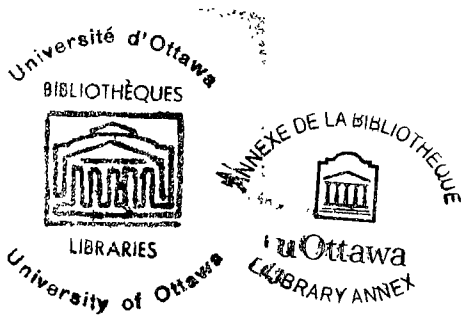
ALCOHOLISM AND THE MENSTRUAL CYCLE

Lina Charette

Thesis submitted to the School of Graduate Studies of the University of Ottawa in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the School of Psychology.



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Curriculum Studiorium

Lina Charette was born in Moonbeam on September 22, 1958. She received an Honours degree in psychology from the University of Ottawa in 1981.

Abstract

This study investigated whether alcohol consumption varies as a function of menstrual cycle, distress symptomatology and global stress in moderately drinking young women at high and low (HR, LR) risk for alcoholism by virtue of family history. Eighty-two normally menstruating women (52 LR and 30 HR) completed several personality inventories and then monitored their alcohol intake, physical and affective distress symptoms and global stress level daily over two consecutive menstrual cycles. Subjects were unaware that their menstrual cycles were being monitored. The findings for personality measures were negative. The results confirmed the presence of increased physical distress symptomatology during the pre- and menstrual phases but did not show any variation in negative affect or global stress ratings throughout the menstrual cycle. HR subjects were aware that they were at higher risk for alcoholism and they consumed more alcohol. However, alcohol consumption was not related to the menstrual cycle, distress symptoms, or global stress. Subjects reported that they drank most frequently with others for pleasure enhancement and rarely for pain or tension-reduction. Subjects also drank more on weekends than weekdays. These findings suggest that the menstrual cycle does not play an etiological role in the development of alcoholism in women. It would appear that social factors influence alcohol consumption in young healthy nonalcoholic women.

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CHAPTER 1

Introduction

Traditionally, alcoholism has been viewed as primarily a male disorder. Surveys of drinking behavior in the general population have typically found women to drink less than men and to report fewer alcohol-related problems (Malin et al., 1982). However, estimates of the prevalence of alcohol problems suggest considerable increases for women since World War II (Fillmore, 1984). There is also evidence that women born during the 1950s may have a higher rate of heavy-frequent drinking than the generations of women who preceded them (Wilsnack et al., 1986).

In 1984, there were an estimated 167,000 female alcoholics comprising 33 percent of all alcoholics in Canada (Addiction Research Foundation, 1988). These estimates of female alcohol abusers may not include many who remain undetected by virtue of drinking in the privacy of their homes, or who are not seeking help for their problem. A 1985/1986 survey of all alcohol treatment services in Ontario indicated that women accounted for only 23 percent of their cases (Addiction Research Foundation, 1988).

Research on alcoholism has also traditionally focused on men and much of what is known about alcoholism is based on studies of male alcoholics. In a literature review by Schuckit

(1972) there were only 29 studies of alcoholism in women published in the English language between 1929 and 1970. Hence, diagnosis, treatment and prevention issues for women were not differentiated and findings about alcoholism in males were assumed to apply to women (Mello, 1980). Fortunately, in recent years, a focus on female alcoholism has emerged and is accruing rapidly. This research has produced evidence that male and female alcoholics differ on physiological, psychological and social factors. For example, female as opposed to male alcoholics have been shown to have increased mortality (Rasmussen, 1984, Weschler, 1980), are more likely to be judged immature and compulsive (McConville, 1983), and to have a lower self-esteem (Beckman, 1978).

Although differing from their male counterparts, alcoholic women also constitute a heterogenous group (Beckman, 1976; Gomberg, 1976). Thus, for the past 15 years, a tremendous effort has been invested in identifying factors (e.g., socio-economic status, marital status, employment status, psychopathology, major crisis, family history) which might differentiate subgroups of alcoholic women with different etiology perhaps requiring different treatment approaches. There have been a variety of etiological theories about female alcoholism, some of which have focused on the feminine physiology (e.g., Belfer et al., 1971; Jones & Jones, 1976).

One of these theories has been that premenstrual tension and discomfort may lead to increased alcohol consumption and eventually alcoholism in women who attempt to self-medicate with alcohol (Belfer et al., 1971; James, 1975; Jones & Jones, 1976; Lisansky, 1957; Lolli, 1953; Podolsky, 1963; Wall, 1937). Although this alcoholism-menstrual cycle hypothesis has persisted for over 50 years, it has been submitted to rigorous investigation only recently. The following is a review of the evidence on the menstrual cycle and its presumed role in the etiology of alcoholism in women.

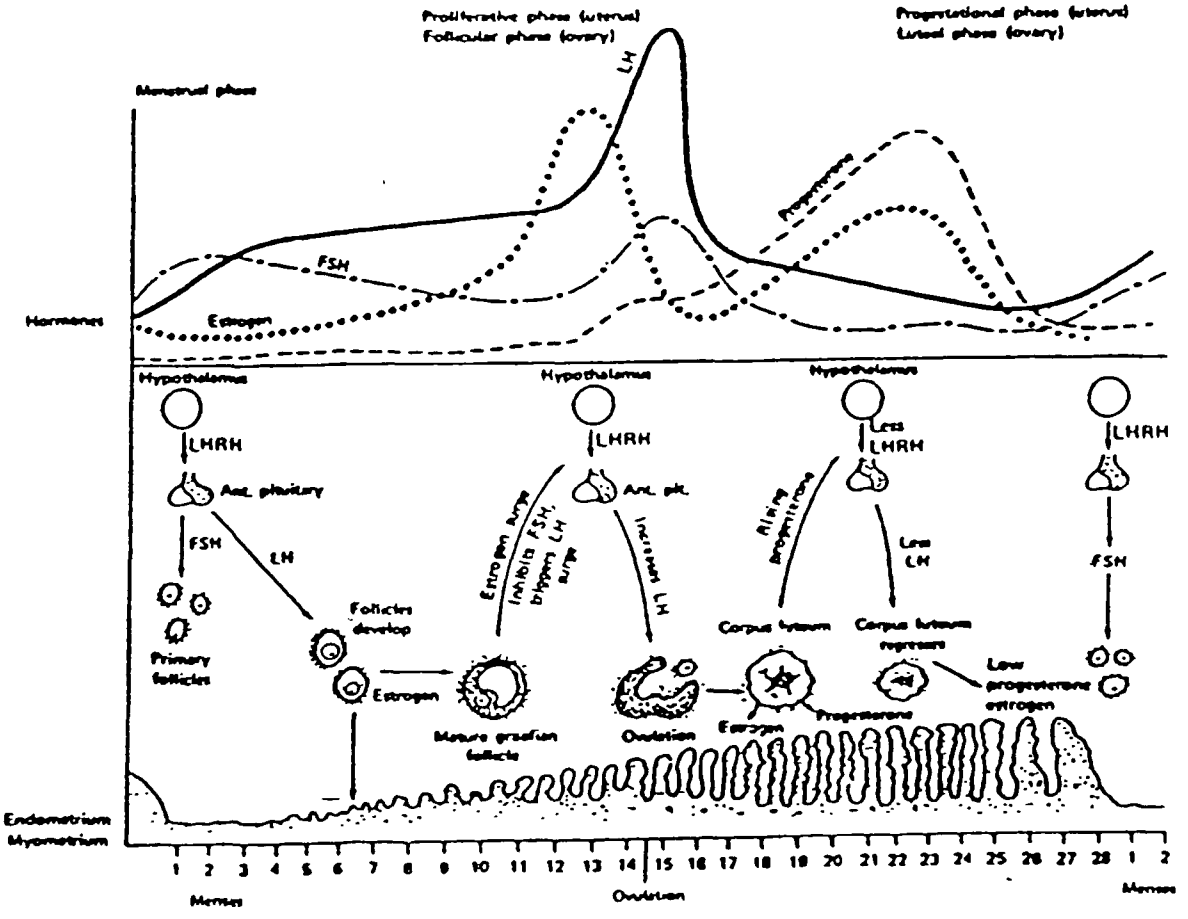
CHAPTER II

Literature Review

Brief Description of the Menstrual Cycle

The menstrual cycle is a complex phenomenon involving the autonomic, central and peripheral nervous systems and the endocrine system (Figure 1). It involves the rhythmical fluctuations of hormones of the hypothalamus, the anterior pituitary and the ovaries, as well as the morphological changes that occur in the ovaries and the endometrium of the uterus. At the beginning of the cycle, the hypothalamus produces luteinizing hormone-releasing hormone (LHRH) which causes the anterior pituitary to release gonadotropic follicle-stimulating hormone (FSH) and luteinizing hormone (LH). FSH stimulates the growth and development of the primary follicles of the ovaries and induces increased ovarian estrogens. Through inhibitory feedback, the increasing estrogen levels suppress FSH, which in turn inhibits further development of the follicles. However by that time a dominant follicle has been chosen for ovulation and has the capacity for continued growth and production of high levels of estrogens despite the decreased FSH levels. During the midfollicular phase, the estrogen levels peak, causing the pituitary and hypothalamus to initiate a surge of LH which causes ovulation within the next 24 to 38 hours. The ovum is then expelled from the ruptured follicle and is ready to be fertilized.

Figure 1. The hormonal levels and events of the ovarian and endometrial cycles in the absence of fertilization.



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In the meantime, the granulosa cells of the ruptured follicle enlarge, undergo luteinization and become the corpus luteum. The corpus luteum begins to produce progesterone and estrogen, reaching peak activity eight days after ovulation. If fertilization has occured, the ovum is implanted in the endometrium of the uterus at this time. In the absence of fertilization, the corpus luteum regresses since there are no hormones available from a developing embryo to sustain it. After 14 to 16 days it ceases functioning. With its decline, estrogen and progesterone levels decrease rapidly to a low level during the premenstruum and, through positive feedback, FSH and LH increase again to initiate a new cycle with the menstrual flow (for a more detailed description, refer to Sloane, 1985, pp. 59-82).

Operationally, the menstrual cycle is defined as the interval from the first day of menstruation to the day preceding the onset of the next menstruation. Three major phases are typically distinguished: 1) menstruation, which refers to the time of the actual flow; 2) ovulation, which corresponds approximately to the time in the middle of the cycle when the ovum is released from its follicle, and 3) premenstruation, which refers to the three days preceding the onset of the menstrual flow. A characteristic pattern of ovarian hormonal fluctuations is associated with these phases. At the beginning of the cycle, the estrogen level is low, rising steadily to a peak at

ovulation, after which it drops considerably to increase again and finally drop to its initial low during the premenstruum. On the other hand, the level of progesterone remains low before ovulation, increases to a high after ovulation, and then drops precipitously during the premenstruum.

Alcohol Consumption and the Menstrual Cycle

Wall (1937) first suggested that alcohol consumption may be related to female physiological functioning. Reviewing charts of 50 inpatient alcoholics and drawing upon their biographic and demographic data, he concluded that dysmenorrhoea coincided with increased alcohol consumption in a subgroup of his sample.

Later, Lolli (1953) wrote a brief review of alcoholism in women in which he presented insights gained through clinical experience with both alcoholic and nonalcoholic women drinkers. Like Wall, he noted an apparent connection between periods of excessive and uncontrolled drinking and the beginning of menstruation. However, he viewed drinking as an attempt to alleviate the mild but commonly occuring depressive symptoms experienced during the premenstruum. He noted that this seemed accentuated in neurotic women and that women who presented with addictive traits (which he did not define) might use alcohol to attempt to alleviate these "unpleasant" symptoms. They might also continue drinking after the disappearance of the symptoms.

Hence, Lolli stated that premenstrual depressive mood was a potential precipitating factor for excessive and uncontrolled drinking in women susceptible to alcoholism.

Subsequently, Lisansky (1957) objected to the simplicity of this supposition and argued that a woman's difficulty accepting her feminine physiological functions and roles could have a greater effect on drinking behavior than hormonal events themselves. She suggested a linkage between the stress of the menstrual cycle, affective disturbance, and alcoholism. However, her proposal was not supported by empirical data.

Podolsky (1963) presented seven case studies of alcoholic women each reporting that they consumed significantly more alcohol during the premenstruum. He stated that premenstrual tension is marked by sensitivity, irritability and depression. He also suggested that there is a psychological aspect to premenstrual tension which is related to the woman's acceptance of her feminine role and her ability to cope with life stresses (e.g., interpersonal relationships, environmental demands, self-perceptions). Podolsky considered that alcohol was used to reduce painful stimuli associated with premenstrual tension when the woman was unable to face the other stresses in her life. Unfortunately, these case studies lack empirical data, weakening his conclusion that "In general such women drink in order to alleviate the symptoms of premenstrual tension... the tempo of

drinking is increased during the premenstruum" (p.818).

Belfer et al. (1971) also postulated that the stress of the menstrual cycle might be a "clear precipitant" of alcoholism in certain women. They studied 44 women of whom 34 were alcoholic and 10 nonalcoholic wives of alcoholics. The average age in these groups was 45 and 44, respectively. Sixty-seven percent (14/21) of the menstruating women and 46 percent (6/13) of the nonmenstruating women in the alcoholic sample related their drinking to their menstrual cycle, primarily the premenstruum. Of these 20, 45 percent (9) said their drinking continued into the menstruum. On measures of anxiety, depression, femininity and demographic variables, the alcoholic women who related their drinking to their menstrual cycle did not differ significantly from those who did not (whether pre- or postmenopausal). The alcoholic group was significantly more depressed and anxious than the nonalcoholic group whose scores were similar to those of a reference population of healthy women. Hence the relationship between abusive drinking, the menstrual cycle, and affective disturbance was not shown. Belfer and Shader suggested that the perceived relationship to the menstrual cycle should be interpreted with caution, as single factors may not be the sole determinants. They suggested that an interaction between acceptance of feminine role and perception of premenstrual physiological changes may serve as a significant stress leading to the reported correspondence between the menstrual cycle and

alcohol consumption. They concluded that "the potent force of endocrine balance must not be overlooked as a significant factor operating within this group" (p.543).

In a study with the objective of determining the validity of Jellineck's stages of alcoholism in women, James (1975) mailed out questionnaires to 89 female Alcoholics Anonymous (AA) members. Although 31 percent of the respondents reported drinking more during the premenstruum and 17 percent more during menstruation, the results remain questionnable given the extremely low return rate of 15 percent.

Not all early reports supported the alcoholism-menstrual cycle hypothesis. Reviewing data from several interviews with 69 alcoholic women (average age 42), Wood and Duffy (1966) observed that several biographic and demographic factors (e.g., parent-child interaction, family history of alcoholism) appeared to be important precipitating factors but they were "unimpressed" with the relationship between onset of alcoholism and hormonal events (unspecified). Similarly, Driscoll and Barr (1972) reported that only one female alcoholic out of 100 spontaneously related her drinking to menstruation.

It is reasonable to assume that the effects of the menstrual cycle upon alcohol consumption in nonalcoholic drinking women might also be relevant to this hypothesis. Therefore, Jones and

Jones (1976) carried out three studies examining the effects of alcohol as a function of the menstrual cycle in moderate social drinkers.

In their initial study, subjects drank 0.66 milliliters of 95 percent ethanol per kilogram of body weight. Blood alcohol levels (BALs) were obtained by Breathalyzer. Twenty women were tested at two of the three phases of their menstrual-cycle and 10 men at comparable two week intervals. Peak BALs and faster absorption rates were obtained during the premenstruum and were significantly higher than for the menstrual and intermenstrual phases. Women also reached significantly higher BALs than men, a finding which was replicated using other alcohol doses (0.33ml/kg and 1.32ml/kg).

Jones and Jones then gave three women the same alcohol dose (0.66ml/kg) on a daily basis for a complete menstrual cycle. Although the daily dose was constant, BALs varied across the phases of the cycle, with peak BALs occuring during the premenstruum and about the time of ovulation. They postulated that this variability across the menstrual cycle was related to changing levels of estrogen and progesterone which had been shown in animal research to influence drinking behavior (Wallgren, 1970). Animal studies have shown decreased voluntary alcohol consumption associated with high estrogen levels (the ovulatory phase in human females). Also, rats receiving estrogen

injections (Aschkenasy-Lelu, 1958, 1960a, 1960b; Mardones, 1960; Wallgren, 1970), given oral contraceptives to increase estrogen levels (Eriksson, 1969), or in the estrous stage of their menstrual cycle (Aschekenasy-Lelu, 1960a, 1960b) have all been shown to voluntarily consume less alcohol.

Assuming that the metabolic rate for alcohol was affected by hormonal levels, Jones and Jones compared women taking oral contraceptives (having a constant high level of progesterone and estrogen during the cycle) with normally cycling women. Alcohol metabolism in 11 women taking oral contraceptives was slower than for 11 normally cycling women, and 11 men. Normally cycling women absorbed alcohol faster during the premenstruum but also metabolized it faster, the implication being that these women would have to consume more alcohol to maintain a given level of intoxication. When subjects were asked to provide a retrospective estimate of the amount of alcohol consumed during the previous month, women on oral contraceptives reported drinking significantly less alcohol than the other two groups ($t = 2.09$, $p < .05$).

To summarize these three studies, women were found to reach higher BALs than men following the ingestion of equivalent doses of alcohol, and their BALs were highest during the premenstruum. In addition to absorbing alcohol faster, normally cycling women metabolized it faster during the premenstruum. Synthetic

estrogens impaired the metabolism of alcohol, and women taking them retrospectively reported consuming less alcohol than normally cycling women. However, Jones and Jones did not actually demonstrate that women drank more during the premenstruum and, as in previous investigations, relied on retrospective reports.

Integrating their findings with those of others, Jones and Jones proposed a model of female alcoholism based on the following observations:

a) depression is one of the most commonly reported symptoms of alcoholic women (e.g., Beckman, 1975; Schuckit et al., 1969; Winokur & Clayton, 1968);

b) depressed women usually have elevated monoamine oxidase (MAO) activity that may result in depression (Klaiber et al., 1972, 1974);

c) estrogens, which inhibit monoamine oxidase (MAO) (Janowsky et al., 1971; Klaiber et al., 1972), had been successfully used to treat depression in women (Klaiber et al., 1971, 1974);

d) alcohol is a MAO inhibitor (Schenker et al., 1967);

e) normal women frequently report depression during the premenstrual phase (Kessel & Coppen, 1963; Moos, 1969) when estrogen is low and associated MAO activity high;

f) since chronic alcohol consumption had been shown to decrease testosterone levels in males (Mendelson & Mello, 1974), it could be inferred to decrease estrogen levels in females. This assumption subsequently received support when Tittmar (1978) showed continuous alcohol consumption interfered with estrogen production and the estrous cycle in the rat. There have also been reports that chronic alcohol ingestion causes cessation of menstruation in humans (Ryback, 1977).

g) some women claim that they consume more alcohol during the premenstruum to relieve depressive symptoms (e.g., Wall, 1937).

Jones and Jones' model of alcoholism in women holds that naturally occuring low levels of estrogen and associated increases in MAO activity during the premenstruum trigger depressed mood in normally cycling women. Since ethanol may be a MAO inhibitor, women may drink to decrease MAO activity, thereby relieving depressive symptoms. As estrogen levels increase with the onset of the menses, reducing MAO activity, the need for alcohol also decreases. Thus, for these women, a cyclical drinking pattern develops, with more alcohol consumed during the

premenstruum. To explain sustained drinking, Jones and Jones suggested that regular drinking suppresses estrogen levels, leading to increased MAO activity and depression. Thus a "vicious circle" of increased alcohol intake could develop through its impact on hormonal events. Although the model provides an explanation for cyclical drinking, the explanation of the transition from cyclical to continuous drinking is less plausible.

The Jones and Jones model is a more detailed version of the original alcoholism-menstrual cycle hypothesis and relies entirely upon the presumed effects of hormones and alcohol upon mood. It is a more biological than psychological version of the hypothesis. Unfortunately, Jones and Jones did not provide empirical evidence for the claimed relationship between alcohol consumption and estrogen levels, leaving this attractive proposition in need of further evaluation.

To this point, there were no controlled prospective studies demonstrating that some women consume more alcohol during the premenstruum. In fact, there were no rigorous data supporting the occurrence and nature of significant premenstrual symptoms during the premenstruum. With the exception of the Jones and Jones studies, all reports were based on small samples of alcoholic women using retrospection. The validity of this technique is questionable. Fontana (1966) suggested that

retrostpective reports are subject to "social attitudes, desirability, selective forgetting, distortions, inaccurate recall". Also, there were no controls for normalcy of menstrual cycling. Wilsnack (1973) had reported that 78 percent of women alcoholics as compared to 35 percent of controls suffer from some kind of gynecological disorder, the most common being amenorrhea. It was possible, therefore, that some subjects were recalling menstrual symptoms experienced several years earlier.

This lack of scientific rigor prompted Ascher-Svanum (1982) to investigate whether women drink more alcohol during the premenstruum to alleviate the distress associated with a "premenstrual syndrome". This was the first study of voluntary alcohol consumption across the phases of the menstrual cycle, and it directly addressed the Jones and Jones (1976) model described above.

Using a prospective double-blind design, 99 moderate drinking women (39 users of oral-contraceptives and 60 normally cycling women) provided daily self-reports of alcohol consumption, intake of other licit drugs, physical and psychological distress (water-retention, pain, and negative subscales of the Menstrual Distress Questionnaire (MDQ)), and occurrence of life-events over two menstrual cycles. The subjects' ages ranged from 21 to 42 years, with an average of 25 years. Seventy percent of these subjects completed the nine-week

evaluation.

Moderate drinkers were defined according to Cahalan et al.'s (1969) Quantity-Frequency-Variability Index of Drinking. Moderate drinkers are those who drank at least once a month, typically several times, but who do not usually consume more than three to four drinks per occasion. The premenstrual phase was defined as the three days preceding the onset of the menses. Ovulation was defined as the three midcycle days, calculated by counting 14 $\pm$ 1 days backwards from the beginning of the menses. The menstruation phase was the first three days of menstrual bleeding.

Because the menstrual cycle has been shown to be heavily laden with negative social attitudes and beliefs (e.g., Brooks-Gunn & Ruble, 1980; Paige, 1971; Parlee, 1973), Ascher-Svanum controlled for the influence of these factors upon the self-report measures. Subjects were not told that the study had anything to do with the menstrual cycle and unobtrusive measures of menstrual symptoms were used along with a post-experimental interview to uncover privately held hypotheses concerning the study. These procedures were necessary to eliminate expectancy/attitudinal as opposed to physiological factors influencing any changes in reported alcohol consumption across the menstrual phases. Only one subject was aware that the menstrual cycle had anything to do with the study.

Neither group (normally cycling or maintained on oral-contraceptives) consumed more alcohol during any phase of the cycle, nor was alcohol intake associated with reports of physical or psychological menstrual or premenstrual distress. Age was the only variable associated with alcohol consumption in that younger women (age 21 to 23) consumed more alcohol. Ascher-Svanum concluded that nonalcoholic women do not consume more alcohol during the premenstruum but rather they tend to increase their use of analgesics.

Normally cycling women in the Ascher-Svanum study did report more pain symptoms during both premenstruation and menstruation and more water-retention symptoms during menstruation only. These findings support the concept of a "paramenstrual syndrome" with increased physical distress in both the pre- and menstrual phases. For women on oral contraceptives, global distress (all symptoms combined) was elevated during the menstrual phase only. Negative affect increased "only slightly" ($p < .10$) at menstruation as compared to ovulation for both groups. These results suggest that physiological rather than emotional symptoms are the main components of the paramenstrual syndrome.

One criticism of the Ascher-Svanum study is that there were no measures of the subjects' intent to self-medicate, as their reasons for drinking were not assessed. In other words, the alcoholism-menstrual cycle hypothesis could be broken down into

two parts: a) alcohol consumption increases during the premenstruum, and b) women increase their consumption with the intent to relieve premenstrual symptoms. Even if the first part was not supported by the results, it is possible that the subjects' motivations for drinking were different during the premenstrual phase.

In summary, the Ascher-Svanum study did not support the assumption that moderately drinking women consume more alcohol during the premenstruum. Physical but not emotional distress symptoms varied over the cycle, with the menstrual phase being the most distressful.

Sutker et al. (1983) carried out a similar study of the interrelationship of menstrual phase, mood, and alcohol consumption in normally cycling women and women on oral contraceptives. They included a control group of men for the alcohol consumption and mood variables. They hypothesized that women would experience more negative mood at certain phases of the cycle (e.g., menstruation) and that alcohol consumption would increase with negative mood.

Thirty-two social drinkers (9 normally cycling women, 12 taking oral contraceptives, and 11 men (age not reported)) completed daily self-reports for two consecutive months. Social drinkers were defined as those drinking no more than 1.5 times

the national daily average of .94 oz/day and no less than twice a week. Each subject self-monitored daily alcohol consumption, mood state (using the Manifest Anxiety Adjective Check List), life events and basal body temperature (BBT). Subjects were also asked to give a reason for drinking and to describe the drinking situation (e.g., with whom, where, when, etc.). Radioimmunoassay and BBT charts were used to confirm ovulation in the normally cycling women. The ovulatory phase was defined as the day BBT dropped plus the following two days. Menstruation was defined as the days of consecutive bleeding (mean 5.67 days for normally-cycling women and 4.26 days for those taking oral contraceptives). The premenstrual phase was the last three days of the cycle. Corresponding intervals were designated for women taking oral contraceptives and male subjects. For each dependent variable, total scores were calculated for each phase.

As in the Ascher-Svanum study, an attempt was made to obscure the focus of the study by including measurements of life events and mood states and a group of male subjects. It is unlikely, however, that subjects would not have been aware of the focus of the study since they were asked to keep their BBT, a well known method of identifying time of ovulation. Unfortunately, Sutker et al. did not conduct a post-study interview to verify the subjects' privately-held beliefs about the purpose of the study. It is thus unclear whether the subject's expectations resulted in some biases in the data.

Time-series analysis was used to assess the extent to which alcohol consumption could be predicted using multiple predictors (menstrual cycle phase, mood, preceding day's alcohol intake, life events, gender and use of oral contraceptives). Subjects did not consume more alcohol during any of the phases and alcohol intake was not correlated with negative mood state, corroborating the Ascher-Svanum (1982) results.

Other analyses revealed that normally cycling women drank alone more frequently during the menstrual phase, and reported drinking for tension reduction or relief of negative affect more often. During the remainder of the cycle, pleasure enhancement motives were more frequently reported. Normally cycling women as compared to those on oral contraceptives and males reported greater feelings of anxiety, depression and hostility (derived from the MAACL) during the menstrual phase than during ovulation or premenstruation.

Sutker et al. (1983) concluded:

> ... there seem to be no singular motives for alcohol consumption in groups of female drinkers across situations. The fact that this sample of healthy, intelligent, working women drank alone and purposively to relieve tension and depression more frequently during menstrual flow suggests that such factors, especially when associated with elevated negative moods, may prompt

> maladaptive drinking patterns among heavier drinking samples. Normally cycling women did not consume more alcohol during menstruation, but they drank in different contexts for different reasons - phenomena which might well be manifested dramatically among certain subsets of women who characteristically consume greater amounts of alcohol or are at high risk for development of abuse patterns (p.331).

Finally, Harvey and Beckman (1985) also examined the menstrual cycle and alcohol consumption in moderate drinkers. The subjects were women who drank at least twice a week but consumed no more than 1.5 ounces of absolute alcohol per day and had never been in treatment for alcohol abuse. Sixty-nine normally cycling women (mean age of 24) self-monitored frequency and quantity of alcohol consumption and BBT on a daily basis for 2 or 3 consecutive menstrual cycles. Temperature charts were used to confirm the time of ovulation and to define five phases: menstrual, follicular, ovulatory, luteal and premenstrual. The ovulatory phase included the day characterized by a BBT drop and the following three days. The menstrual phase consisted of the days of actual flow. The premenstruum consisted of the three days preceding the onset of the menstrual flow, and the follicular and luteal phases were bounded by the menstrual and ovulatory, and ovulatory and the premenstrual phases, respectively. The subjects were aware that the study concerned the menstrual cycle but were led to believe that it was an

investigation of factors affecting time of ovulation.

The results were that frequency of alcohol use did not vary across the five phases of the cycle, but quantity of alcohol consumed was higher during the luteal phase when estrogen and progesterone levels are elevated. Interestingly, both measures of drinking were lowest during the premenstruum. Of the prospective studies, this was the only one to have shown cyclical fluctuations in alcohol intake across the menstrual cycle and the finding was contradictory to the alcoholism-menstruation hypothesis. The authors concluded that more research was needed to clarify the relationship between female drinking patterns, the menstrual cyle and fluctuating hormone levels.

To summarize, these three prospective studies (Ascher-Svanum, 1982; Harvey & Beckman, 1985; Sutker et al., 1983) all failed to demonstrate that moderate drinking women increase their alcohol intake during the premenstrual or menstrual phases. One found higher alcohol consumption in the luteal as compared to the premenstrual phase (Harvey & Beckman, 1985). Two of the three studies, assessed menstrual distress symptomatology. Using the Moos MDQ, Ascher-Svanum found increased physiological distress during the "paramenstruum". Using the MAACL, Sutker et al. found significantly more negative mood states during the menstrual phase. Sutker et al. also found that women drank more frequently alone during the menstrual phase and more frequently reported drinking for tension reduction or relief of negative

affect. Finally, only the Ascher-Svanum study employed effective controls for the confounding influence of subject's expectations. It is doubtful that the subjects were blind to the importance of the menstrual cycle in both the Sutker et al. and Harvey and Beckman studies given that they were monitoring their BBT. Hence, the reported fluctuations in negative moods and reasons and context for drinking may have been affected by the subjects' expectations about the effects of their menstrual cycle.

CHAPTER III

The Problem

Numerous investigators have proposed, on the basis of anecdotal evidence, that some women consume more alcohol during the premenstruum to alleviate dysphoria, and that for certain individuals this contributes to the development of alcoholism (Belfer et al., 1971; James, 1975; Lisansky, 1957; Lolli, 1953; Podolsky, 1963; Wall, 1937). When submitted to more rigorous evaluation in prospective studies of alcohol consumption across the cycle in moderate drinkers, this assumption was not supported (Ascher-Svanum, 1982; Harvey & Beckman, 1985; Sutker et al., 1983). As a consequence, it has been suggested that the menstrual cycle may influence alcohol consumption in subgroups of female drinkers, either heavier drinkers or those at HR for the development of alcoholism (Ascher-Svanum, 1982; Sutker et al., 1983). The present study is designed to assess alcohol consumption as a function of menstrual phase, distress symptomatology, and global level of stress in women at HR and LR for alcoholism.

There were several important methodological considerations. For example, an alternative explanation of reports by alcoholic women that they drank in response to the negative affects of the premenstruum is that these reports were attempts to explain and legitimize their use of alcohol and reduce the stigma associated

with alcoholism. It is well known that negative stereotypical attitudes consistently characterize the premenstruum (Erickson, 1977). Furthermore, women with negative expectancies toward menstruation have reported more pre- or menstrual distress than women who did not have such expectations (Brooks-Gunn & Ruble, 1980). Retrospective reports of menstrual distress by normal, healthy women have consistently overrestimated daily reports (e.g., Ascher-Svanum, 1982; May, 1976; Paige, 1971; Sommer, 1973; Sutker et al., 1983). College women who were led to believe they were premenstrual reported significantly more negative symptoms than those who believed they were intermenstrual (Ruble, 1977). The same pattern of response was obtained when college women were asked to answer as if they were premenstrual as compared to intermenstrual (Brooks, Ruble & Clark, 1977). Hence, retrospective reports by alcoholic women of increased alcohol consumption during the premenstruum may have been influenced by their attitudes and expectancies toward the menstrual cycle. It was therefore essential to control for these factors by keeping subjects unaware of the focus of the study.

Recent studies have generally found increased symptomatology reported for both the premenstrual and menstrual phases and some investigators have preferred the terms "paramenstrual syndrome" or "perimenstrual syndrome" as opposed to "premenstrual syndrome" (Ascher-Svanum, 1982; Logue & Moos, 1986). In addition, age-related findings suggest that younger women report

relatively more menstrual distress whereas older women (over the age of 30) complain of relatively more premenstrual distress (Dalton, 1959; Golub, 1976; Golub & Murphy-Harrington, 1981; Moos, 1968). It is important, therefore, to examine both phases of the cycle.

Because the alcoholism-menstrual cycle hypothesis is that women increase their alcohol intake during the premenstruum to relieve distress, it was important to demonstrate increased distress symptoms during the paramenstruum. The hypothesis has been that alcohol is used primarily to relieve affective symptoms (dysphoria) but physical symptoms have been shown in one study to predominate (Ascher-Svanum, 1982). It was important, then, to have measures of both physical and emotional symptoms. As menstrual distress symptoms may interact with other external stressors, it was important to measure perceived global stress.

Alcoholism has long been considered a familial disorder and family studies have consistently shown that the incidence of alcoholism is greater in families of alcoholics than of nonalcoholics (see reviews by Cotton, 1979; Goodwin, 1971; 1979). For example, Lisansky (1957) found that approximately 50 percent of female and 33 percent of male alcoholics had at least one alcoholic biological parent. There is abundant evidence that the children of alcoholics, as a group, are at HR for the development of alcoholism, and family history remains the best

predictor of this risk (Goodwin, 1985). Studies of the antecedents, as opposed to the consequences, of alcoholism have often focused on the children of alcoholics before they show clear signs of alcohol abuse. The "High Risk Paradigm" is a strategy whereby young subjects with at least one alcoholic biological parent (HR) are compared to subjects without alcoholic parents (LR). This paradigm maximizes the chances of observing etiological influences by comparing subjects at two levels of risk. Alterman and Tarter (1983) have suggested that the HR Paradigm is a promising strategy for the preliminary investigation of psychological and biological vulnerabilities associated with alcoholism. The present study employed the HR Paradigm to investigate the alcoholism-menstrual cycle hypothesis in a group at higher risk for alcoholism.

Most research using the HR Paradigm has studied males. Subjects in the HR group have had at least one alcoholic parent, usually the father, and LR subjects have had nonalcoholic parents. According to Schuckit (1985), males are usually studied to avoid possible confounding by the menstrual cycle (e.g., Jones & Jones, 1976), or the effects of oral contraceptives in studies of alcohol ingestion. Several studies have found significant differences between HR and LR male subjects in baseline functioning and in response to alcohol ingestion. Schuckit (1985) has provided a detailed review.

There are only two published HR studies with female subjects. Hennecke (1984) studied both sons and daughters of alcoholic fathers, and concluded that children of alcoholics, regardless of sex, tend to have an augmenter perceptual style. The other study examined alcohol-induced body sway in 12 women (Lex et al., 1988), and found LR women to be significantly more affected by alcohol.

The assumption in the present study was that greater vulnerability to alcoholism in young HR women (prior to the development of clearly abusive drinking patterns) would manifest itself in their use of alcohol in response to the distress symptoms associated with the paramenstruum. However, before evaluating whether alcohol consumption increased as a function of paramenstrual distress in HR women, it was important to demonstrate whether they actually reported more distress in those phases than LR women. To explore whether individual personality characteristics were related to the impact of the menstrual cycle on drinking and distress variables, some personality measures were also included in the study.

The study was designed to test the following hypotheses:

1) Subjects will report more distress symptoms during the paramenstruum.

2) HR subjects will report more distress symptoms than LR subjects during the paramenstruum.

To test the first two hypotheses, 3-way analyses of variance with repeated measures on Phase and Cycle were performed on the four MDQ subscale scores.

3) HR subjects will report more global stress than LR subjects during the paramenstruum.

To test this hypothesis, a 3-way analysis of variance with repeated measures on Phase and Cycle was performed on global stress rating scores.

4) HR subjects will report increased alcohol consumption during the paramenstruum.

To test this hypothesis, a 3-way analysis of variance with repeated measures on Phase and Cycle was performed on alcohol consumption scores.

5) Alcohol consumption will vary as a function of distress symptoms (pain, water retention, autonomic reaction and negative affect).

To evaluate this hypothesis, four Pearson product-moment correlations were calculated between alcohol consumption and

total MDQ subscale scores.

6) Alcohol consumption will vary as a function of ratings of global stress.

To test this hypothesis, a Pearson product-moment correlation was calculated between total alcohol consumption and global stress ratings.

CHAPTER IV

Method

Subjects and procedures

Subjects were solicited from undergraduate psychology classes at the University of Ottawa and Algonquin College to participate in a nine-week, daily self-report study of "the interrelationships among life events, psychological and physiological distress and alcohol use". The investigation comprised three stages: initial screening, administration of a battery of personality tests, and completion of a daily self-report questionnaire for nine weeks.

Subjects who completed the initial selection questionnaire (Appendix A) were given a written description of the study and requested to complete a consent form (Appendix B). Subsequently, subjects meeting the selection criteria completed the Eysenck Personality Questionnaire (1975), the Barron-Ego Strength Scale (1953) and the Vando (1969) Reducer-Augmenter Scale (Appendix C). Materials and instructions for daily recording were then given in a 15-minute training session and subjects began daily self-monitoring of distress symptoms, global stress levels, alcohol intake and various "life events" for nine consecutive weeks (Appendix D).

Initial Screening

The selection questionnaire comprised four sections concerning demographic data, relevant medical history, the subject's drinking practices, and family history for alcoholism. The demographic data included age, marital status, living arrangement, student status, employment status, years of post-grade 12 education, weight, and parental income. The section concerning the medical history was designed to determine covertly if the prospective subject had any medical problem (e.g., gynecological or endocrinological disorder) which might affect the menstrual cycle, current use of medications (including oral contraceptives), current medical/psychiatric problems, and history of hospitalizations or surgery.

To ascertain whether the subject was using oral contraceptives, subjects were asked to circle those drugs they were currently using from a list of nine types of licit drugs which included oral contraceptives. No reference was made to the menstrual cycle in the selection questionnaire. At the end of the daily self-report stage the participants completed a brief questionnaire about contraceptive use, pregnancy, use of hormonal supplements and gynecological and/or endocrinological difficulties (Appendix E). At that point, irregularly-menstruating women were excluded from the study.

The drinking practices of the subject were ascertained by

asking if alcohol was consumed at least once a month and by the 24 questions comprising the Michigan Alcoholism Screening Test (MAST, Selzer, 1971). The MAST has been shown to be a reliable means of identifying alcohol abuse and alcoholism in a variety of populations (Hedlund & Vieweg, 1984), and has a classification accuracy of nearly 90 percent in non-clinical settings. Selzer et al. (1975) suggested a score of 0-4 indicates nonalcoholic status, 5-6 is suggestive of alcoholism, and 7 or greater indicates alcoholism. For the present study, subjects with scores of 5 or more were excluded as possibly having an alcohol abuse problem.

The subject's family history of alcoholism was assessed by the parental versions of the shorter MAST questionnaire (F-SMAST and M-SMAST). The F-SMAST and the M-SMAST are 13-item questionnaires designed to identify alcohol problems in the subject's father and mother, respectively. The reliability of the instrument in screening for parental alcoholism has been demonstrated (Sher & Descutner, 1986). Scores of five or more were considered indicative of parental alcoholism while scores of two or less were considered as ruling out parental alcoholism. The HR group comprised subjects reporting at least one alcoholic parent; the LR group no alcoholic parents. Subjects were also asked to identify the number of biological relatives (siblings, aunts, uncles, and grand parents) and the number of each who abuse(d) alcohol. LR subjects were excluded if they reported a

large number of nonparental relatives as alcohol-abusing. Four LR subjects were excluded by this procedure (7/22, 12/32, 7/16, 4/14 respectively).

Four hundred and twenty-three subjects completed the intitial screening and 96 subjects met the following criteria:

1. aged 18 to 28 years
2. consumed alcohol at least once a month
3. no history of significant alcohol problems (MAST score ≤ 4)
4. no hormonal contraceptive or supplement
5. no identified psychiatric/psychological disorder
6. no relevant medical problem
7. satisfied classification criteria for HR and LR groups

Personality Measures

Once selected, the subjects were asked to complete, at home, three paper-and-pencil personality questionnaires: the Vando Reducer-Augmenter scale (Vando R-A), the Eysenck Personality Questionnaire (EPQ), and the Barron Ego-Strength Scale (Es) (Appendix C).

The Vando R-A is a 54-item forced-choice questionnaire

which has been shown to be a reliable and valid measure of stimulus intensity modulation, and an economical predictor of pain tolerance (Vando, 1969). The scale is based on Petrie's (1967) theory of individual differences in perceptual-reactance in which she suggested that people can be classified by how they respond to stimulation as augmenters, reducers or moderates. Stimulus augmenters tend to overestimate the magnitude of stimulation and hence tend to be more sensitive to pain. Reducers tend to underestimate stimulus intensity, resulting in higher pain thresholds. Moderates are intermediate. Barnes (1985) commented that "a person's style of stimulus intensity modulation seems to be a pervasive personality characteristic that affects a person's life style, adjustment, and general outlook on life" (p.176). Hennecke (1984), using the HR Paradigm, found that stimulus augmentation was characteristic of the offspring of alcoholics, suggesting that this perceptual style could be premorbid to alcoholism.

The EPQ (Eysenck & Eysenck, 1975) measures personality in terms of three independent dimensions: extraversion-introversion (E), neuroticism-stability (N) and psychoticism (P). High E scores reflect outgoing, carefree, impulsive and sociable inclinations whereas low E scores describe quiet, introspective and reserved tendencies. The N scale differentiates emotional lability and stability while the P scale discriminates psychoticism versus toughmindedness. An

additional lie scale (L) identifies valid questionnaires.

There is evidence to suggest that alcoholics are primarily introverted as compared to nonalcoholics (Tarnai & Young, 1983), or that there are two subgroups of alcoholics, one introverted and one extroverted (MacAndrew, 1980). Schuckit (1983) examined two small groups of HR and LR males and found no significant between-group differences on the EPQ. There are no studies of this personality measure in HR and LR females.

The Es Scale, a subset of the MMPI, was developed by Barron in 1953. It was considered a "useful scale for assessing a person's adaptability and personal resourcefulness in a variety of situations" (Duckworth, 1980, p.204). It has been suggested that there are several ego functions, one of which is a stimulus barrier controlling incoming stimulation (Bellak et al, 1973). Research (e.g., Barnes, 1980) has shown that alcoholics score lower than non-alcoholics on measures of ego-strength, and that alcoholics may feel uncomfortable receiving too much stimulation from both internal and external sources. Ego strength has been reported to be one of the personality measures that best discriminates alcoholics from non-alcoholics (Barnes, 1980, p.908).

Daily Self-Reports

Subjects completed daily self-reports of alcohol consumption, menstrual symptoms, and global stress for nine consecutive weeks (Appendix D). To control for order effects, subjects began reporting at different points in their menstrual cycles; however, subjects were not aware of this procedure.

Once each week, the investigator met with each subject to give her a weekly supply of daily questionnaires in exchange for her output from the previous week. As an incentive for participating in the study, participants were given a weekly newsletter letting them know how the project was evolving. If a subject missed her weekly appointment, the investigator contacted her by telephone to ensure her continued participation. Each participant had an extra week's supply of questionnaires to prevent subjects from missing daily reports. On completion of the self-report period the participants were asked to state their perception of the purpose of the study (Appendix F).

As previously noted, the menstrual cycle is often associated with negative expectancies and stereotypical attitudes which could affect self-report data. To prevent this, a double-blind procedure was used so that subjects were not told the true purpose of the study before its completion and the investigator was blind as to whether a subject was in the HR or LR group.

Withholding the importance of the menstrual cycle from the participants constituted an element of deception, but one that did not affect the comfort or security of the subjects concerned. The investigator was able to debrief only a third of the subjects on completion of the study because it corresponded with the end of the semester and many students were not available. These other students will be debriefed via a newsletter.

Most alcoholism research has relied upon self-report measures of alcohol consumption, and concern has been expressed about their accuracy. Some have suggested that the only way to validate self-reported consumption is to observe the subject's drinking over time or measure blood alcohol concentration (Armor et al., 1978). Others have concluded that self-reports are generally valid (Polich, 1982). In a study of self-reported alcohol consumption in a general population survey, Williams et al. (1985) obtained reliability measures averaging 0.91. Streissguth et al. (1976) studied alcohol consumption in 78 pregnant women and conducted initial and follow up interviews one week apart for two time periods: five months after the onset of pregnancy and one month prior to pregnancy. They obtained test-retest reliabilities of 0.90 for pregnancy and 0.89 for the period prior to pregnancy. Garrett and Bahr (1974) validated a quantity-frequency measure against a global self-rating criterion and obtained average correlations of 0.61 for men and 0.82 for women. Cooke and Allan (1983) found that women were more likely

than men to classify their drinking patterns accurately.

Most studies of alcoholics (e.g., Cooper et al., 1981; Davidson & Stein, 1983; ; Sobell & Sobell, 1975; Sobell et al., 1978, 1979) have found satisfactory reliability and validity of self-reported measures in patients in alcoholism treatment centers. Using multiple measures of drinking behavior and self-reports, Sobell and Sobell (1975) found that 91.9 percent of self-reports were reliable and 85.9 percent were valid. Whereas quantity-frequency measures require subjects to select among a number of choices as to how often and how much they drink during a typical week, daily diaries have been shown to be much more accurate (Poikolainan et al., 1983; Redman et al., 1987). Daily diaries shorten the period of recall and obtain information on actual behavior so that informants do not have to generalize about their behavior. For these reasons, the present study used the daily diary method. Subjects were assured of confidentiality to encourage the most accurate results. It should also be noted that when subjects self-monitor alcohol intake, they may reduce their alcohol use (Thorensen & Mahoney, 1974). However, since all subjects self-monitored, the effects were expected to be equally distributed in both risk groups.

Another consideration was the subjects' perceptions of their personal risk for alcoholism and how this might affect their drinking behavior. It was possible that HR and LR subjects might

perceive their risks differentially and modify their alcohol intake accordingly. Therefore, on completion of the study subjects were asked to rate their personal risk on a 0-7 point scale from "practically nonexistent" to "higher than that of most people". They were asked if their perceived risk affected their alcohol consumption ("Yes" or "No") (Appendix G).

In their diaries (Appendix D), subjects were asked to record the number and type of alcoholic drinks, the size of servings in ounces, the drinking context (the location and if they were alone), and their reasons for drinking (from a list of six alternatives). For mixed drinks subjects were asked if the drink was self-prepared and if so, the reported volume of alcohol was taken at face value. If it was prepared by others, the alcohol content was estimated using Mr. Boston's Offical Bartender's Guide (Glenmore Distilleries Company, 1984). To obtain a measure of alcohol consumption per day, the number of ounces of each beverage type consumed was converted to absolute alcohol content using the following algorithm:

5 % - all 3.5 to 5 percent alcohol-content beverages (beer, coolers)

12 % - all 10 to 14 percent alcohol-content beverages (table wines)

17 % - all 14 to 17 percent alcohol-content beverages (fortified wines)

27 % - all 21 to 33 percent alcohol-content beverages (cordials)

40 % - all 34 to 50 percent alcohol-content beverages (distilled spirits)

Estimates of total absolute alcohol consumption from all beverage types combined were calculated for each subject. For example, if a subject consumed 4 (12 oz.) beers, 2 (5 oz.) glasses of wine and 1 Irish coffee over a 24-hour period, she had consumed 4.20 oz. of alcohol (see calculations below).

(4 X 12) X .05	+	(2 X 5) X .12	+	1.5 X .40	=	4.20 oz.
beer		wine		whiskey		alcohol

The menstrual cycle was divided into five phases, each comprising three days. The menstrual phase was defined as the first three days of menstrual flow. Ovulation was the three midcyle days, obtained by counting 14 days $\pm$ 1 backwards from the onset of the next menstruation. The follicular and luteal phases comprised the three middle days of the intervals bounded by menstruation and ovulation, and ovulation and premenstruation, respectively. The premenstrual phase consisted of the three days preceding the onset of menstrual flow.

Menstrual cycle symptoms were measured by Moos' (1968, 1986) widely used self-report scale The Menstrual Distress Questionnaire (MDQ). The scale requires the respondent to rank the severity of 47 psychological and physical symptoms on a five-point scale from non-existing to debilitating. There are eight independent symptom subscales: pain, water retention, autonomic reaction, negative affect, impaired concentration, behavior change, arousal and control symptoms (Moos & Leiderman, 1978).

The present study employed a short version of the MDQ consisting of three somatic symptom subscales (pain, water retention, autonomic reaction) and one mood subscale (negative affect). The pain subscale contained the following symptoms: muscle stiffness, headache, cramps, backache, fatigue, and general aches and pains. The water retention subscale contained: weight gain, skin blemish or disorder, painful or tender breasts, and swelling (breasts, abdomen). The autonomic reaction subscale contained: dizziness (faintness), cold sweats, nausea (vomiting), and hot flashes. Finally, the negative affect subscale contained: loneliness, anxiety, mood swings, crying, irritability, tension, feeling sad or blue, and restlessness. The short MDQ required subjects to rate 22 somatic and mood items each day and took no longer than five minutes to complete.

Stress ratings were obtained by asking subjects to rate how stressful their day had been on a 0-7 point scale from "least stressful ever" to "most stressful ever". An "Occurence of Life Events" scale asked subjects to check any of 10 potentially stressful events occurring that day (e.g., an exam, an argument with a friend). Included was the item "began menstruating". The purpose of this list was only to identify unobtrusively the beginning of menstruation.

To ensure that the subjects were unaware of the purpose of the study, at the conclusion of the daily self-report stage they were asked to state in writing what they perceived the purpose of

the study to be (Appendix G). Only one LR subject identified the menstrual cycle as being an important component of the study.

CHAPTER V

Results

Ninety-six subjects (62 LR and 34 HR) completed the study. Ten LR and four HR subjects were subsequently excluded because of irregular menstrual cycle (one or no menstruation, or cycle exceeded 36 days), using medication to regulate the cycle, use of oral contraceptives, pregnancy or illness preventing consumption of alcoholic beverages. The results are therefore based on a final sample of 82 subjects. Demographic characteristics of the two groups are presented in Table 1. The HR and LR groups were similar on all variables except for number of relatives abusing alcohol (t = -8.93, p <.001). This t-value corresponds to a r^2 value of .50 indicating that 50 percent of the variance in the number of alcoholic relatives is attributable to the subjects' risk. The HR group reported almost seven times as many alcohol abusing relatives as the LR (4.7 and 0.7, respectively).

Of the 52 LR subjects, 49 (94 percent) completed the 63 days of daily reporting and the remaining 3 completed a minimum of 56 days. Twenty-five of the 30 HR subjects (83 percent) completed the 63 days of reporting while the other 5 completed a minimum of 56 days.

Daily alcohol intake was converted into ounces of absolute alcohol. The 22 symptoms of the MDQ were converted to total

Table 1

Demographic Data for High Risk and Low Risk Subjects

Demographic Variable	High Risk (N = 30)	Low Risk (N = 52)	Significance Test
Age(years)			
Mean	21.43	21.08	t = -0.52
SD	3.40	2.74	
Marital Status			
Single	24	46	x^2 = 3.68
Married\Cohabiting	4	6	
Separated\Divorced	2	0	
Living Arrangment			
Alone	3	5	x^2 = 1.70
With Spouse	3	8	
With Roomate(s)	12	19	
With Children	2	1	
With Parents	8	15	
Other	2	4	
Employment Status			
Part-time	15	21	x^2 = 0.72
Full-time	3	6	
Unemployed	12	25	
Student Status			
Full-time	25	42	x^2 = 2.59
Part-time	3	9	
Other	2	1	
Number of Years Post-grade 12 Education			
Mean	2.1	1.8	t = -0.71
SD	1.6	1.1	
Annual Parental Income in Dollars			
Mean	43,384.62	44,548.39	t = 0.17
SD	28,996.60	22,440.39	
Weight in pounds			
Mean	128.10	133.33	t = 1.20
SD	18.90	19.26	
Number of Biological Relatives			
Mean	19.9	18.8	t = -0.87
SD	5.9	5.7	
Number of Alcohol Abusing Relatives			
Mean	4.7	0.7	t = -8.93*
SD	2.3	1.0	

*p <.001

daily scores on the four subscales: pain (6 symptoms), water-retention (4 symptoms), autonomic reaction (4 symptoms), and negative affect (8 symptoms). Scores for each subject on each dependent variable (number of symptoms reported, ounces of absolute alcohol, and stress ratings) were then summed over the three days of each of the five phases for each of the two menstrual cycles.

Hypothesis 1. Subjects will report more distress symptoms during the paramenstruum.

Hypothesis 2. HR subjects will report more distress symptoms than LR subjects during the paramenstruum.

To test these hypotheses, analyses of variance (ANOVA) were performed on the four MDQ subscale scores (pain, water-retention, autonomic reaction and negative affect). Means and standard deviations for each symptom are presented in Tables 2-5. There were two levels of Risk (HR/LR), five levels of Phase and two Cycles with repeated measures for Phase and Cycle. The results (Tables 6-9) show no significant main effects for Risk or Cycle. Significant Phase main effects were obtained for pain ($F(4, 320) = 11.07$, $p < .001$), water retention ($F(4, 320) = 22.96$, $p < .001$), and autonomic reaction ($F(4, 320) = 2.87$, $p < .05$), but not for negative affect ($F(4, 320) = 1.49$, $p > .05$). There was a significant interaction of Risk by Cycle ($F(4, 320) = 7.78$, $p < .01$) for pain scores, and a significant Risk by Phase

Table 2

Group Mean (SD) for Pain / Phase / Cycle

		M	F	O	L	PM
Cycle 1	LR	12.23 (7.79)	8.29 (5.54)	9.14 (8.31)	8.54 (7.19)	8.77 (6.62)
	HR	13.00 (9.98)	10.17 (6.50)	13.00 (10.16)	9.93 (7.29)	11.03 (7.40)
Cycle 2	LR	12.39 (8.76)	8.77 (7.11)	8.69 (6.64)	9.58 (9.00)	9.35 (7.93)
	HR	13.40 (11.24)	9.30 (6.83)	9.07 (6.63)	9.23 (6.81)	10.40 (7.61)

Note. M = menstrual, F = follicular, O = ovulatory, L = luteal and PM = premenstrual

Table 3

Group Mean (SD) for Water Retention / Phase / Cycle

		M	F	O	L	PM
Cycle 1	LR	5.02 (4.93)	2.14 (2.86)	2.40 (3.06)	3.35 (4.56)	6.27 (6.85)
	HR	6.87 (6.87)	3.23 (3.45)	4.10 (4.41)	4.33 (5.55)	4.67 (4.80)
Cycle 2	LR	5.98 (5.52)	1.94 (3.11)	2.33 (2.58)	3.46 (3.87)	5.46 (5.58)
	HR	4.70 (3.98)	2.57 (2.86)	3.13 (3.39)	4.03 (4.79)	4.90 (5.89)

Note. M = menstrual, F = follicular, O = ovulatory, L = luteal and PM = premenstrual

Table 4

Group Mean (SD) for Autonomic Reaction / Phase / Cycle

		M	F	O	L	PM
Cycle 1	LR	1.17 (3.15)	1.17 (2.46)	1.12 (2.66)	.71 (1.54)	1.71 (3.31)
	HR	2.07 (3.25)	1.13 (2.13)	1.07 (2.26)	1.23 (2.52)	.63 (1.03)
Cycle 2	LR	1.65 (2.79)	.81 (2.07)	1.33 (3.26)	1.27 (3.18)	1.09 (3.09)
	HR	1.50 (2.26)	.67 (1.61)	.37 (.67)	.77 (1.81)	.90 (1.63)

Note. M = menstrual, F = follicular, O = ovulatory, L = luteal and PM = premenstrual

Table 5

Group Mean (SD) for Negative Affect / Phase / Cycle

		M	F	O	L	PM
Cycle 1	LR	11.25 (12.33)	9.64 (9.91)	12.50 (13.64)	11.62 (13.11)	13.92 (13.18)
	HR	10.47 (9.71)	11.47 (8.31)	12.77 (9.33)	11.90 (9.71)	12.70 (8.67)
Cycle 2	LR	12.65 (11.46)	12.37 (12.19)	11.42 (11.87)	12.67 (14.10)	11.90 (11.85)
	HR	14.40 (12.68)	13.90 (10.26)	12.13 (10.03)	10.83 (9.04)	15.37 (11.82)

Note. M = menstrual, F = follicular, O = ovulatory, L = luteal and PM = premenstrual

interaction ($F(4, 320) = 2.41$, $p < .05$) for water retention scores (Figures 2-3).

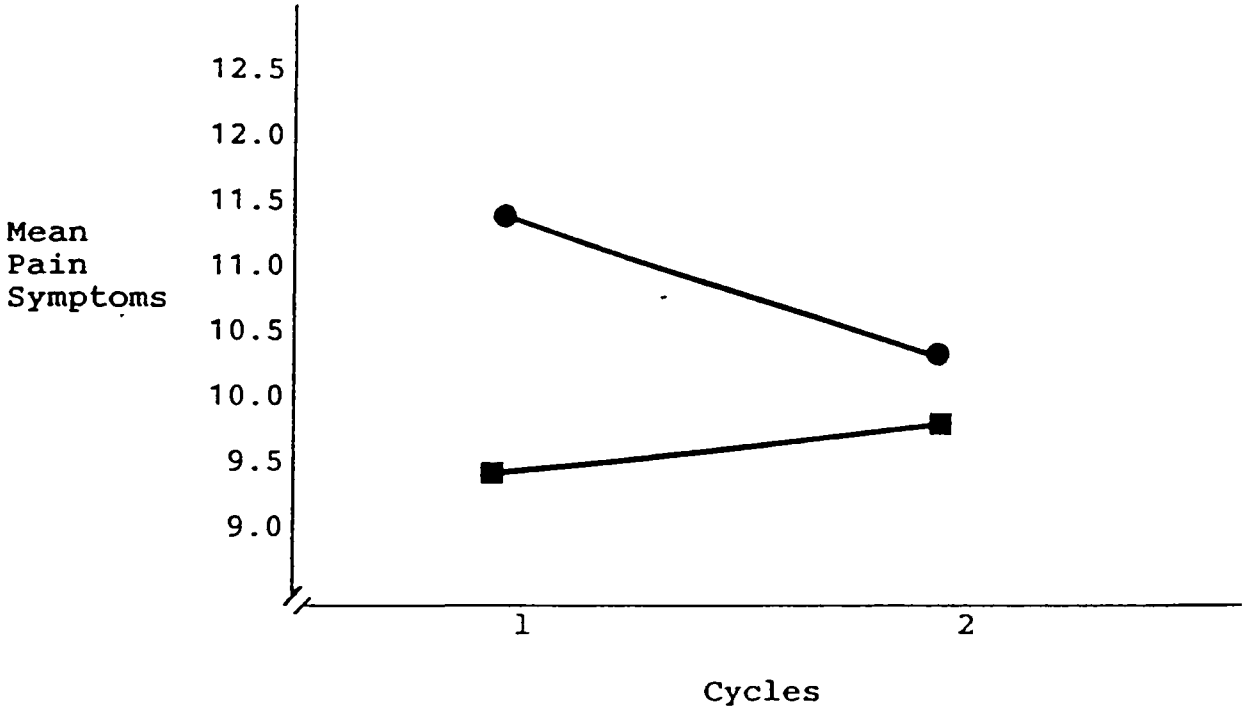
Multiple comparisons were calculated for pain and autonomic reaction scores between phases using Tukey's test (Tukey, 1949) (Figures 4-5). Pain was significantly higher at menstruation than during the follicular ($t = 5.86$), ovulatory ($t = 4.49$), luteal ($t = 5.56$) and premenstrual ($t = 4.64$) phases (all $p < .05$). All other paired comparisons were nonsignificant. For autonomic reaction, the mean for the menstrual phase was highest but none of the paired comparisons were significant.

For water-retention (Figure 5), tests for simple effects indicated that the two Risk groups did not differ significantly from each other at any phase. For both Risk groups water-retention was significantly greater in the premenstrual and menstrual phases than follicular and ovulatory phases. The Risk by Phase interaction was due to relatively greater increases in water-retention symptoms from the luteal to premenstrual phase for the LR group ($F(1, 80) = 19.27$, $p < .001$) as compared to the HR group ($F(1, 80) = 1.21$, $p > .05$).

For the Risk by Cycle interaction using pain scores, tests for simple effects revealed no significant differences between the HR and LR groups for the first ($F(1, 80) = 2.78$) or the second cycle ($F(1, 80) = 0.12$). However, the HR group did report significantly more pain symptoms during their first than their

Figure 2

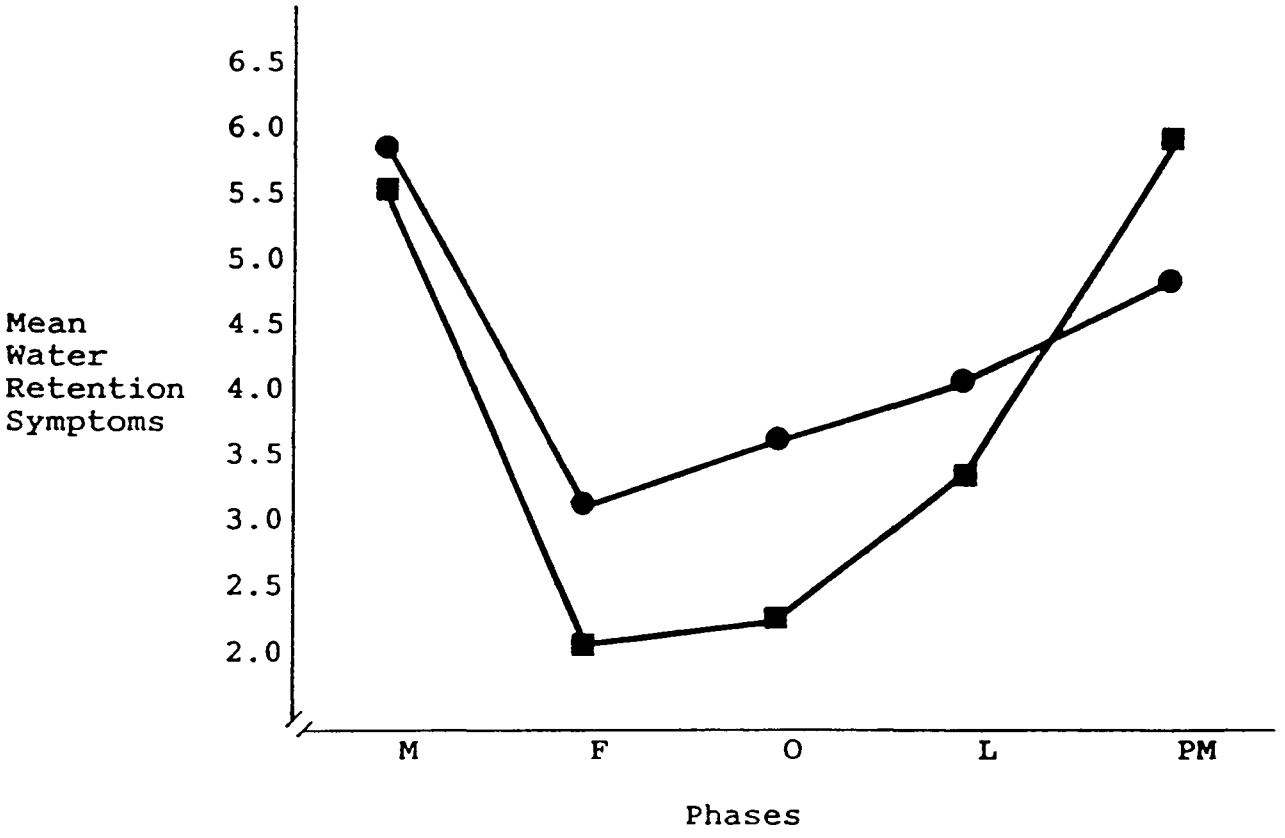
Mean Total Pain Symptoms By Cycles
for HR and LR Groups



Note. HR●
LR■

Figure 3

Mean Total Water Retention Symptoms Across Phases for HR and LR Groups

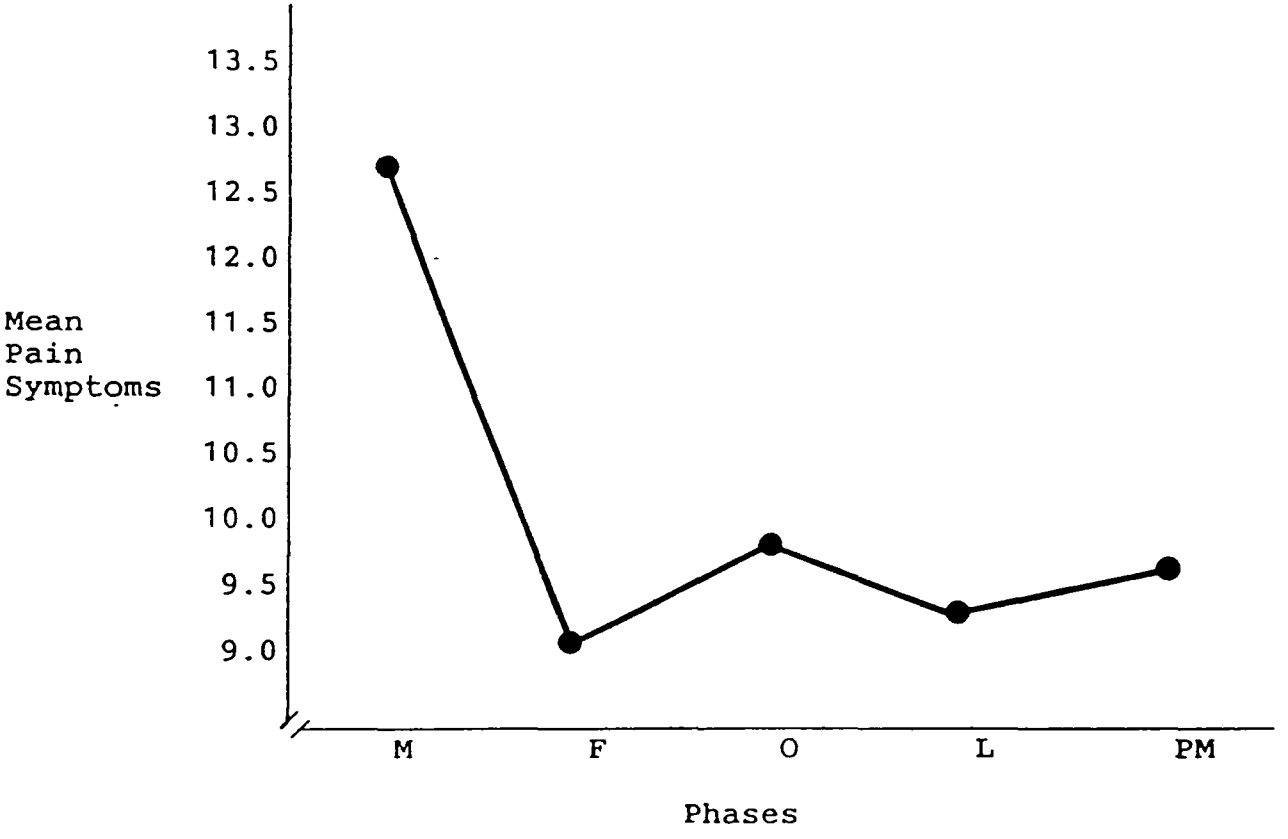


Note. HR●
LR■

M = menstrual, F = follicular, O = ovulatory, L = luteal, and PM = premenstrual

Figure 4

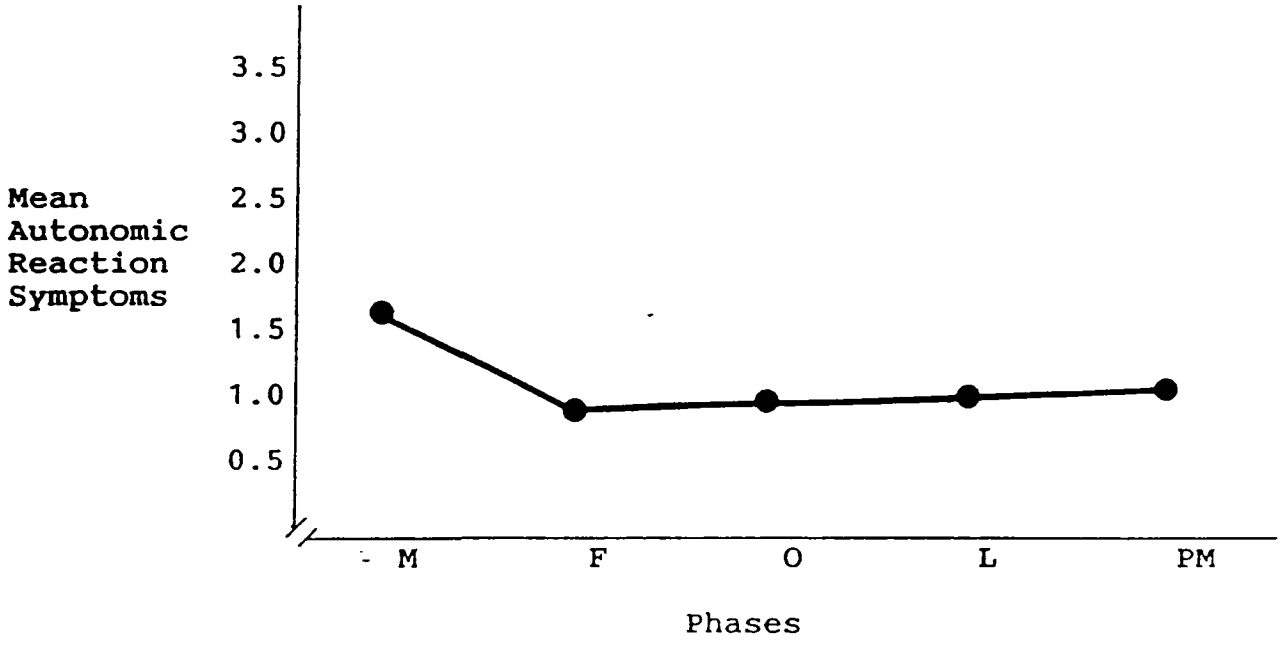
Mean Total Pain Symptoms Across Menstrual Phases



Note. M = menstrual, F = follicular, O = ovulatory, L = luteal, and PM = premenstrual

Figure 5

Mean Total Autonomic Reaction Symptoms Across Menstrual Phase



Note. M = menstrual, F = follicular, O = ovulatory, L = luteal, and PM = premenstrual

for both Risk groups over all phases of the cycle (see Table 12). Hypothesis 4 was not supported.

Hypothesis 5. Alcohol consumption will vary as a function of distress symptoms (pain, water retention, autonomic reaction and negative affect).

Four Pearson product-moment correlations were calculated between total alcohol consumption and total MDQ subscale scores. There were no significant correlations between alcohol consumption and pain (r = -.10), water retention (r = .14), autonomic reaction (r = -.02) or negative affect (r = -.11).

Similar correlations were calculated for Risk groups separately and all correlations were nonsignificant (LR group: r = -.08, r = .10, r = -.04, r = -.09, respectively) and (HR group: r = -.18, r = .18, r = .08, r = -.19). Hypothesis 5 was not supported.

Hypothesis 6. Alcohol consumption will vary as a function of ratings of global stress.

To evaluate this hypothesis, a Pearson product-moment correlation was calculated between total alcohol consumption and global stress ratings. The correlation was not significant (r = .008). Additional correlations between stress ratings and

second cycle ($F(1, 80) = 7.56$, $p < .01$) (Figure 2). There was no significant difference between cycles for the LR group (F (1, 80) = 1.72).

Hypothesis 1 was therefore primarily supported in that both Risk groups reported more physical distress symptoms in the menstrual and premenstrual phases. However, affective distress symptoms were not influenced by the menstrual cycle. Hypothesis 2 was not supported by the results as the Risk groups did not differ from each other at any phase of the cycle.

Hypothesis 3. HR subjects will report more global stress than LR subjects during the paramenstruum.

A 3-way ANOVA (Risk (2) X Cycle (2) X Phase (5)) was performed on stress rating scores (Table 10). There were no significant main effects or interactions. Stress scores were equivalent for the risk groups and were not influenced by phases of the menstrual cycle. Hypothesis 3 was not supported.

Hypothesis 4. HR subjects will report increased alcohol consumption during the paramenstruum.

A three-way ANOVA (Risk (2) X Cycle (2) X Phase (5)) with repeated measures on Phase and Cycle was performed on alcohol consumption scores. The results (Table 11) show no significant main effects or interactions. Alcohol consumption was equivalent

Table 12

Mean (Standard Deviation) Alcohol Consumption for Risk Groups by Menstrual Phase

		M	F	O	L	PM
Cycle 1	LR	.629 (.912)	.689 (1.369)	.700 (1.091)	.677 (1.089)	.883 (1.802)
	HR	1.017 (1.776)	1.023 (1.384)	.700 (.943)	1.037 (1.611)	.607 (1.046)
Cycle 2	LR	.600 (.923)	.873 (1.438)	.698 (.922)	.989 (1.499)	.642 (1.131)
	HR	.800 (1.221)	1.030 (1.404)	.817 (1.298)	1.277 (1.629)	1.317 (2.452)

Note. M = menstrual, F = follicular, O = ovulatory, L = luteal and PM = premenstrual

alcohol consumption within each Risk group were also not significant (LR: r =.03; HR: r = .07). Hypothesis 6 was not supported.

Mean ratings of subject's perceived risk for alcoholism on the 0-7 point scale were 0.87 and 1.80 for the LR and HR groups, respectively ($t(80) = -3.07$, $p < .01$). This t-value corresponds to a r^2 value of .11 indicating that risk status accounts for 11 percent of the variability in risk perception. Therefore, both groups perceived their risk for alcoholism to be low but HR subjects rated themselves at significantly greater risk.

When asked whether their perceived risk for alcoholism affected their drinking behavior (perceived, not actual), 23 percent of HR and 17.3 percent of LR subjects said that it did. A chi-square analysis showed that this Risk group difference in the frequency of this response was not significant (X^2 (1, N = 82) = .139).

Table 13 shows the distribution of each reason for drinking as a percentage of the total number of reasons given for the HR and LR groups across menstrual phases. The number of drinking occasions was too low (subjects drank on only 22.4 percent of days) to allow for formal statistical analysis. However, examination of Table 9 shows that the two most frequently cited reasons for drinking were "for pleasure enhancement, celebration" (43.4 percent) and "to accompany dinner / before dinner drink"

(34.6 percent). The least frequently reported reasons were "to deal with a stressful situation" (4.0 percent) and "self-medication for pain" (0.0 percent). There did not appear to be any relationship between the reasons given for drinking and the menstrual phase.

Table 14 shows the percentage of days that subjects drank and the context of drinking. In terms of context, when subjects drank, they did so almost exclusively in the company of other people and solitary drinking was less than 3 percent of drinking occasions. Again, there was no obvious pattern in drinking contexts across phases of the cycle for either Risk group.

For the personality measures, independent t-tests were conducted on the Es, Vando R-A, and EPQ scores comparing the two Risk groups (Table 15). There were no significant between-group differences.

To examine possible relationships between the personality variables and total alcohol consumption, menstrual distress symptoms and global stress scores, Pearson product-moment correlations were calculated (Table 16). None were significant with the exception of a negative correlation between Es and total pain symptoms (r = -.29, p <.01) and a positive correlation between total alcohol consumption and EPQ extroversion scores (r = .29, p <.01).

Mean daily alcohol consumption was also calculated for weekends and weekdays for each subject for the 56-day period for which complete data were available. A 2-way mixed ANOVA (Risk (2) X Day (2)) was performed and significant main effects for Risk ($F(1, 80) = 4.77$, $p < .05$) and Day ($F(1, 80) = 34.04$, $p < .001$) were obtained (Table 17). The HR group consumed more alcohol than the LR group. However, mean daily alcohol consumption was also significantly greater on weekends for both groups (0.443 oz and 0.253 oz, respectively).

Chapter VI

Discussion

Initial support for the alcoholism-menstrual cycle hypothesis was based upon the clinical impressions and the retrospective reports of alcoholic women. When submitted to controlled investigation in samples of social drinkers, the hypothesis was not supported (Ascher-Svanum, 1982; Harvey & Beckman, 1985; Sutker et al., 1983). It was then suggested that the hypothesis might only apply to subgroups such as heavy drinkers or those at HR for alcoholism. The present study, therefore, included women at both HR and LR for the subsequent development of alcoholism.

Before discussing the principal hypotheses, certain methodological issues deserve consideration. First, the two Risk groups were equivalent in terms of demographic characteristics except for the number of relatives reported to abuse alcohol. HR subjects reported significantly more abusing relatives. This was expected, as the criterion for group membership required that HR subjects have at least one alcohol-abusing parent and that LR subjects have no alcohol-abusing parents. The fact that HR subjects reported almost seven times as many alcohol-abusing relatives as LR subjects shows that the family backgrounds of the two groups with respect to alcoholism were highly divergent. The finding that HR subjects consumed more alcohol and rated themselves at higher risk for alcoholism

is supportive of the assumption that the two groups were at different levels of vulnerability for alcoholism.

The strategy of the HR paradigm is to compare individuals at HR and LR, before significant alcohol-related problems have developed, thereby avoiding confounding by the consequences of excessive drinking. At the initial screening stage, individuals who were already experiencing alcohol-related problems (MAST > 4) were excluded to eliminate possible confounding influences. It has been argued by Sher (1985) that such a procedure can have the unintended effect of reducing the possibility of finding Risk group differences by eliminating those subjects who may be the most vulnerable. The problem depends on the dependent variables being examined. For example, personality traits are less likely to be affected by the consequences of heavier drinking, particularly at such an early stage, and are more likely to be predisposing factors. In a study of personality traits, those subjects who are currently experiencing alcohol-related problems but who do not yet meet the criteria for alcohol dependence could be included. However, a potential problem with including heavily drinking women is the high incidence of gynecological disorders in heavy drinkers (Ryback, 1977) and altered menstrual cycles in alcoholic women (Wilsnack, 1973).

It was important to avoid a high rate of attrition of subjects from the study when daily reporting over nine

consecutive weeks was required. However, no one dropped out of the study and daily reports were completed by all subjects for a minimum of eight weeks. A number of procedures may have contributed to the high completion rate. Weekly contact with the investigator and weekly newsletters informing the participants of the progress of the project may have contributed to a sense of commitment and loyalty to the project by the subjects. Participants may also have identified with an effort to improve knowledge of alcoholism in women and, ultimately, improve on prevention and treatment. Several subjects mentioned these motives spontaneously during informal discussions on conclusion of the study.

Another concern were the possible confounding effects of the subjects' beliefs and expectations about menstruation upon their reporting of menstrual symptoms if they were aware of the purpose of the study. However only one subject in the inquiry following data collection inferred that the study was related to the menstrual cycle.

Finally, another concern was the subjects' perception of their risk for developing alcohol dependence and its potential effect on their drinking behavior. The HR women rated their risk for an "alcohol problem" as significantly higher than the LR women, but both groups rated their risk as minimal. Most subjects in both groups (80.5 percent of subjects) reported that

their perceived risk did not influence their drinking behavior. Thus the HR women were aware of their greater risk for alcohol problems but were not more likely to say that they altered their drinking behavior accordingly. In fact, HR women drank significantly more overall than LR women. This supports the assumption that these subjects were at higher risk for alcoholism and is consistent with reports that this awareness is not necessarily translated into appropriate behavior (Goodstadt, 1978).

It was assumed that menstrual distress symptoms would vary over the menstrual cycle with more symptoms occuring during the paramenstruum (e.g., Ascher-Svanum, 1982; Golub, 1976, 1981; Logue & Moos, 1986; Sutker et al., 1983). Overall, both groups did report more physical distress symptomatology during menstruation, and, to a lesser extent, during premenstruation. These results support the concept of a "paramenstrual syndrome" of physical symptomatology in young, healthy, normally cycling women. The present findings do not support any significant emotional or dysphoric aspect to the paramenstrual syndrome. The study of Sutker et al. (1983) is the only one to have found increased anxiety, depression, and hostility during the menstrual phase. There are three possible explanations for the different findings. One is that subjects in the Sutker et al. study were aware that the menstrual cycle was of interest (they were told that it was not "salient" for the study) and as a

result were more inclined to check affective symptoms. Another is that the Multiple Affect Adjective Check List is a more sensitive measure than the eight items on the negative affect subscale of the MDQ. A third possibility is sampling differences. Sutker et al. used a small sample of 21 women, only nine of whom were normally cycling. All subjects were employed in a medical complex. These women may have experienced more or have been more inclined to report more pre- and menstrual emotional symptoms for reasons that are unknown. Given that the present study and that of Ascher-Svanum employed larger samples and ensured that the subjects were unaware that their menstrual cycles were monitored, there seems little support for a significant emotional component to the paramenstruum in young women. A consistent finding was that measures of global stress did not vary over phases of the menstrual cycle. Variations in stress ratings were apparently due to other factors in the subjects' lives unrelated to the menstrual cycle (e.g., exams, interpersonal difficulties, health problems, etc.). Ascher-Svanum reported that most of her subjects reacted with surprise in the post-experimental interview when they discovered that a "minor event" such as the menstrual cycle was considered relevant to alcohol consumption. When asked to respond to an open-ended question about any "unusual event affecting your general life pattern" most responded with "lengthy and detailed" accounts of "events such as their difficulties with interpersonal relationships, lost pets, accidents, job interviews..." (p.70).

There were two unexpected findings in the present study that could not be explained. The significant interaction of Risk by Cycle for pain symptoms reflected the fact that the HR group reported more pain symptoms during the first than the second cycle, while for the LR group there was a slight trend in the opposite direction. There is no obvious explanation for these results since care was taken to control for order effects by having subjects begin monitoring at various points in their cycles. A significant interaction of Risk by Phase for water retention was obtained due to relatively greater increases in water retention symptoms from the luteal to the premenstrual phase for the LR group. There is no known plausible explanation for either of these findings.

With regard to alcohol consumption, neither HR nor LR subjects increased their alcohol use as a function of the menstrual cycle, menstrual symptoms or overall stress. These results confirm those of Ascher-Svanum and Sutker et al.. Only Harvey and Beckman (1985) found an increase in consumption in the luteal phase, when estrogen levels are higher, and in contradiction to the alcoholism-menstrual cycle hypothesis.

Taken together, these four prospective studies (including the present one) provide no evidence for increased alcohol consumption during the premenstrual or menstrual phases in moderately drinking women including those at higher risk for

alcoholism.

The alcoholism-menstrual cycle hypothesis was also not supported by the finding that subjects reported that they drank mainly for reasons of pleasure enhancement/celebration or to accompany dinner. The least frequently cited reasons were "to deal with a stressful situation" and "self-medication for pain". No one reported drinking to alleviate menstrual symptoms. Subjects also reported that they drank mainly in the company of other people, usually outside the home. The results did not replicate those of Sutker et al. (1983), whose nine normally cycling subjects reported drinking more frequently alone and to relieve tension or negative affect during menstruation. The fact that subjects drank significantly more on weekends than weekdays suggests that social variables have an impact on alcohol consumption.

The personality variables were not related to risk for alcoholism or alcohol consumption. Previously, Barnes (1985) reported female alcoholics to have significantly lower Vando R-A scores (stimulus augmenters) than nonalcoholic women. Hennecke (1984), in a HR study, also found stimulus augmentation to predominate in both male and female children of alcoholics. However, she employed the Kinesthetic Figural After-Effect test rather than the Vando R-A as a measure of stimulus augmentation-reduction. The only reported HR study utilizing the EPQ was that

of Schuckit (1983) who studied male subjects and also found no between-group differences. Finally, Es, which is believed to best discriminate alcoholics from nonalcoholics (Barnes, 1980), did not differentiate HR and LR subjects. It may be that the lower ego strength scores found in alcoholics reflect the consequences of years of alcohol abuse and associated familial and psychosocial problems. Despite these negative findings, the relationship between personality and temperament variables and risk for alcoholism remains an important area of speculation and research (see Tarter and Edwards, 1986).

This study does not support the alcoholism-menstrual cycle hypothesis in a population of young normally cycling university women at high risk for alcoholism. However, as mentionned previously it may be that the most vulnerable to alcoholism were already experiencing alcohol-related problems and were thus excluded from the study. Future studies could include these women as a third group.

Finally, it would be interesting to repeat this study with a sample of high "stress" women. One could select the two groups on the basis of their reported paramenstrual distress. Given that the basic assumption of the alcoholism-menstrual cycle hypothesis is that women drink to relieve distress, this procedure would maximize the chances of observing the phenomenon if it exists. This study could also be conducted within the broader framework of the High Risk Paradigm.

Conclusion

The hypothesis that women increase their alcohol intake during the premenstruum to alleviate dysphoria has not been supported in studies of nonalcoholic social drinkers. It was then suggested that it might occur in subgroups of heavy drinking women or women at HR for alcoholism. The present study investigated alcohol consumption, menstrual distress symptoms, and global stress levels across the menstrual cycle in women at HR and LR for alcoholism. The results confirmed that young, healthy, normally cycling women experience increased physical, but not emotional, distress during both premenstruation and menstruation (the paramenstruum). Most importantly, alcohol consumption did not vary across the menstrual cycle for either HR or LR subjects and was not correlated with distress symptoms or global stress. Rather, alcohol consumption increased on weekends as compared to weekdays. Subjects most frequently reported that they drank for social reasons rather than to relieve pain, stress, or negative mood. These findings, along with those of other prospective studies, strongly suggest that the menstrual cycle does not play an etiological role in the development of alcoholism. The results suggest that social factors influence alcohol consumption in moderately drinking women.

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APPENDIX A

INITIAL SELECTION QUESTIONNAIRE

PROJECT TITLE: The Interrelationships among life events, psychological and physiological distress and alcohol use in women.

EXPERIMENTER: Lina Charette

SUPERVISOR: Allan Wilson, M.D., Ph.D.

* The information you will provide will remain STRICTLY CONFIDENTIAL.

Please relax, take time to answer as accurately as you can.

NAME OF STUDENT: _____

TELEPHONE NUMBER: _____

BEST TIME TO BE REACHED: _____

PART A

DO NOT WRITE IN THIS SPACE

DEMOGRAPHIC AND BIOGRAPHIC INFORMATION

CODE # _____

1. Age _____ 1. ____

PLEASE CIRCLE CORRECT ANSWER

2. Family Status

1) What is your present marital status? 2-1. ____
   a) single, never married
   b) married
   c) separated
   d) divorced
   e) widowed
   f) cohabiting

2) Current living arrangement 2-2. ____
   a) alone
   b) with spouse/partner
   c) with roomate(s)
   d) with children
   e) with parents
   f) other

3. Employment and Income Information

1) Present employment status: 3-1. ____
   a) employed part-time
   b) employed full-time
   c) unemployed

2) Student status: 3-2. ____
   a) full-time student
   b) part-time student
   c) other

3) Total parental income/year _____ 3-3. ____

4. Education

1) Highest year of education completed _____ 4. ____

PART B

DO NOT WRITE IN THIS SPACE

RELEVANT MEDICAL HISTORY

1) Present weight _____ pounds 1. ____

2) List any physical illness, hospitalization or surgery you have or have had: 2. ____

_____

_____

3) Are you or have you been seen by any helping professional (eg. psychologist, psychiatrist, etc.) in the past six months for counseling or therapy? Yes _____ No _____ (If yes, please specify _____) 3. ____

4) Were you given any medication? Yes _____ No _____ (If yes, please specify _____) 4. ____

5) Circle the one(s) you consume: 5. ____

a) cigarettes	(eg. Matinee, Virginia Slim)
b) caffeine	(eg. coffee, tea, soft-drinks)
c) tranquilizers	(eg. Valium, Serax, Halcion)
d) laxatives	(eg. Ex-Lax, Metamucil)
e) anti-depressants	(eg. Elavil, Sinequan)
f) birth-control pill	(eg. Ortho-Novum 1/50, Ovral)
g) diet pills	(eg. Ayds, Dexatrim)
h) analgesics	(eg. aspirin, Tylenol, codeine)
i) other	

6) How many biological brothers and sisters do you have? ____ 6. ____

7) As far as you know, how many are or have been alcoholic (have or had problems due to drinking)? ____ 7. ____

8) How many biological aunts and uncles do you have? ____ 8. ____

9) As far as you know, how many are or have been alcoholic? ____ 9. ____

PART C

QUESTIONNAIRE ON DRINKING PRACTICES (MAST)

DIRECTIONS: Check (✓) YES or NO; answer all questions.

1.	Do you feel you are a normal drinker?	Yes ___	No ___
2.	Have you ever awakened the morning after some drinking the night before and found that you could not remember a part of the evening before?	Yes ___	No ___
3.	Does your spouse (or parents) ever worry or complain about your drinking?	Yes ___	No ___
4.	Can you stop drinking without a struggle after one or two drinks?	Yes ___	No ___
5.	Do you ever feel bad about your drinking?	Yes ___	No ___
6.	Do friends or relatives think you are a normal drinker?	Yes ___	No ___
7.	Are you always able to stop drinking when you want to?	Yes ___	No ___
8.	Have you ever attended a meeting of Alcoholics Anonymous (AA) because of your drinking?	Yes ___	No ___
9.	Have you gotten into fights when drinking?	Yes ___	No ___
10.	Has drinking ever created problems with you and your spouse?	Yes ___	No ___
11.	Has your spouse (or other family member) ever gone to anyone for help about your drinking?	Yes ___	No ___
12.	Have you ever lost friends or girl friends/boy friends because of drinking?	Yes ___	No ___
13.	Have you ever gotten into trouble at work because of drinking? ..	Yes ___	No ___
14.	Have you ever lost a job because of drinking?	Yes ___	No ___
15.	Have you ever neglected your obligations, your family or your work for two or more days in a row because you were drinking? ...	Yes ___	No ___
16.	Do you ever drink before noon?	Yes ___	No ___
17.	Have you ever been told you have liver trouble? Cirrhosis?	Yes ___	No ___
18.	Have you ever had delirium tremens (DTs), severe shaking, heard voices, or seen things that weren't there after heavy drinking? ,	Yes ___	No ___
19.	Have you ever gone to anyone for help about your drinking?	Yes ___	No ___
20.	Have you ever been in a hospital because of drinking?	Yes ___	No ___
21.	Have you ever been a patient in a psychiatric hospital or on a psychiatric ward of a general hospital where drinking was part of the problem?	Yes ___	No ___
22.	Have you ever been seen at a psychiatric or mental health clinic, or gone to a doctor, social worker, or clergyman for help with an emotional problem in which drinking had played a part?	Yes ___	No ___
23.	Have you ever been arrested, even for a few hours, because of drunk behavior?	Yes ___	No ___
24.	Have you ever been arrested for drunk driving or driving after drinking?	Yes ___	No ___

* * *

** Do you consume alcohol at least once a month? ..... Yes ___ No ___

PART D (cont'd)

QUESTIONNAIRE ON PARENTAL DRINKING PRACTICES (M-SMAST)

DIRECTIONS: Check (✓) YES or NO; answer all questions.

Please answer with respect to your BIOLOGICAL mother.

1. Do you feel your (biological) mother has been a normal drinker? ..... Yes____ No____

2. Did your father, grandparent, or other near relative complain about your mother's drinking? ..... Yes____ No____

3. Did your mother ever feel guilty about her drinking? ..... Yes____ No____

4. Did friends and relatives think your mother was a normal drinker? ..... Yes____ No____

5. Was your mother able to stop drinking when she wanted to? ..... Yes____ No____

6. Has your mother ever attended a meeting of Alcoholics Anonymous (AA)? ..... Yes____ No____

7. Has your mother's drinking ever created problems between her and your father or another near relative? ..... Yes____ No____

8. Has your mother ever gotten into trouble at work because of drinking? ..... Yes____ No____

9. Has your mother ever neglected her obligations, her family, or her work for 2 or more days in a because of her drinking? ..... Yes____ No____

10. Has your mother ever gone to anyone for help about her drinking? ..... Yes____ No____

11. Has your mother ever been in a hospital because of drinking? ..... Yes____ No____

12. Has your mother ever been arrested for drunken driving, driving while intoxicated, or driving under the influence of alcoholic beverage? ..... Yes____ No____

13. Has your mother ever been arrested, even for a few hours, because of other drunken behavior? ..... Yes____ No____

PART D

QUESTIONNAIRE ON PARENTAL DRINKING PRACTICES (F-SMAST)

DIRECTIONS: Check (✓) YES or NO; answer all questions.

Please answer with respect to your BIOLOGICAL father.

1. Do you feel your (biological) father has been a normal drinker? ..... Yes____ No____

2. Did your mother, grandparent, or other near relative complain about your father's drinking? ..... Yes____ No____

3. Did your father ever feel guilty about his drinking? ..... Yes____ No____

4. Did friends and relatives think your father was a normal drinker? ..... Yes____ No____

5. Was your father able to stop drinking when he wanted to? ..... Yes____ No____

6. Has your father ever attended a meeting of Alcoholics Anonymous (AA)? ..... Yes____ No____

7. Has your father's drinking ever created problems between him and your mother or another near relative? ..... Yes____ No____

8. Has your father ever gotten into trouble at work because of drinking? ..... Yes____ No____

9. Has your father ever neglected his obligations, his family, or his work for 2 or more days in a because of his drinking? ..... Yes____ No____

10. Has your father ever gone to anyone for help about his drinking? ..... Yes____ No____

11. Has your father ever been in a hospital because of drinking? ..... Yes____ No____

12. Has your father ever been arrested for drunken driving, driving while intoxicated, or driving under the influence of alcoholic beverage? ..... Yes____ No____

13. Has your father ever been arrested, even for a few hours, because of other drunken behavior? ..... Yes____ No____

APPENDIX B

INFORMATION SHEET

STUDY: INTERRELATIONSHIPS AMONG LIFE EVENTS, PSYCHOLOGICAL AND PHYSIOLOGICAL DISTRESS AND ALCOHOL USE IN WOMEN

In the literature on alcohol consumption in women, it is believed that women's drinking is related to specific life events as compared to men's where there seems to be no identifiable cause. In addition, it is believed that women at different risk for the development of an alcohol problem react differently to the same events; however, this belief is only anecdotal.

This doctoral project, directed by myself, Lina Charette, and supervised by Allan Wilson M.D., Ph.D., has been designed to study the interrelationships among life events, psychological and physiological distress and alcohol use in women from a wide spectrum of risk for subsequent development of an alcohol problem.

This interesting and challenging project would provide you with the possibility of participating in a research project while acquiring knowledge about yourself and about a field of growing concern for the health professionals.

If you want to volunteer for this study, please take a few minutes to read these instructions carefully and sign the attached consent form. In exchange for the signed consent form, you will receive a selection questionnaire to complete, at home if you like, which you will bring back to your next class. This questionnaire should take about 20 minutes to complete.

If your scores coincide with those required for this study, I will contact you within the next two weeks.

You may withdraw from the study at any time without penalty.

Your participation in the project will then require the following:

1) completion of three paper-and-pencil personality questionnaires which will take approximately 30 minutes of your time at the beginning of the study.

2) completion of a daily self-report questionnaire for a period of nine consecutive weeks. The daily questionnaire, to be completed at bedtime, should take about 5 to 10 minutes.

3) before beginning the self-report period you will be given a 15 minute training session on how to complete the daily questionnaire.

To maintain confidentiality and anonymity, the scores on the questionnaires will be linked to your name in coded form only (by number), and throughout the remainder of the project, the investigator will not be aware of the scores you have made. In addition, no one else will be given, or allowed access to any of the information provided by you or derived from the project now, or at any time in the future. This way your identity as a participant will be protected and will remain strictly confidential. All identification data from those subjects not selected will be destroyed immediately after recruitment.

Participation in this research will lead to increased awareness and some individuals may find it mildly psychologically distressing. On the other hand, the same individuals may benefit from the increased awareness. If you have any questions or concerns while the study is in progress, please do not hesitate to contact me as I will do my best to answer any questions to your satisfaction. You may leave a message at 564-3915 and I will contact you on weekdays within 24 hours.

Upon completion of the study, you will have the opportunity to express your feelings and thoughts about the study to me and I will give you a more detailed description of the contents of the study. Should you have any further concerns as a result of the study (eg. about your alcohol consumption, etc.), and wish to explore these issues with a counselor, you are welcome to do so at one of the three following centers depending on your status as a student: the Counselling Services at the University of Ottawa, the Center for Psychological Services also at the University of Ottawa or the Alcohol and Drug Unit at the Royal Ottawa Hospital. You will be directed at the proper center if you wish such a follow-up.

This study may prove very beneficial to the understanding of alcohol use in women. By participating you may be instrumental in the discovery of factors yet unknown. Your cooperation will be most appreciated if you decide to participate to this important research.

Lina Charette
Researcher

CONSENT

STUDY: INTERRELATIONSHIPS AMONG LIFE EVENTS, PSYCHOLOGICAL AND PHYSIOLOGICAL DISTRESS AND ALCOHOL USE IN WOMEN

RESEARCHER: Lina Charette
ADVISOR: Allan Wilson, M.D., Ph.D.

When studies are conducted with human subjects, the Ethics Committee of the University requires a written consent of each participant. This does not imply that the project carries any risk. The intention is to assure the respect and confidentiality of the individuals concerned.

***

I, the undersigned, have read the information sheet about this study and understood the nature and procedure of the research project in which I am being asked to participate. I also understand that I may withdraw from the study at any point without penalty. I thus give my informed, voluntary consent to participate in this study.

Name of Participant: _____ Date: _____

Signature of Participant: _____

Signature of Investigator: _____

* Subject received a copy of the information sheet to keep.

---

* If you wish to receive a copy of the summary of the results, please leave your name and address:

_____

_____

_____

APPENDIX C

EPQ

(Adult)

Name _____ Age _____ Sex _____

Occupation _____ Date _____

Firm _____ Marital Status _____

Health Status _____

Weight _____ Height _____ Code _____

INSTRUCTIONS

Please answer each question by marking an [X] beside the "YES" or the "NO" following the question. There are no right or wrong answers, and no trick questions. Work quickly and do not think too long about the exact meaning of the question.

PLEASE REMEMBER TO ANSWER EACH QUESTION

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IN EVERY QUESTION, MARK JUST ONE BOX.

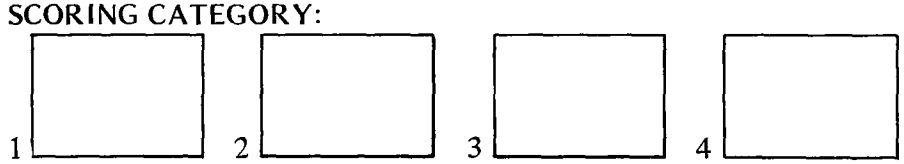
1. Do you have many different hobbies? YES ☐ NO ☐
2. Do you stop to think things over before doing anything? YES ☐ NO ☐
3. Does your mood often go up and down? YES ☐ NO ☐
4. Have you ever taken the praise for something you knew someone else had really done? YES ☐ NO ☐
5. Are you a talkative person? YES ☐ NO ☐
6. Would being in debt worry you? YES ☐ NO ☐
7. Do you ever feel "just miserable" for no reason? YES ☐ NO ☐
8. Were you ever greedy by helping yourself to more than your share of anything? YES ☐ NO ☐
9. Do you lock up your house carefully at night? YES ☐ NO ☐
10. Are you rather lively? YES ☐ NO ☐
11. Would it upset you a lot to see a child or an animal suffer? YES ☐ NO ☐
12. Do you often worry about things you should not have done or said? YES ☐ NO ☐
13. If you say you will do something, do you always keep your promise no matter how inconvenient it might be? YES ☐ NO ☐
14. Can you usually let yourself go and enjoy yourself at a lively party? YES ☐ NO ☐
15. Are you an irritable person? YES ☐ NO ☐
16. Have you ever blamed someone for doing something you knew was really your fault? YES ☐ NO ☐
17. Do you enjoy meeting new people? YES ☐ NO ☐
18. Do you believe insurance plans are a good idea? YES ☐ NO ☐
19. Are your feelings easily hurt? YES ☐ NO ☐
20. Are *all* your habits good and desirable ones? YES ☐ NO ☐
21. Do you tend to keep in the background on social occasions? YES ☐ NO ☐
22. Would you take drugs which may have strange or dangerous effects? YES ☐ NO ☐
23. Do you often feel "fed-up"? YES ☐ NO ☐
24. Have you ever taken anything (even a pin or button) that belonged to someone else? YES ☐ NO ☐
25. Do you like going out a lot? YES ☐ NO ☐
26. Do you enjoy hurting people you love? YES ☐ NO ☐
27. Are you often troubled about feelings of guilt? YES ☐ NO ☐
28. Do you sometimes talk about things you know nothing about? YES ☐ NO ☐
29. Do you prefer reading to meeting people? YES ☐ NO ☐
30. Do you have enemies who want to harm you? YES ☐ NO ☐
31. Would you call yourself a nervous person? YES ☐ NO ☐
32. Do you have many friends? YES ☐ NO ☐
33. Do you enjoy practical jokes that can sometimes really hurt people? YES ☐ NO ☐
34. Are you a worrier? YES ☐ NO ☐
35. As a child did you do as you were told immediately and without grumbling? YES ☐ NO ☐
36. Would you call yourself happy-go-lucky? YES ☐ NO ☐
37. Do good manners and cleanliness matter much to you? YES ☐ NO ☐
38. Do you worry about awful things that might happen? YES ☐ NO ☐
39. Have you ever broken or lost something belonging to someone else? YES ☐ NO ☐
40. Do you usually take the initiative in making new friends? YES ☐ NO ☐
41. Would you call yourself tense or "highly-strung"? YES ☐ NO ☐
42. Are you mostly quiet when you are with other people? YES ☐ NO ☐
43. Do you think marriage is old-fashioned and should be done away with? YES ☐ NO ☐
44. Do you sometimes boast a little? YES ☐ NO ☐
45. Can you easily get some life into a rather dull party? YES ☐ NO ☐

GO RIGHT ON TO THE NEXT PAGE.

46. Do people who drive carefully annoy you? . . . . . YES ☐ NO ☐
47. Do you worry about your health? . . . . . YES ☐ NO ☐
48. Have you ever said anything bad or nasty about anyone? . . . . . YES ☐ NO ☐
49. Do you like telling jokes and funny stories to your friends? . . . . . YES ☐ NO ☐
50. Do most things taste the same to you? . . . . . YES ☐ NO ☐
51. As a child did you ever talk back to your parents? . . . . . YES ☐ NO ☐
52. Do you like mixing with people? . . . . . YES ☐ NO ☐
53. Does it worry you if you know there are mistakes in your work? . . . . . YES ☐ NO ☐
54. Do you suffer from sleeplessness? . . . . . YES ☐ NO ☐
55. Do you always wash before a meal? . . . . . YES ☐ NO ☐
56. Do you nearly always have a "ready answer" when people talk to you? . . . . . YES ☐ NO ☐
57. Do you like to arrive at appointments in plenty of time? . . . . . YES ☐ NO ☐
58. Have you often felt listless and tired for no reason? . . . . . YES ☐ NO ☐
59. Have you ever cheated at a game? . . . . . YES ☐ NO ☐
60. Do you like doing things in which you have to act quickly? . . . . . YES ☐ NO ☐
61. Is (or was) your mother a good woman? . . . . . YES ☐ NO ☐
62. Do you often feel life is very dull? . . . . . YES ☐ NO ☐
63. Have you ever taken advantage of someone? . . . . . YES ☐ NO ☐
64. Do you often take on more activities than you have time for? . . . . . YES ☐ NO ☐
65. Are there several people who keep trying to avoid you? . . . . . YES ☐ NO ☐
66. Do you worry a lot about your looks? . . . . . YES ☐ NO ☐
67. Do you think people spend too much time safeguarding their future with savings and insurances? . . YES ☐ NO ☐
68. Have you ever wished that you were dead? . . . . . YES ☐ NO ☐
69. Would you dodge paying taxes if you were sure you could never be found out? . . . . . YES ☐ NO ☐
70. Can you get a party going? . . . . . YES ☐ NO ☐
71. Do you try not to be rude to people? . . . . . YES ☐ NO ☐
72. Do you worry too long after an embarrassing experience? . . . . . YES ☐ NO ☐
73. Have you ever insisted on having your own way? . . . . . YES ☐ NO ☐
74. When you catch a train do you often arrive at the last minute? . . . . . YES ☐ NO ☐
75. Do you suffer from "nerves"? . . . . . YES ☐ NO ☐
76. Do your friendships break up easily without it being your fault? . . . . . YES ☐ NO ☐
77. Do you often feel lonely? . . . . . YES ☐ NO ☐
78. Do you always practice what you preach? . . . . . YES ☐ NO ☐
79. Do you sometimes like teasing animals? . . . . . YES ☐ NO ☐
80. Are you easily hurt when people find fault with you or the work you do? . . . . . YES ☐ NO ☐
81. Have you ever been late for an appointment or work? . . . . . YES ☐ NO ☐
82. Do you like plenty of bustle and excitement around you? . . . . . YES ☐ NO ☐
83. Would you like other people to be afraid of you? . . . . . YES ☐ NO ☐
84. Are you sometimes bubbling over with energy and sometimes very sluggish? . . . . . YES ☐ NO ☐
85. Do you sometimes put off until tomorrow what you ought to do today? . . . . . YES ☐ NO ☐
86. Do other people think of you as being very lively? . . . . . YES ☐ NO ☐
87. Do people tell you a lot of lies? . . . . . YES ☐ NO ☐
88. Are you touchy about some things? . . . . . YES ☐ NO ☐
89. Are you always willing to admit it when you have made a mistake? . . . . . YES ☐ NO ☐
90. Would you feel very sorry for an animal caught in a trap? . . . . . YES ☐ NO ☐

PLEASE CHECK TO SEE THAT YOU HAVE ANSWERED ALL THE QUESTIONS

SCORING CATEGORY:



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EPQ 001

VANDO R-A Scale

INSTRUCTIONS: Following you will find a series of paired statements which you are asked to regard as choices. In some cases you will dislike both choices. In other cases you will find the choices neutral. No matter how the item strikes you, however, you are asked to choose between them. In each case you are to decide which of the alternatives you PREFER in COMPARISON to the other alternative and then to indicate your selection by drawing a circle around the (a) or (b) to the left of the statement. It is important to answer all items. Do not skip any. It is best to work as rapidly as possible.

1.
(a) see a war drama
(b) see a situation comedy

2.
(a) play sports requiring endurance
(b) play games with rest stops

3.
(a) raunchy blues
(b) straight ballads

4.
(a) jazz combo
(b) 1001 strings

5.
(a) stereo on too loud
(b) stereo on too low

6.
(a) own a goldfish
(b) own a turtle

7.
(a) conservatism
(b) militantism

8.
(a) too much sleep
(b) too little sleep

9.
(a) danger
(b) domesticity

10.
(a) passenger car
(b) sports car

11.
(a) have several pets
(b) have one pet

12.
(a) be a shepherd
(b) be a cowboy

13.
(a) motorcycle
(b) motor scooter

14.
(a) see a movie
(b) read a book

15.
(a) cocktail music
(b) discotheque music

16.
(a) do research in the library
(b) attend a classroom lecture

17.
(a) a hot drink
(b) a warm drink

18.
(a) a drum solo
(b) a string solo

19.
(a) too much exercise
(b) too little exercise

20.
(a) loud music
(b) quiet music

21.
(a) prepare medications
(b) dress wounds

22.
(a) a driving beat
(b) a nice melody

23.
(a) hard rock music
(b) regular popular music

24.
(a) like athletics
(b) dislike athletics

25.
(a) unamplified music
(b) electrically amplified music

26.
(a) smooth-textured foods
(b) crunchy foods

27.
(a) wake-up pill ("upper")
(b) sleeping pill ("downer")

28.
(a) speed
(b) safety

29.
(a) rock music
(b) ballads

30.
(a) soccer
(b) golf

31.
(a) excitement
(b) calm

32.
(a) a family of six
(b) a family of three

33.
(a) thrills
(b) tranquility

34.
(a) play contact sports
(b) play noncontact sports

35.
(a) live in a crowded home
(b) live alone

36.
(a) share intimacy
(b) share affection

37.
(a) games emphasizing speed
(b) games paced slowly

38.
(a) thinking
(b) doing

39.
(a) competitive sports
(b) non-competitive sports

40.
(a) emotionally expressive, somewhat unstable people
(b) calm even tempered people

41.
(a) be a nurse on an acute care ward
(b) be a nursing operator

42.
(a) be a NASA scientist
(b) be an astronaut

43.
(a) be a stuntman
(b) be a propman

44.
(a) a job which requires a lot of travelling
(b) a job which requires you in one place

45.
(a) climb a mountain
(b) read about a dangerous adventure

46.
(a) body odors are disgusting
(b) body odors are appealing

47.
(a) keep on the move
(b) spend time relaxing

48.
(a) have a cold drink
(b) have a cool drink

49.
(a) being confined alone in a room
(b) being free in the desert

50.
(a) security
(b) excitement

51.
(a) continuous anesthesia
(b) continuous hallucinations

52.
(a) water skiing
(b) boat rowing

53.
(a) hostility
(b) conformity

54.
(a) traditional art (e.g. Renoir)
(b) abstract art (e.g. Picasso)

Barron

Questions	#	Circle correct answer	
1. I have a good appetite.	2	Yes	No
2. I seldom worry about my health.	36	Yes	No
3. I am in just as good physical health as most of my friends.	51	Yes	No
4. I go to church almost every week.	95	Yes	No
5. Some people are so bossy that I feel like doing the opposite of what they request, even though I know they are right.	109	Yes	No
6. During the past few years I have been well most of the time.	153	Yes	No
7. I have never had a fainting spell.	174	Yes	No
8. When I get bored I like to stir up some excitement.	181	Yes	No
9. My hands have not become clumsy or awkward.	187	Yes	No
10. I have had no difficulty in keeping my balance in walking.	192	Yes	No
11. I like to flirt.	208	Yes	No
12. I like science.	221	Yes	No
13. I like to talk about sex.	231	Yes	No
14. I get mad easily and then get over it soon.	234	Yes	No
15. I can be friendly with people who do things which I consider wrong.	253	Yes	No
16. When I leave home I do not worry about whether the door is locked and the windows closed.	270	Yes	No
17. Sometimes I enjoy hurting persons I love.	355	Yes	No
18. I am not afraid of fire.	367	Yes	No

19. When someone says silly or ignorant things about something I know about, I try to set him right.	380	Yes	No
20. I would certainly enjoy beating a crook at his own game.	410	Yes	No
21. One or more members of my family is very nervous.	421	Yes	No
22. I am attracted by members of the opposite sex.	430	Yes	No
23. The man who had most to do with me when I was a child (such as my father, stepfather, etc.) was very strict with me.	458	Yes	No
24. I think Lincoln was greater than Washington.	513	Yes	No
25. In my home we have always had the ordinary necessities (such as enough food, clothing, etc.).	515	Yes	No
26. I have diarrhea once a month or more.	14	Yes	No
27. At times I have fits of laughing and crying that I cannot control.	22	Yes	No
28. I find it hard to keep my mind on a task or job.	32	Yes	No
29. I have had very peculiar and strange experiences.	33	Yes	No
30. I have a cough most of the time.	34	Yes	No
31. My sleep is fitful and disturbed.	43	Yes	No
32. When I am with people I am bothered by hearing very queer things.	48	Yes	No
33. Everything is turning out just like the prophets of the Bible said it would.	58	Yes	No
34. Parts of my body often have feelings like burning, tingling, crawling, or like "going to sleep".	62	Yes	No

35. I am easily downed in an argument.	82	Yes	No
36. I do many things which I regret afterwards (I regret things more or more often than others seem to)	94	Yes	No
37. I have met problems so full of possibilities that I have been unable to make up my mind about them.	100	Yes	No
38. I like collecting flowers or growing house plants.	132	Yes	No
39. I like to cook.	140	Yes	No
40. I feel weak all over much of the time.	189	Yes	No
41. I believe my sins are unpardonable.	209	Yes	No
42. I frequently find myself worrying about something.	217	Yes	No
43. I brood a great deal.	236	Yes	No
44. I dream frequently about things that are best kept to myself.	241	Yes	No
45. My way of doing things is apt to be misunderstood by others.	244	Yes	No
46. I have had blank spells in which my activities were interrupted and I did not know what was going on around me.	251	Yes	No
47. If I were an artist I would like to draw flowers.	261	Yes	No
48. At times I hear so well it bothers me.	341	Yes	No
49. Often I cross the street in order not to meet someone I see.	344	Yes	No
50. I have strange and peculiar thoughts.	349	Yes	No
51. Sometimes some unimportant thought will run through my mind and bother me for days.	359	Yes	No

52. I do not like to see women smoke.	378	Yes	No
53. I feel unable to tell anyone all about myself.	384	Yes	No
54. My plans have frequently seemed so full of difficulties that I have had to give them up.	389	Yes	No
55. I have had some very unusual religious experiences.	420	Yes	No
56. Christ performed miracles such as turning water into wine.	483	Yes	No
57. I pray several times every week.	488	Yes	No
58. I feel sympathetic towards people who tend to hang on to their griefs and troubles.	489	Yes	No
59. I am afraid of finding myself in a closet or small closed place.	494	Yes	No
60. Dirt frightens or disgusts me.	510	Yes	No
61. I am made nervous by certain animals.	525	Yes	No
62. My skin seems to be unusually sensitive to touch.	541	Yes	No
63. I feel tired a good deal of the time.	544	Yes	No
64. I never attend a sexy show if I can avoid it.	548	Yes	No
65. If I were an artist I would like to draw children.	554	Yes	No
66. I sometimes feel that I am about to go to pieces.	555	Yes	No
67. I have often been frightened in the middle of the night.	559	Yes	No
68. I very much like horseback riding.	561	Yes	No

APPENDIX D

DAILY SELF-REPORT QUESTIONNAIRE

DATE _____ CODE _____

A) ALCOHOL CONSUMPTION

1. Have you consumed any alcoholic beverage during the past 24 hours?

   Yes ____ No ____ If no, please go to Section B.

2. Have you consumed any spirits (whiskey, vodka, brandy, etc)?

   Yes ____ No ____ If no, please go to Number 3.

Name of Spirit	Self-Prepared (✓)	Oz. of Spirits	# of Drinks	Drinking Location	Alone? Yes/No

3. Beer / Wine / Aperitive

Type of Beverage	Oz.	# of Drinks	Drinking Location	Alone? Yes/No

Please indicate REASON(S) for drinking.

a) pleasure enhancement, celebration
b) to deal with a stressful situation
c) self-medication for pain
d) to alleviate negative mood state (eg. depression, anxiety)
e) to accompany dinner / before dinner drink
f) and/or other (specify) _____

_____

B) PSYCHOLOGICAL AND PHYSIOLOGICAL DISTRESS

DATE _____
CODE _____

The following is a list of common symptoms and feelings. For each item check (✓) the answer that best describes your experience today. Even if none of the categories is exactly correct, choose the one that best describes your experience. Please be sure to check one answer for each item. Remember to fill in your code and today's date.

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

DATE _____ CODE _____

C) OCCURRENCE OF LIFE EVENTS

1. Please indicate if any of the following happened today. Circle correct answer.

   a) had an exam at the University

   b) had an appointment with my family physician

   c) went to a party

   d) received upsetting news

   e) went out for a special occasion (eg. film, dinner, etc.)

   f) entertained some friends at home

   g) was sick

   h) began menstruating

   i) had an argument with a significant other (eg. mother, friend, etc.)

   j) other event which may have affected you?

   _____

   _____

2. How stressful was your day? Please rate on the following scale.

least stressful ever	0	1	2	3	4	5	6	7	most stressful ever

APPENDIX E

CODE _____

PLEASE ANSWER THE FOLLOWING AS ACCURATELY AS POSSIBLE:

1. Since the beginning of the study, have you started using contraceptive pills?

   Yes ____ No ____

   (if yes, please specify the date when you started using the pill _____)

2. Since the beginning of the study, have you become pregnant or found out you were pregnant?

   Yes ____ No ____

3. Since the beginning of the study, have you started using hormonal supplements other than the pill?

   Yes ____ No ____

   (if yes, please specify _____)

4. Since the beginning of the study, have you had any gynecological and/or endocrinological difficulties?

   Yes ____ No ____

   (if yes, please specify _____)

P.S. Please do not discuss these questions with other participants until the end of the study as it may bias those who are still reporting.

Thank You!

APPENDIX F

CODE _____

Dear participant,

It appears that some of the participants are not quite clear about the goal of the project. In order for me to shed some light on the matter, I would like to know what you perceive the goal of the study to be. In your own words, please briefly (2-3 sentences) describe the purpose of this research as <u>you</u> see it.

_____

_____

_____

Thank you!

APPENDIX G

PERCEPTION OF OWN PERSONAL RISK

CODE _____

1. Please rate your personal risk for developing an alcohol problem as you perceive it.

my risk is practically nonexistent	0	1	2	3	4	5	6	7	my risk is higher than that of most people

2. Does your perception of your own personal risk affect your drinking behavior?

Yes _____ No _____

(If yes, please specify how it is affected:

_____

_____

_____)

APPENDIX H

Table 6

Summary of ANOVA Results for MDQ Pain Scores

Source of Variation	SS	DF	MS	F	P
Risk (A)	311.82	1	311.82	.80	.373
S(A)	31094.57	80	388.68		
Cycle (B)	29.32	1	29.32	2.11	.150
A X B	108.19	1	109.19	7.78	.007*
BS(A)	1111.79	80	13.90		
Phase (C)	1306.83	4	326.71	11.07	.000**
A X C	59.89	4	14.97	.51	.731
CS(A)	9448.06	320	29.53		
B X C	158.26	4	39.56	1.80	.128
A X B X C	68.27	4	17.07	.78	.541
BCS(A)	7029.70	320	21.97		

**p <.001 *p <.01

Table 7

Summary of ANOVA Results for MDQ Water-Retention Scores

Source of Variation	SS	DF	MS	F	P
Risk (A)	33.35	1	33.35	.31	.580
S(A)	8636.12	80	107.95		
Cycle (B)	28.44	1	28.44	2.42	.124
A X B	28.44	1	28.44	2.42	.124
BS(A)	939.95	80	11.75		
Phase (C)	1193.70	4	298.42	22.96	.000**
A X C	125.18	4	31.30	2.41	.049*
CS(A)	4158.93	320	13.00		
B X C	6.21	4	1.55	.16	.959
A X B X C	86.26	4	21.57	2.21	.068
BCS(A)	3129.33	320	9.78		

**p <.001 *p <.05

Table 8

Summary of ANOVA Results for MDQ Autonomic Reaction Scores

Source of Variation	SS	DF	MS	F	P
Risk (A)	5.53	1	5.53	.22	.639
S(A)	1990.26	80	24.88		
Cycle (B)	5.27	1	5.27	.65	.424
A X B	9.23	1	9.23	1.13	.291
BS(A)	652.21	80	8.15		
Phase (C)	45.51	4	11.38	2.87	.023*
A X C	25.12	4	6.28	1.59	.178
CS(A)	1267.39	320	3.96		
B X C	4.89	4	1.22	.30	.879
A X B X C	26.59	4	6.65	1.62	.169
BCS(A)	1312.45	320	4.10		

*p <.05

Table 9

Summary of Anova Results for MDQ Negative Affect Scores

Source of Variation	SS	DF	MS	F	P
Risk (A)	68.28	1	68.28	.08	.782
S(A)	71080.87	80	888.51		
Cycle (B)	169.16	1	169.16	2.89	.093
A X B	52.18	1	52.18	.89	.348
BS(A)	4683.12	80	58.54		
Phase (C)	289.73	4	72.43	1.49	.206
A X C	128.15	4	32.04	.66	.622
CS(A)	15585.73	320	48.71		
B X C	387.29	4	96.82	1.88	.114
A X B X C	263.19	4	65.80	1.28	.280
BSC(A)	16513.37	320	51.60		

Table 10

Summary of ANOVA Results for Global Stress Ratings

Source of Variation	SS	DF	MS	F	P
Risk (A)	.29	1	.29	.00	.951
S(A)	6086.81	80	76.09		
Cycle (B)	5.60	1	5.60	.69	.408
A X B	4.37	1	4.37	.54	.464
BS(A)	645.90	80	8.07		
Phase (C)	41.05	4	10.26	1.32	.261
A X C	26.25	4	6.56	.85	.497
CS(A)	2482.12	320	7.76		
B X C	11.93	4	2.980	.36	.838
A X B X C	23.46	4	5.86	.70	.590
BCS(A)	2666.09	320	8.33		

Table 11

Summary of ANOVA Results for Alcohol Consumption

Source of variation	SS	DF	MS	F	P
Risk (A)	958.40	1	958.40	2.12	.149
S(A)	36084.40	80	451.06		
Cycle (B)	222.59	1	222.59	1.30	.258
A X B	75.91	1	75.91	.44	.507
BS(A)	13691.51	80	171.14		
Phase (C)	708.23	4	177.06	1.09	.360
A X C	164.01	4	41.00	.25	.908
CS(A)	51800.65	320	161.88		
B X C	381.21	4	95.30	.66	.620
A X B X C	865.19	4	216.30	1.50	.202
BCS(A)	46149.66	320	144.22		

Table 13

Reasons Given for Drinking as a Percentage for Risk Groups by Menstrual Phase

REASON	RISK	M	F	O	L	PM
Pleasure	LR	42.1	45.8	42.2	43.3	48.9
	HR	36.1	51.4	43.8	41.0	35.5
Stress	LR	1.8	5.1	3.1	7.5	2.2
	HR	5.6	0.0	3.1	5.1	6.5
Self-Medication	LR	0.0	0.0	0.0	0.0	0.0
	HR	0.0	0.0	0.0	0.0	0.0
Negative Mood	LR	5.3	8.5	7.8	3.0	11.1
	HR	11.1	16.2	3.1	2.6	6.5
Dinner	LR	38.6	32.2	42.2	29.9	33.3
	HR	33.3	21.6	40.6	33.3	38.7
Other	LR	12.3	8.5	4.7	16.4	4.4
	HR	13.9	10.8	9.4	17.9	12.9

Note. M = menstrual, F = follicular, O = ovulatory, L = luteal and PM = premenstrual

Table 14

Percentage of Days Subjects Drank and Drinking Context for Risk Groups by Menstrual Phase

CONTEXT	RISK	M	F	O	L	PM
Did not Drink	LR	79.1	80.8	77.3	76.9	83.0
	HR	77.8	71.6	75.0	70.0	77.3
At Home, alone	LR	0.0	0.0	0.0	0.0	0.3
	HR	1.6	2.2	0.6	1.1	1.1
At Home, With Others	LR	5.8	6.4	7.1	6.8	3.2
	HR	7.8	8.4	6.1	10.6	4.5
Elsewhere, Alone	LR	0.0	0.0	0.0	0.0	0.0
	HR	0.0	0.6	0.0	0.6	0.0
Elsewhere, With Others	LR	15.1	12.8	15.7	16.4	13.5
	HR	12.8	17.2	18.3	17.8	14.5

Note. M = menstrual, F = follicular, O = ovulatory, L = luteal and PM = premenstrual

Table 15

Summary of Independent *t*-tests between Risk Groups on Personality Measures

Personality Measure	*t*	*p*
Barron Es	- .47	.638
EPQ Psychoticism	- .67	.506
EPQ Extraversion	.61	.546
EPQ Neuroticism	.31	.760
EPQ Lie Score	1.11	.270
Vando R-A Scale	- .65	.515

Note. All *df* = 80

Table 16

Pearson Product-Moment Correlations Between Alcohol Consumption, Menstrual Symptoms, Stress, and Personality Variables

	EPQ-P	EPQ-E	EPQ-N	Vando R-A	Barron Es
Alcohol Cons.	.0104	.2864*	-.1011	.1778	.1231
Pain	.1114	.0494	.2695	-.0453	-.2902*
Water Retent.	.2030	.0444	.0171	-.0227	-.2060
Auton. Reac.	.0453	.1361	.1803	-.0903	-.2185
Neg. Affect	.1971	.0548	.1589	-.0243	-.2595
Stress	.1465	.1164	.0642	.0270	-.0412

Note. EPQ-P = Eysenck Psychoticism, EPQ-E = Eysenck Extroversion, EPQ-N = Eysenck Neuroticism, Vando R-A = Vando Reducer-Augmenter Scale, Barron Es = Barron Ego Strength Scale, Alcohol Cons. = Alcohol Consumption, Pain = MDQ Pain, Water Retent. = MDQ Water Retention, Auton. Reac. = MDQ Autonomic Reaction, Neg. Affect = MDQ Negative Affect, and Stress = Global Stress.
* $p < .01$

Table 17

Summary of ANOVA Results on Alcohol Consumption on Weekdays and Weekends

Source of Variation	SS	DF	MS	F	P
Risk (A)	77.34	1	77.34	4.77	.032*
S(A)	1298.29	80	16.23		
Time (B)	168.98	1	168.98	34.04	.000**
A X B	.29	1	.29	.06	.809
BS(A)	397.18	80	4.96		

Note. *p <.05
**p <.001

APPENDIX I

'87 FEB 24 A11 :45

STANFORD UNIVERSITY MEDICAL CENTER

STANFORD, CALIFORNIA 94305 • (415) 858-3996

STANFORD UNIVERSITY SCHOOL OF MEDICINE
Department of Psychiatry
Rudolf H. Moos, Ph.D., Professor
Director, Social Ecology Laboratory

January 1987

Dear Colleague:

Thank you for your interest in the Menstrual Distress Questionnaire (MDQ). The new Manual and Overview of research with the MDQ is now available. The Manual has been extensively revised. It is composed of 125 pages and cites more than 200 references covering the use of the MDQ and recent developments in research on the menstrual cycle.

In brief, Part I of the new Manual considers the development of the MDQ and covers psychometric and methodological issues related to it. Part II provides an overview of the prevalence of perimenstrual symptoms as estimated by the MDQ, while Part III focuses on menstrual cycle symptom profiles and typologies of perimenstrual syndromes. Part IV covers the personal and behavioral correlates of perimenstrual symptoms and Part V examines the links between such symptoms and attitudes about menstruation, sex, and femininity. Part VI focuses on the role of cognitive attributions and contextual factors such as life stressors and social resources in perimenstrual syndromes. Part VII covers studies of the treatment of perimenstrual distress in which the MDQ has been used. Finally, Part VIII integrates the foregoing material and highlights some priorities for future research.

The two Forms of the MDQ (Form C focuses on the overall cycle and Form T focuses on today's symptoms) are reprinted in Appendix A in the Manual. You are welcome to use the MDQ in your research and to make copies of it for this purpose. Please be sure to include the copyright notice on all reprinted copies of the Questionnaire. If you wish to adapt or change the MDQ for your study, please write to me for permission. I would also appreciate your sending me a copy of the results of any study you conduct so that I can maintain a file of MDQ research to use in periodically updating the Manual.

We currently are charging $10.00 to help cover the cost of reproducing and distributing the MDQ Manual. Please make your check payable to "Stanford University" and mail it to us at the above address. Be sure to include your (legible) name and full mailing address.

Good luck with your work.

Rudolf Moos

Rudolf H. Moos

June 13th, 1987.

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Chapter: 3 "The Menstrual Cycle and its Hormonal Interrelationships"
Book: Biology of Women. 2nd ed.
1985
Author: Ethel Sloane

An early reply would be most appreciated.

Yours sincerely,

Lina Charette
Box 7, RR#1
Hammond, Ontario
K0A 2A0
-CANADA-

JUN 23 1987