Brast, and Noble (1971). These authors found that OC users experienced shorter, more regular cycles as well as relief from some muscular and behavioral symptoms related to menstruation. Moos (1968a, 1968b, 1985) supports these results as OC users also reported experiencing fewer cyclical symptoms in his studies.

Several authors discuss differences in symptom alleviation as a result of using different types of oral contraceptives. Some researchers (Cullberg, 1972; Kutner & Brown, 1972) indicate that progesterone OC's lower PMS while estrogen containing oral contraceptives increase these symptoms. Further research into various forms of oral contraceptives as well as their individual actions appears warranted to settle this controversy.

Hypothesis 4

Hypothesis four was not confirmed. In this study, women taking prescription and non-prescription medications for relief of premenstrual discomfort did not report experiencing less premenstrual distress than those taking such medications. These findings are not consistent with the literature claiming that non-steroidal anti-inflammatory drugs (NSAIDS) relieve menstrual cramps and some associated premenstrual and menstrual symptoms.

This hypothesis may not have been confirmed possibly due to the fact that only a small proportion of the women surveyed use non-prescription and prescription medications to relieve premenstrual discomfort; only 40% used any medication at all; 14% used aspirin, 14% used acetaminophen, and 1% used diuretics.

Only 3% used ibuprofen which has been under recent study, and none used naproxen. These NSAIDS are generally chosen by physicians for mentrually-related discomfort and are preferable to steroidal oral contraceptives such as progesterone and estrogen, for women who do not desire contraception (Chan, 1983; Chan, Dawood, & Fuchs, 1981; Hanson, 1972). In addition, ibuprofen and naproxen were found to be more effective in relieving menstrually-related symptoms (Chan, 1983; Corson & Bolognese, 1978; Rosenwaks, et al., 1981) than even aspirin, which was used by 14% of the sample under investigation. Since research has only been conducted recently in the area of NSAIDS, future empirical studies should continue to investigate the influence of NSAIDS on PMS as well as on the physiological process of menstruation.

<u>Population and Recruitment Procedures</u>

In the present study, volunteers from a college population were used as subjects. This type of subject has spurned a proliferation of research in the past for several reasons: Volunteers are not a random sample and are therefore not representative of the general population. Their motives for participating may also be difficult to determine or may differ when compared to a random sample. Also, using college students limits the generalizability of the results due to the homogeneity of such a sample. The mean age of the participants in this study was 26.1 years, possibly due to older females being more interested in the topic (i.e., greater interest in learning about their bodies). This interest may have prompted a greater response to the announcement. In previous samples, the mean age has been somewhat lower (Moos, 1968b; Bem, 1974). Since the women participating in this study were older, future research might focus on this age group and how their experiences differ from younger women, using both a student and a non-student population. The present study suggests that age may be a significant factor which contributes to PMS. Additional research appears warranted to clarify this relationship.

In addition, the recruitment procedures may also have been somewhat biased towards older women. Undergraduate women had access to the newspaper advertisement as well as the announcements posted in their dormitories. These women had to make more of an effort to participate as compared to older students living in the graduate dormitory. The latter group had access to the campus newspaper, but in addition, they received an announcement in a newsletter which they received once a week in their mailboxes. This is a more individualized way of recruiting subjects as opposed to the somewhat impersonal announcements posted on bulletin boards in the undergraduate dormitories, and may have influenced the results. In the present study, all the women were college students, but no differentiation was made between educational level. Older women living in the graduate dormitory may have been graduate students or non-traditional age undergraduates. Since this research does not address possible differences between these two groups, subsequent research in this area appears warranted.

Instrumentation and Interpretation of Correlational Data

The present study attempted to analyze experiences in the past month using both the MDQ and the LES. The period of time analyzed by the Life Experiences Survey was shortened to meet this criterion. Instead of asking subjects to report their experiences in 0-6 months and 7 months to one year, the time frame was changed to events occurring in the past month and the past six months. The latter period of time is an inclusive category; life events occurring in the past month were included in both categories. The validity of this measure may have decreased due to these changes.

Several of the hypotheses in this study were supported. It should be mentioned here that although these findings were significant, some of the correlations obtained were small, and are therefore of limited practical significance. In addition, an inherent limitation of correlational data is that it does

not imply causation. Caution should be exercised when interpreting the findings of this study.

Additional Implications for Future Research and Conclusions

An abundance of research opportunities are available to those researchers who wish to further clarify issues which influence the premenstrual syndrome. Research has demonstrated that environmental factors such as stressful life experiences, can influence a woman's experience of menstruation. In the present study, major stressful life experiences were examined. Future research might focus instead on the smaller scale daily stressors or hassles women undergo and how these affect PMS.

Expectation and attribution may be powerful influences on our experiences. Future research might focus on the development of these attitudes towards menstruation. By examining the attitudes and experiences of significant others in the life of a premenarchal girl, one might determine how these interactions influence her future experience of menstruation.

In addition, researchers might examine women who report experiencing similar groups of premenstrual symptoms. Once this is accomplished, different kinds of treatment might be performed on them (i.e., vitamin or drug therapy, biofeedback techniques, yoga or exercise therapy) to see which treatments work best for which group of symptoms. Such treatments may then be applied in clinical practice.

Lastly, researchers should attempt to re-examine their perspectives and to clarify the symptoms associated with premenstrual experiences. PMS manifests itself in many different ways and may be attributed to and facilitated by various conditions. Subsequent researchers should make an effort to follow a holistic approach which does not discount external factors as being potentially linked to biological processes. Such a biopsychosocial approach will be beneficial in the future for the detection, intervention, and prevention of premenstrual distress.

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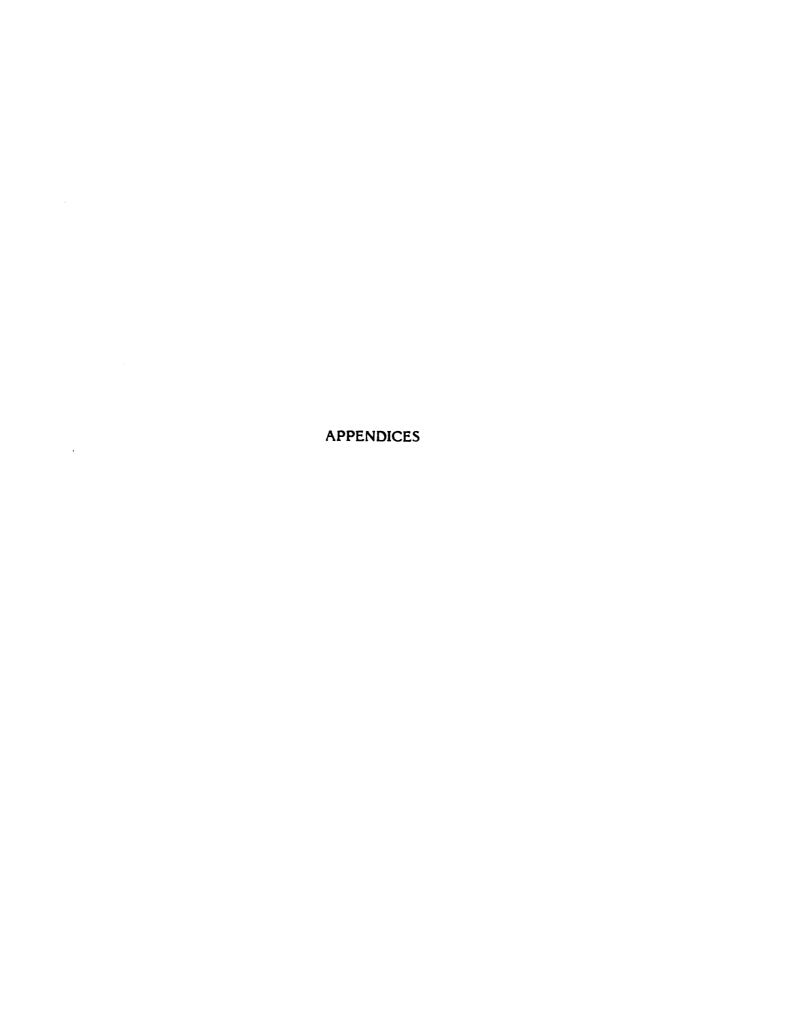
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APPENDICES

APPENDIX A

COVER LETTER

The following questionnaires are part of a research study being conducted at Michigan State University. The questionnaires address personality characteristics, body awareness and life experiences.

It is important that you answer each question thoughtfully and honestly. If you find a question you feel you cannot answer honestly, please leave it blank.

All your answers will be kept strictly confidential and anonymous. It will be impossible to identify you or your responses. Only this researcher will see the completed questionnaires. In addition, your participation in this study is voluntary. You can omit answers to any question or discontinue your participation in the study at any time without penalty. Your voluntary completion of these questionnaires constitutes your informed consent to participate in the study.

The questionnaires will take about 20 minutes to complete. Instructions are provided at the top of each questionnaire. If you have any questions, please feel free to ask the researcher.

The results will be analyzed and presented in approximately two months. If you are interested in obtaining the results of this study, please contact the researcher after June 1, 1985.

Thank you for your help in this study.

APPENDIX B

PERSONAL CHARACTERISTICS QUESTIONNAIRE

DIRECTIONS

On the next page, you will find listed a number of personality characteristics. I would like you to use those characteristics to describe yourself, that is, I would like you to indicate, on a scale from 1 to 7, how true of you each of these characteristics is. **Please do not leave any characteristics unmarked.**

EXAMPLE: sly

Write a 1 if it is never or almost never true that you are sly.

Write a 2 if it is usually not true that you are sly.

Write a 3 if it is sometimes but infrequently true that you are sly.

Write a 4 if it is occasionally true that you are sly.

Write a 5 if it is often true that you are sly.

Write a 6 if it is usually true that you are sly.

Write a 7 if it is always or almost always true that you are sly.

Thus, if you feel it is sometimes but infrequently true that you are "sly," never or almost never true that you are "malicious," always or almost always true that you are "irresponsible," and often true that you are "carefree," then you would rate these characteristics as follows:

Sly	3	Irresponsible	7
Malicious	1	Carefree	5

1	2	3	4	5	6	7

*

| Never or almost never true | Usually not true | Sometimes but infrequently true | Occasionally true | Often true | Usually true | Always or almost always true |

Defend my own beliefs		Adaptable		Flatterable	
Affectionate		Dominant		Theatrical	
Conscientious		Tender		Self-sufficient	
Independent		Conceited		Loyal	
Sympathetic		Willing to take a stand		Happy	
Moody		Love children		Individualistic	
Assertive		Tactful		Soft-spoken	
Sensitive to needs of others		Aggressive		Unpredictable	
Reliable		Gentle		Masculine	
Strong personality		Conventional		Gullible	
Understanding		Self-reliant		Solemn	
Jealous		Yielding		Competitive	
Forceful		Helpful		Childlike	
Compassionate		Athletic		Likable	
Truthful		Cheerful		Ambitious	
Have leadership abilities		Unsystematic		Do not use harsh language	
Eager to soothe hurt feelings		Analytical		Sincere	
Secretive		Shy		Act as a leader	
Willing to take risks		Inefficient		Feminine	
Warm		Make decisions easily		Friendly	

	a	b	Class
R.S.			
S.S.			

a - b   SS diff.

APPENDIX C

BODY AWARENESS QUESTIONNAIRE

The following is a list of common symptoms and feelings. For each item, circle the number for the category that best describes your experience of each of these symptoms during the four days before your most recent menstrual flow. Please report any experience of these symptoms whether or not they seem to you to be related to your menstrual cycle. Even if none of the categories is exactly correct, choose the one that best describes your experience. Please be sure to circle one number for each item.

		NONE	PRESENT MILD	PRESENT MODERATE	PRESENT STRONG	PRESENT SEVERE
1.	Muscle stiffness	0	1	2	3	4
2.	Weight gain	0	1	2	3	4
3.	Dizziness, faintness	0	1	2	3	4
4.	Loneliness	0	1	2	3	4
5.	Headache	0	1	2	3	4
6.	Skin blemish or disorder	0	1	2	3	4
7.	Cold sweats	0	1	2	3	4
8.	Anxiety	0	1	2	3	4
9.	Mood swings	0	1	2	3	4
10.	Cramps	0	1	2	3	4
11.	Painful or tender breasts	0	1	2	3	4
12.	Nausea, vomiting	0	1	2	3	4
13.	Crying	0	1	2	3	4
14.	Backache	0	1	2	3	4
15.	Swelling (breasts, abdomen)	0	1	2	3	4
16.	Hot flashes	0	1	2	3	4
17.	Irritability	0	1	2	3	4
18.	Tension	0	1	2	3	4
19.	Fatigue	0	1	2	3	4
20.	Feeling sad or blue	0	1	2	3	4
21.	General aches and pains	0	1	2	3	4
22.	Restlessness	0	1	2	3	4

		NONE	PRESENT MILD	PRESENT MODERATE	PRESENT STRONG	PRESENT SEVERE
23.	Insomnia	0	1	2	3	4
24.	Poor school or work performance	0	1	2	3	4
25.	Affectionate	0	1	2	3	4
26.	Feelings of suffocation	0	1	2	3	4
27.	Forgetfulness	0	1	2	3	4
28.	Take naps, stay in bed	0	1	2	3	4
29.	Orderliness	0	1	2	3	4
30.	Chest pains	0	1	2	3	4
31.	Confusion	0	1	2	3	4
32.	Poor judgment	0	1	2	3	4
33.	Stay at home	0	1	2	3	4
34.	Excitement	0	1	2	3	4
35.	Ringing in the ears	0	1	2	3	4
36.	Difficulty concentrating	0	1	2	3	4
37.	Avoid social activities	0	1	2	3	4
38.	Feelings of well-being	0	1	2	3	4
39.	Heart pounding	0	1	2	3	4
40.	Distractible	0	1	2	3	4
41.	Decreased efficiency	0	1	2	3	4
42.	Bursts of energy, activity	0	1	2	3	4
43.	Numbness, tingling	0	1	2	3	4
44.	Minor accidents	0	1	2	3	4
45.	Blind spots, fuzzy vision	0	1	2	3	4
46.	Poor motor coordination	0	1	2	3	4
47.	Increased appetite	0	1	2	3	4

APPENDIX D

LIFE EXPERIENCES SURVEY

Listed below are a number of events which sometimes bring about change in the lives of those who experience them and which necessitate social readjustment. Please check those events which you experienced in the past month and those you have experienced in the past six months (including the past month). **Be sure that all check marks are directly next to the items they correspond to.**

Also, for each item you check, please indicate the impact that event had on your life at the time you were experiencing it. This can be done by circling the number which corresponds to your feelings about the impact that particular event had on your life at the time. For example, if you circle (-3), this means that the event had an extremely negative impact on your life. A rating of (0) suggests no impact at all. A rating of (+3) would indicate an extremely positive impact.

		PAST MONTH	PAST 6 MONTHS	extremely negative	moderately negative	slightly negative	no impact	slightly positive	moderately positive	extremely positive
1.	Marriage			-3	-2	-1	0	+1	+2	+3
2.	Detention in jail or comparable institution			-3	-2	-1	0	+1	+2	+3
3.	Death of spouse			-3	-2	-1	0	+1	+2	+3
4.	Major change in sleeping habits (much more or much less sleep)			-3	-2	-1	0	+1	+2	+3
5.	Death of close family member:									
	a. Mother			-3	-2	-1	0	+1	+2	+3
	b. Father			-3	-2	-1	0	+1	+2	+3
	c. Brother			-3	-2	-1	0	+1	+2	+3
	d. Sister			-3	-2	-1	0	+1	+2	+3
	e. Grandmother			-3	-2	-1	0	+1	+2	+3
	f. Grandfather			-3	-2	-1	0	+1	+2	+3
	g. Other (please specify) _____			-3	-2	-1	0	+1	+2	+3
6.	Major change in eating habits (much more or much less food intake)			-3	-2	-1	0	+1	+2	+3
7.	Foreclosure on mortgage or loan			-3	-2	-1	0	+1	+2	+3

		PAST MONTH	PAST 6 MONTHS	IMPACT ON YOUR LIFE AT THE TIME						
				extremely negative	moderately negative	slightly negative	no impact	slightly positive	moderately positive	extremely positive
8.	Death of close friend			-3	-2	-1	0	+1	+2	+3
9.	Outstanding personal achievement			-3	-2	-1	0	+1	+2	+3
10.	Minor law violations (traffic tickets, disturbing the peace, etc.)			-3	-2	-1	0	+1	+2	+3
11.	Pregnancy			-3	-2	-1	0	+1	+2	+3
12.	Changed work situation (different work responsibility, major change in working conditions, hours, etc.)			-3	-2	-1	0	+1	+2	+3
13.	New job			-3	-3	-1	0	+1	+2	+3
14.	Serious illness or injury of close family member:									
	a. Father			-3	-2	-1	0	+1	+2	+3
	b. Mother			-3	-2	-1	0	+1	+2	+3
	c. Sister			-3	-2	-1	0	+1	+2	+3
	d. Brother			-3	-2	-1	0	+1	+2	+3
	e. Grandmother			-3	-2	-1	0	+1	+2	+3
	f. Grandfather			-3	-2	-1	0	+1	+2	+3
	g. Other (please specify) _____			-3	-2	-1	0	+1	+2	+3
15.	Sexual difficulties			-3	-2	-1	0	+1	+2	+3
16.	Trouble with employer (in danger of losing job, being suspended, demoted, etc.)			-3	-2	-1	0	+1	+2	+3
17.	Trouble with in-laws			-3	-2	-1	0	+1	+2	+3
18.	Major change in financial status (a lot better off or a lot worse off)			-3	-2	-1	0	+1	+2	+3
19.	Major change in closeness of family members (increased or decreased closeness)			-3	-2	-1	0	+1	+2	+3

		PAST MONTH	PAST 6 MONTHS	IMPACT ON YOUR LIFE AT THE TIME						
				extremely negative	moderately negative	slightly negative	no impact	slightly positive	moderately positive	extremely positive
20.	Gaining a new family member (through birth, adoption, family member moving in, etc.)			-3	-2	-1	-	+1	+2	+3
21.	Change of residence			-3	-2	-1	0	+1	+2	+3
22.	Major change in church activities (increased or decreased attendance)			-3	-2	-1	0	+1	+2	+3
23.	Major change in number of arguments with boyfriend or mate (a lot more or a lot less arguments)			-3	-2	-1	0	+1	+2	+3
24.	Major change in usual type and/or amount of recreation			-3	-2	-1	0	+1	+2	+3
25.	Borrowing more than $10,000 (buying a home, business, etc.)			-3	-2	-1	0	+1	+2	+3
26.	Borrowing less than $10,000 (buying car, TV, getting school loan, etc.)			-3	-2	-1	0	+1	+2	+3
27.	Having an abortion			-3	-2	-1	0	+1	+2	+3
28.	Major personal illness or injury			-3	-2	-1	0	+1	+2	+3
29.	Major change in social activities, e.g., parties, movies, visiting (increased or decreased participation)			-3	-2	-1	0	+1	+2	+3
30.	Major change in living conditions of family (building new home, remodeling, deterioration of home, neighborhood, etc.)			-3	-2	-1	0	+1	+2	+3
31.	Divorce			-3	-2	-1	0	+1	+2	+3
32.	Serious injury or illness of close friend			-3	-2	-1	0	+1	+2	+3
33.	Ending of formal schooling			-3	-2	-1	0	+1	+2	+3
34.	Separation from spouse (due to work, travel, etc.)			-3	-2	-1	0	+1	+2	+3

	PAST MONTH	PAST 6 MONTHS	IMPACT ON YOUR LIFE AT THE TIME						
			extremely negative	moderately negative	slightly negative	no impact	slightly positive	moderately positive	extremely positive
35. Engagement			-3	-2	-1	0	+1	+2	+3
36. Breaking up with boyfriend			-3	-2	-1	0	+1	+2	+3
37. Leaving home for the first time			-3	-2	-1	0	+1	+2	+3
38. Reconciliation with boyfriend			-3	-2	-1	0	+1	+2	+3
39. Beginning a new school experience at a higher academic level (college, graduate school, professional school, etc.)			-3	-2	-1	0	+1	+2	+3
40. Transferring to a new school at same academic level (undergraduate, graduate, etc.)			-3	-2	-1	0	+1	+2	+3
41. Academic probation			-3	-2	-1	0	+1	+2	+3
42. Being dismissed from dormitory or other residence			-3	-2	-1	0	+1	+2	+3
43. Failing an important exam			-3	-2	-1	0	+1	+2	+3
44. Changing a major			-3	-2	-1	0	+1	+2	+3
45. Failing a course			-3	-2	-1	0	+1	+2	+3
46. Dropping a course			-3	-2	-1	0	+1	+2	+3
47. Joining a sorority			-3	-2	-1	0	+1	+2	+3
48. Financial problems concerning school (in danger of not having sufficient money to continue)			-3	-2	-1	0	+1	+2	+3
49. Other recent experiences which have had an impact on your life. List and rate.			-3	-2	-1	0	+1	+2	+3
50.			-3	-2	-1	0	+1	+2	+3
51.			-3	-2	-1	0	+1	+2	+3

APPENDIX E

BACKGROUND INFORMATION

Please answer the following questions.

1. How old are you?_____

2. How do you primarily describe yourself? (Circle one)

    a. American Indian
    b. Black or Afro-American
    c. Mexican American or Chicano
    d. Puerto Rican or other Latin American
    e. Oriental or Asian American
    f. White or Caucasian
    g. Other (please specify)_____

3. What is your present marital status? (Mark one)

    a. Single
    b. Engaged
    c. Married
    d. Separated
    e. Divorced

4. Do you have any children? (Circle One) YES   NO   If so, how many?_____

5. What is your religious preference? (Mark one)

    a. Protestant (Baptist, Presbyterian, Methodist, Lutheran, etc.)
    b. Catholic
    c. Jewish
    d. Eastern Orthodox
    e. None
    f. Other (Please specify)_____

6. Medical History

    a. Are you currently using contraceptives? (Circle one)   YES   NO
        If yes, what method are you using?_____

    b. Is your menstrual cycle regular? (Circle one)   YES   NO
        If no, please explain_____
        _____

    c. What is the length of your menstrual cycle (in days)?_____

    d. What is the length of your menstrual flow (in days)?_____

    e. Are you currently using any prescription medications for premenstrual
        discomfort?   YES   NO
        If yes, please list them_____
        _____

    f. Are you currently using any non-prescription medications for
        premenstrual discomfort?   YES   NO
        If yes, please list them_____
        _____