

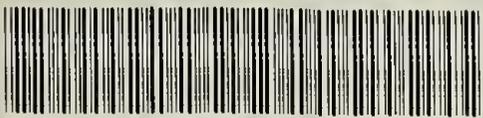


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THEMATIC SEXUAL RESPONSES AS
RELATED TO PHASE OF THE
MENSTRUAL CYCLE

JANE A. NELSON

1961



THEMATIC SEXUAL RESPONSES AS RELATED TO PHASE
OF THE MENSTRUAL CYCLE

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the degree of Master of Science

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Introduction

The present study investigated the relationship between women's sexual responses on a thematic apperception-type test and sexual motivation as associated with phase of the menstrual cycle.

Thematic Apperception and Basic Drives. Several studies have investigated physiological drives as they are related to projective techniques. Atkinson and McClelland (1) found a relationship between food responses to the TAT and degree of hunger. Epstein and Smith (5) obtained similar findings, but indicated that it was necessary to consider the need-relevance of the stimulus if correct predictions were to be made.

Two studies by Clark (2, 3) have reported a relationship between sex drive in males and sex responses on a thematic apperception test. Clark experimentally induced the drive by presenting his Ss with pictures of nude females before testing them. He found that under non-alcoholic conditions, the aroused group expressed significantly more symbolic and fewer direct sex responses than the control group. Under conditions of alcohol, both groups expressed very little symbolism and large amounts of manifest sexuality. As pointed out by Epstein and Smith (5), however, a drive induced by external stimulation is not the same as one predominantly based upon internal stimulation. These two varieties of motivation are likely to differ since an externally induced drive can be more easily labelled and therefore be more subject to inhibition. It is the relatively enduring internally-produced states that are of greatest interest to the user of projective techniques. Epstein and Smith (6) reported a direct relationship between reported frequency of orgasm and sexual responses on a

thematic apperception test. They indicate that in their study the measure of drive was dependent upon acceptance of sexual behavior and suggest the need for a study in which sexual motivation is anchored in a physiological state, such as the menstrual cycle, which is not subject to conscious control. In the foregoing studies, a relationship between responses to the thematic apperception test and the intensity of a basic drive, as measured by an outside criterion, was demonstrated.

Periodicity of Sexual Motivation in Females as Investigated through Questionnaires. Davis (4) has studied the responses of both unmarried and married females to questionnaires on periodicity of sex desire and its relation to the menstrual cycle. The unmarried subjects, all of whom were college graduates at least five years out of college, were asked whether they felt sexual desire more strongly at some periods than at others, and if so, how these periods were related to the menstrual cycle. Subjects indicated when greater sexual desire was present by stating "before," "after," or "during" the menstrual period, or "midway" between menstrual periods. Of 1000 subjects who answered the questions, the responses of 580 women were sufficiently consistent to warrant further study. Regular periodicity of sexual desire was found in 272 cases; irregular periodicity of desire occurred in 298 cases. The results were grouped by weekly intervals of the menstrual cycle.

The questions which the married women (of whom 68.1 percent were college graduates) were asked to answer were not organized in the same way as those for the single women. The married women were asked to recall premarital sexual desire between the age of 14 and the time of marriage.

Of 369 women admitting sexual feelings during these years, 126 stated that they felt regular periods of desire and 45 stated that they felt irregular periods of desire.

For the married subjects (who recalled premarital desire) and unmarried subjects, the nature of sexual periodicity was almost identical. They indicated that they had either one or two periods during the month when greatest desire was felt. These periods occurred either two or three days before the onset of menstruation or two or three days after menstruation was over. A few subjects stated that their time of greatest sexual desire was during the mid-interval (about the time that ovulation occurs), but for the whole group, this was the time when sexual desire was weakest.

The significance of Davis' investigation lies in the finding that many women consciously recognize periodicity of sexual desire and that the periods of strongest desire reported are just before and just after menstruation.

Davis' method of obtaining information had certain drawbacks which Davis, herself, points out. The design of her questionnaire was not conducive to obtaining information on the particular subject of periodicity of sexual desire. (Davis was primarily interested in other information.) The questionnaire for married subjects was not comparable to that for unmarried subjects and prevented comparing the groups. Of greater importance, however, is the fact that questionnaires, however well designed, call for introspection by the subjects about subtle motivational changes which they are poorly prepared to consciously analyze. With a thematic

apperception test, however, introspection may be eliminated and motivational differences which are not conscious can be studied.

Explanations for the Nature of Periodicity of Sexual Desire in Females. Different explanations of reported periodicity of sexual desire as related to menstrual cycle have been offered.

Ford and Beach (7) note that physiological factors produce different effects upon eroticism in humans as compared to eroticism in other primates. They state that human sexual patterns are difficult to account for in terms of reproductive physiology alone because the time of ovulation in human females is accompanied by lessened sexual drive, while in other primates this is the time when mating behavior is most evident. They state that if the sex drive in human females were primarily a function of ovarian hormones that produce heat and mating in other mammals, the "mid-interval," or time of ovulation should be the time of maximum sexual reactivity. They indicate that the pattern of sexual behavior in other animals is biologically adaptive in that it maximizes the likelihood of conception. Although recognizing other possible explanations for the behavior of the human female, Ford and Beach suggest that since women do not usually engage in sexual acts during menstruation, this period is one of deprivation. They believe that the rise in receptivity before and after menstruation is the result of social conditioning and learning; i.e., the premenstrual rise in desire is due to anticipated deprivation during menstruation and the post-menstrual rise is a direct result of the deprivation. In summary, then, Ford and Beach present the opinion that the biologically non-adaptive sexual behavior of human females is a result of psychological

factors predominating over biological ones.

Hartman (8) has reviewed the literature pertaining to women's introspections about sexual desire and ovulation. He reports a "curve of well-being" that has been graphed by some authors. This curve, based on reports from women of when they feel generally best, reflects the same rises and declines in sexual desire found by Davis. Hartman suggests that the tensions associated with the menstrual cycle may take the form of changes in mood, well-being, or feelings of tension. Such feelings are sometimes localized in the pelvis. The preceding information is based upon reports of physicians or others in close contact with sexual and physiological functioning of females. However, no systematic study of these phenomena has been performed. Hartman presents the interesting opinion that Davis' findings are in error as a result of a mental bias in women to relate sex matters to the one most outstanding event, the menstrual flow. This bias causes them to consider sexual matters in close time relation to menstruation. A possibility to consider, based on the above opinion, is that periodicity of sexual desire does not actually follow the pattern obtained by women's reports, as in the Davis study.

Kinsey (9) found that the amount of vaginal secretion (which he considers a measure of sexual responsiveness) during coital activity varies in relation to the timing of the activity within the menstrual cycle. Sixty-nine percent of those who recognized such fluctuation reported that mucus was most abundant when sexual activity occurred one to four days before the onset of menstruation. The next highest percentage of women (thirty-nine percent) reported that maximum secretion occurred just after

menstruation ceased. (The percentages total over 100 percent because some women reported more than one period that brought increased secretion.) Kinsey feels that this physical reaction is more objective than information requiring introspection about erotic feelings, especially since he asked questions pertaining to vaginal secretions before asking questions about maximum erotic responsiveness. Therefore, those questioned could not confuse the latter questions with the former. Kinsey feels that the occurrence of maximum secretion at the same time of the month as maximum arousal is of particular interest. In agreement with Ford and Beach, he notes that the female's period of greatest desire is not conducive to propagation of the species. Kinsey also found that the observations of husbands who contributed information to his study were in accord with the finding that women report highest sexual drive at the times just preceding and following menstruation. Unlike Ford and Beach, he concludes that the female has, in the course of evolution, departed from other mammals and has developed new characteristics which have relocated the period of maximum sexual arousal to before and after menstruation.

Kinsey bases his acceptance of the reported curve of periodicity on accompanying secretions. It is worth considering, however, the possibility that the vaginal secretions themselves are psychologically conditioned; i.e., the psychological reactions determine the physiological reactions rather than the reverse. In addition, the same mental bias may occur in reporting the time of greatest secretion that Hartman has suggested for reporting the time of greatest desire.

Statement of the Problem: The present study dealt with the relationship between motivational state and sexual periodicity. If the same curve of periodicity that Davis (4) reports had been obtained with a projective test, it would indicate that the findings of her study were not in error as a result of relying upon self-report. If, on the other hand, a curve of periodicity had been obtained with a projective test which differed from that reported by Davis, it would suggest that the reports of women are faulty and that the explanation offered by Ford and Beach (7) for periodicity in human females would be supported.

If a mental bias exists, as Hartman (8) suggests, the actual curve of periodicity which would be found with the present study would resemble the primate curve of sexual desire. The "set" effects produced by asking subjects a direct question about sexual desire whereby they may tend to relate desire close, in time, to menstruation was eliminated with the use of a TAT. Subjects responded to the TAT without knowledge of the purpose of the study. Their responses were related to the menstrual cycle. Since responses to the questionnaire about menstruation followed the projective test, there was no bias from this source affecting their TAT responses.

The following hypotheses were investigated:

1. There is a relationship between menstrual cycle and sexuality as determined by self-report. This hypothesis is consistent with findings in other studies. It will be determined whether the relationship holds for the particular sample in the present study.
2. There is a relationship between sexual responses to a TAT-type test

and phase of the menstrual cycle. Evidence for this relationship is based on previous studies which have used verbal reports alone, a source which can be questioned. If the same pattern is found as in studies relying on self-report, it will verify the general conclusions of these studies; if a different pattern is found, it will indicate that reports of women are biased, and may reveal that human females experience periodicity of sexual desire similar to that of non-human primates.

3. A group relatively high in sex-guilt (as measured by responses to a questionnaire) does not demonstrate as marked a relationship between sexual responses on a TAT-type test and menstrual cycle as a group relatively low in sex-guilt. This prediction is based upon the presumed inhibiting effects of guilt upon sex-related responses.

4. There is a relationship between sexual responses on a TAT-type test and sexual reactivity as reported in the questionnaire. The relationship between reported sexuality and the thematic sexual responses will be studied in order to determine whether thematic responses reflect conscious motivation.

5. A group relatively high in sex-guilt does not demonstrate as marked a relationship between thematic responses and self-reported sexual reactivity as does a group low in sex-guilt. It is assumed that the inhibiting effects of guilt create a separation between measures of sexual motivation based on different levels of consciousness.

Method

Subjects. The subjects consisted of one hundred unmarried female undergraduates at the University of Massachusetts who were enrolled in the Introductory Psychology course. The students were required to participate in three hours of experimentation; participation in this study was partial fulfillment of that requirement. Subjects were tested in groups of fifteen to twenty-five per session.

The Ss position in the menstrual cycle at the time of testing determined in which of the five following groups she was placed. (The following is based on a twenty-eight day cycle. Where a longer or shorter cycle existed, the subject was assigned to a group on the basis of a proportionate estimate corresponding to the twenty-eight day cycle):

1. Menstruation Group: All Ss menstruating at the time of testing were placed in this group; it was therefore between the second and eighth day of the cycle, varying for each individual.
2. Post-menstruation Group: Four days just following the cessation of menstruation.
3. Pre-menstruation Group: Four days just preceding the estimated onset of menstruation.
4. Ovulation Group: Four days halfway between two menstrual periods, during which ovulation was expected to occur.
5. Interim Group: The remaining days of the cycle on either side of the ovulation time period. These days should have a common physiological accompaniment of low estrogen level.

Stimulus Materials. A TAT-type test was administered according to the method described by Atkinson and McClelland (1). An introduction to the test informed Ss that the test was one of creative imagination. Each picture was exposed for twenty seconds, followed by four minutes for writing stories.

The test consisted of ten specially designed pictures which varied in stimulus-relevance to sex. An artist was instructed to draw the pictures, presented in order of administration.

Picture 1. A girl sitting along on a park bench.

Picture 2. A girl sitting at a desk before a window writing a letter.

Picture 3. A man and woman shaking hands. A second man appears to be introducing them.

Picture 4. A man and woman eating dinner together.

Picture 5. A sleeping or resting woman, with a balloon cloud suggesting a disturbing dream.

Picture 6. A man and woman dancing together; the moon can be seen in the background.

Picture 7. A girl with bowed head, sitting alone in a doorway. figure in the distance is walking away.

Picture 8. A man and woman, parked in a car, are in a close embrace. The moon is in the background.

Picture 9. Two women, one considerably older than the other, appear to be involved in an argument or serious discussion.

Picture 10. A man, lying down on a bed, is holding and kissing a woman who is sitting on the bed and leaning over him. She is dressed in a slip or nightgown.

Pictures 5, 7, and 9 were not considered part of the sexual stimulus-dimension, but were used to measure sex-related guilt responses.

Pictures were presented in order of presumed increasing stimulus-relevance for sex to avoid response generalization from high sex-relevant pictures to low sex-relevant pictures. The actual stimulus-relevance of the pictures was determined by the average score elicited by the picture.

Questionnaire. A questionnaire was designed for the present study to obtain accurate information about all aspects of the menstrual cycle and sexual feelings as related to the menstrual cycle. Information about sex-related guilt was also included. (See Appendix A.)

The questionnaire was presented following the administration of the TAT test. Subjects were first told that the questionnaire required personal information about sexual feelings and attitudes and that anyone unwilling to give such information was free to leave the testing session.

A method for checking the accuracy of women's reports about length of their menstrual cycle and deviations in regularity of cycles was indicated as necessary by Hartman (8), who stressed that women are inaccurate in reporting this information. The examiner, therefore, asked Ss to check any records they might have which would verify the date of when their last menstruation began, and to report this information on one of two post cards given them. The second card was used to notify the examiner of the date

of the onset of the next menstruation. This information provided a more exact method of assigning Ss to one of the five menstrual cycle groups.

Scoring of TAT Responses. All test and questionnaire material was coded to insure anonymity of Ss and to prevent scorer bias.

Responses were scored by a modified version of Murray's N-Sex score (1). The score consisted of assigning a global weight based mainly on the intensity of the hero's sex need, but modified according to importance of sex to the plot, and frequency of sexual reference. To aid in making accurate judgment, all responses to a given picture were read before scores were assigned. The modal story was then selected and assigned an initial score of three, and other responses were initially scored comparatively on a scale of 1 to 5. After each story had been scored in this manner, scores were converted to absolute weights which could be applied to all pictures. Absolute weights were obtained by listing a representative story for each initial score value as applied to each picture for all pictures pooled. This list of representative stories was then assigned a weight according to discriminable levels of sexual content. The final range of scores was one to eight.

Following are descriptions of the full range of final scores:

- 1- Casual mention of a male; any indication of awareness of the opposite sex.
- 2- Light atmosphere in which a boy and girl are introduced; no romance or attraction specified.
- 3- Attraction is suggested. A couple enjoy each others' company; it is probably a lasting association.

- 4- Attraction is definitely present, such as a girl writing to her boyfriend and feeling close to him.
- 5- Strong emphasis on attraction between a boy and girl.
- 6- Reference to "parking" and the likelihood that this will be done again.
- 7- Kissing which will continue and become more passionate; love-making which "might get out of hand."
- 8- Sexual intercourse anticipated or being enjoyed.

A graduate student in psychology was instructed in the method of scoring and applied the method to thirty TAT records. The interscorer reliability for this student and the author was .80.

Results

Analysis of Thematic Responses. Eighty Ss provided adequate information about menstruation dates and were assigned to the appropriate menstrual-cycle groups as defined. The number in each group was as follows:

- Menstruation group- 15
- Post-menstruation group- 15
- Ovulation group- 15
- Pre-menstruation group- 14
- Interim group preceding ovulation- 10
- Interim group following ovulation- 11

The actual stimulus relevance of each picture was determined by obtaining the mean Need Sex score for all subjects to each picture, as shown in Table I. Picture III proved to be of greater stimulus relevance than had been anticipated. (Pictures V, VII, and IX were designed to elicit

sex-related guilt responses.)

TABLE I

Mean Need Sex Scores For All Groups Combined

N-80										
Picture Number	1	2	3	4	5	6	7	8	9	10
Mean	5.4	12.8	21.2	16.0	14.6	17.1	20.5	26.6	19.5	39.6

The mean Need Sex score for all 10 pictures combined for each menstrual cycle group is presented in Table II.

TABLE II

Mean Need Sex Scores For All Pictures Combined

	N-15	N-15	N-10	N-15	N-11	N-14
Group	Menstruation	Post-men.	1st Int.	Ovul.	2nd. Int.	Pre-men.
Mean	34.3	30.0	30.9	33.1	32.5	32.5

For the first analysis of variance, menstrual-cycle groups were divided into the following three groups: Menstruation, Ovulation, and the remaining groups combined as "All Others." This was done to increase the number of cases in the cells and to compare the physiologically and psychologically most significant segments of the cycle with the rest of the cycle. Ss were also divided into High and Low sexual-guilt by determining, for each subject, the sum of questionnaire response values to items related to sexual guilt, and then dividing subjects at the median total, which was 12. The totals for sexual guilt ranged from 5 to 17 points. The low-guilt group ranged from 5 through 12, while the high-guilt group

ranged from 13 through 17 points in total guilt scores.

TAT pictures were divided into low, medium, and high stimulus relevance. Pictures I and II were grouped as low stimulus relevance, pictures III, IV, and VI as medium stimulus relevance, and pictures VIII and X as high stimulus relevance. (Pictures V, VII, and IX were analyzed separately.) Need Sex scores were combined within each level of stimulus relevance by summing and dividing the sum by the number of pictures in the stimulus level. Seventy-six Ss were included in the analysis after four Ss were randomly discarded to keep groups proportionate. In Table III it can be seen that there is only one source of variance that reaches significance. Pictures designated as of high relevance, not surprisingly, elicited stronger responses than pictures designated as of low relevance.

TABLE III

Analysis of Variance of Need Sex Scores for Three Menstrual-Cycle Groups, High and Low Guilt, and Low, Medium, and High Stimulus Relevance

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Total Between <u>Ss</u>				
Menstrual Cycle (M)	2.73	2	1.36	1.37
Guilt (Gt.)	1.05	1	1.05	1.06
MxGt:	3.77	2	1.89	1.91
<u>Ss</u>	69.51	70	.99	
Total Within <u>Ss</u>				
Stimulus Relevance (S-R)	617.99	2	3090.0	338.0**
S-RxM	6.71	4	1.68	1.85
S-RxGt:	4.04	2	2.02	2.23
S-RxMxGt:	6.12	4	1.53	1.68
S-Rx <u>Ss</u>	<u>127.67</u>	<u>140</u>	.91	
Total	839.59	227		

** Significant at the .01 level

The data were analyzed by Chi Squares for each picture with Ss divided according to the six menstrual cycle groups described previously. The median N-Sex score for each picture was determined, and the number of Ss above and below the pooled cutting point were compared for the different groups. Inspection of the data revealed that Chi Squares for three groups, as in the analysis of variance, would not differ from that using six groups.

In Table IV, it can be seen that none of the Chi Squares approach significance. The Chi Square for picture VI is presented below, to illustrate the data.

TABLE IV

Chi² for Pictures I-X, df-5

Pictures	1	2	3	4	5	6	7	8	9	10
Median Cutting Point	0-1	1-2	3-4	2-3	2-3	2-3	3-4	3-4	3-4	6-7
Percent <u>Ss</u> above Cutting Point	47.5	48.0	57.5	48.75	55.0	51.25	72.5	65.0	42.5	57.5
Chi ²	5.07	5.07	6.84	8.14	1.71	7.64	3.32	.70	5.01	3.93

Data for Chi² of Picture 6

	Menstrual Groups						n
	Menstru.	Post-Men.	1st Int.	Ovul.	2nd Int.	Pre-Men.	
Above Median	12	8	5	7	4	5	41
Below Median	3	7	5	8	7	9	39
n	15	15	10	15	11	14	80

In a second Analysis of Variance, Need Sex scores were divided into High and Low sexual-drive as determined by responses to the questionnaire. As in the first analysis, sex-related guilt and stimulus-relevance were treated as additional independent variables. There were fifty-two Ss in this analysis, after Ss were randomly discarded to maintain proportionality of groups. There were six subjects in the high sex-high guilt group, six in the high sex-low guilt group, and twenty each in the low sex-high guilt and low sex-low guilt groups. In Table V it can be seen that again only stimulus-relevance is significant.

TABLE V

Analysis of Variance of Need Sex Scores for High and Low Need Sex Groups (Determined from Questionnaire), High and Low Guilt Groups, and Low, Medium and High Stimulus Relevance

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Total Between <u>Ss</u>				
Need Sex (NS)	2.04	1	2.04	1.91
Guilt (Gt)	.02	1	.02	.02
NS x Gt	.07	1	.07	.06
<u>Ss</u>	51.25	48	1.07	
Total Within <u>Ss</u>				
Stimulus Relevance (S-R)	408.27	2	204.14	204.14**
S-R x NS	.64	2	.32	.32
S-R x Gt	1.88	2	.94	.94
S-R x NS x Gt	2.98	2	1.49	1.49
S-R x <u>Ss</u>	95.73	96	1.00	
Total	562.88	155		

** Significant at the .01 level

The third analysis of variance was carried out in a manner similar

to the first except that the stimulus-dimension consisted of pictures V, VII, and IX, rather than low, medium and high stimulus relevance. Need Sex scores to these pictures were analyzed to study sex-related guilt responses. Menstrual-cycle group, self-reported guilt, and individual pictures were treated as the independent variables. In Table VI, it can be seen that stimulus-relevance is again the only significant variable.

TABLE VI

Analysis of Variance of Need Sex Scores for Three Menstrual-Cycle Groups, High and Low Guilt Groups, and Three "Anxiety" Pictures

<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Total Between <u>Ss</u>				
Menstrual Cycle (M)	11.20	2	5.60	.85
Guilt (Gt)	3.69	1	3.69	.56
M x Gt	17.21	2	8.60	1.31
<u>Ss</u>	460.78	70	6.58	
Total Within <u>Ss</u>				
Pictures (P)	44.13	2	22.06	5.98**
P x M	4.87	4	1.22	.33
P x Gt	8.01	2	4.00	1.08
P x M x Gt	6.54	4	1.64	.44
P x <u>Ss</u>	<u>517.79</u>	<u>140</u>	3.69	
Total	1074.22	227		

** Significant at the .01 level

Analysis of Questionnaire Data. Item VII of the questionnaire called for self-ratings of sexuality on a five-point scale (see Appendix A). All except six Ss designated their sexual drive as either about average or somewhat below average. Selecting as the cutting-point "average" and

"above average", the data were analyzed by Chi Square to determine whether a relationship existed between self-rated sexuality and menstrual cycle group. In Table VII it can be seen that the first hypothesis, which states that there is a relationship between reported sexuality and phase of the menstrual cycle, is not supported.

TABLE VII

Chi² for Self-rated Sexual Desire and Menstrual Cycle Groups

Sexual Desire	Menstrual Cycle Group						n
	Menstruation	Post-men.	1st Int.	Ovui.	2nd Int.	Pre- Men.	
Average or Above	5	3	2	7	4	2	23
Below Average	10	12	8	8	7	12	57
N	15	15	10	15	11	14	80

Chi² = 5.16; df = 5

The questionnaire was designed to provide information about the group studied and required both information about menstruation and characteristics of the menstrual cycle for each subject, and self-report information about sexual drive and sex-related guilt. The Appendix contains the full text of the questions, while the following presents the question in brief, with a summary of responses. Item numbers used here correspond to those in the Appendix. Item 5 is omitted here because it asked for the actual date of last menstruation and was otherwise not of importance.

1. Length of the menstrual cycle for the group studied averaged thirty days, or somewhat longer than the usual twenty-eight days considered as average for females in general. The range of cycle lengths was from

twenty-five to forty days.

2. Reported variation in length of the cycle from month to month was as follows:

TABLE VIII

Response	Number
Always the same length	3
Almost always the same	25
Generally the same - may vary 3 or 4 days	34
Usually not the same - often 5 days variation	15
Very changeable	3

The largest number of Ss report some degree of variation in length of cycle from month to month, with a mode of three to four days variation.

3. The average reported duration of menstruation was 5.16 days, with a range of 2 to 8 days.

4. Calendar records of dates of previous menstruation are kept by forty-four of the eighty Ss studied.

6. Fifty-eight of the Ss were unaware of when they were ovulating. The following table summarizes the answers to the question on relationship between sexual responsivity and ovulation for the remaining twenty-two Ss. More than one explanation of awareness of ovulation was offered by some Ss.

TABLE IX

Increase in sex desire	Vaginal discharge	Pain	Anxiety feelings	Feelings of Tiredness
6	9	9	2	1

The large number who are totally unaware of when ovulation occurs, and the vagueness of many of the remaining responses given to this question suggest that ovulation is not usually consciously recognized, and if there are accompanying changes in sexual drive they appear to be largely unconscious.

7. General intensity of sexual desire was self-rated as follows:

TABLE X

Self-rating	Number
Strong	0
Above average	5
Average	52
Less than average	22
Hardly notice any sexual feeling	1

Self-ratings of sexual desire for these females are clustered around average and reflect some lack of basis for making this self-evaluation, or some need to consider themselves as "average," or low in sexual desire.

8. Ss were asked if they had noted some relationship between point in the menstrual cycle and (A) increased sexual desire, (B) daydreaming, (C) increased interest in love stories and movies, (D) increased interest in males. The combined responses to all four alternatives follow:

TABLE XI

Menstruation	Post-men.	Ovulation	Pre-men.	Pre- & Post-men.	<u>N</u>
5	4	10	7	7	33
No relationship noted					33
Other combinations:					
Premenstruation and Menstruation					4
Postmenstruation and ovulation					2
Decrease during menstruation					2
Premenstruation, Menstruation, and Postmenstruation					1
Premenstruation, Menstruation, Ovulation to Menstruation					1
Menstruation and Postmenstruation					1
Decrease in Premenstruation					1
Ovulation and Premenstruation					2
Numbers summarized:		No relationship			33
		Individual segments of the cycle			33
		Other combinations			<u>14</u>
		Total N			80

The large number of combinations of times throughout the cycle when sex-related activity increases, makes it difficult to consider any point in the cycle as more likely to be associated with high sexual drive.

9. Anticipated feelings Ss will have when sexual intercourse is engaged in is as follows:

TABLE XII

	<u>Number</u>
Look forward to that time	62
Do not think about it	8
Slightly unpleasant thought	10
Definitely upsetting	0

10. A discussion of sex elicits the following reactions:

TABLE XIII

	<u>Number</u>
Contribute to it	43
Take it or leave it	34
Think it childish	2
Find it upsetting	1

11. The following reactions are reported to occur when sexual thoughts or feelings come to mind:

TABLE XIV

	<u>Number</u>
Enjoy them or think them through	19
Give them some attention	54
Try to think of something else	7
Feel ashamed of myself	0

12. Ss responded as follows to the question of whether they note secretions at certain times of the month:

TABLE XV

	<u>Number</u>
Yes, at the following times during the cycle:	67
A. 3 or 4 days before menstruation	27
B. 3 or 4 days following menstruation	8
C. 6 days in the middle of the cycle	19
D. Other -	
One week before menstruation	2
Two weeks before menstruation	1
Ovulation to menstruation	1
A and B above	2
A and C	3
Yes, but uncertain when	2
C, and when sexually aroused	1
In the summer	<u>1</u>
Total	13
No secretions noted during cycle	13

These results coincide with the findings of Kinsey (9) who noted that the time just preceding menstruation was accompanied by greater secretions during coital activity than other times during the menstrual cycle. In the present study, Ss were asked whether they noted increased secretions, in general, rather than in association with sexual activity.

13. Guilt reactions to "heavy petting" are as follows:

TABLE XVI

	<u>Number</u>
No guilt	13
Some guilt	16
Equal guilt and pleasure	9
Greater guilt than pleasure	26
Strong guilt	16

14. Anticipated guilt reactions to sexual intercourse are as follows:

TABLE XVII

	<u>Number</u>
No guilt	7
Some guilt	4
Equal guilt and pleasure	22
Greater guilt than pleasure	11
Strong guilt	36

The results of the questionnaire provided information about the characteristics of the sample of Ss tested. There is a moderate variability in length of the cycle for the group as a whole, with very few Ss reporting complete consistency in cycle length. There is also considerable difference between Ss in duration of menstruation. This information, taken together with the information that calendar records of menstruation dates are kept by only about one-half of the group, makes clear the need for some exact method of determining Ss positions in the cycle at time of testing.

Ss are generally unaware of when ovulation is occurring, and of those who report awareness of ovulation, only six Ss associate increased sexual drive with this event. None of the responses suggested precise awareness of when ovulation occurs.

The group considers itself to be of average or below average sexual drive. The time-in-the-cycle when sexual drive is greatest cannot be determined from the questionnaire results, as a large proportion noted no

relationship between sexual drive and time-in-the-cycle. Of those who did, however, no one time was consistently chosen. These results suggest that there is an absence of accurate self-observation in relation to sexual drive, or that sexual drive varies with the individual rather than with menstrual cycle.

From reported feelings about sexual activity and sex-related guilt, it can be concluded that attitudes and feelings toward sexual thoughts, discussions, and activity (in the acceptable circumstances) are positive, but that guilt is greater than pleasure when "petting" or intercourse is anticipated or engaged in. Guilt is anticipated if sexual activity were to take place while unmarried but not if it occurred in marriage.

Discussion

It had been hypothesized that there is a relationship between menstrual cycle and sexuality as determined by self-report. No significant relationship was found to exist. Inasmuch as questionnaire items about sexual drive and the relationship with the menstrual cycle which Ss themselves had noted failed to elicit meaningful trends, it may be possible that the lack of a significant relationship between sexuality and menstrual cycle in this study indicates that no clear relationship exists.

The second hypothesis states that there is a relationship between sexual responses to a TAT test and phase of the menstrual cycle. No significant relationship was found to exist for this group. Davis (4), using a questionnaire, found that both married and unmarried Ss reported periodicity of sexual desire. Inconsistent records (almost half the total

examined) were eliminated from her study, so that the data cannot be compared with the present study which included all records, whether or not they were consistent. Her "unmarried" group was composed of married Ss who were asked to recall their pre-marital periodicity of sexual desire. The present investigation has presented unmarried females with both a questionnaire and TAT; neither method has resulted in a significant relationship between menstrual cycle and sexual desire.

It may well be that social conditioning, attitudes, and learned guilt, rather than physiological state, almost exclusively determine sexual feelings and actions in human females. Very likely, any role that physiological state plays is mediated by psychological factors, so that for one individual, an increase in sexual hormones results in desire, and for another individual, the result is guilt-determined aversion.

The population from which the present group was drawn differs from that studied by Davis. Her subjects were all college graduates at least five years out of college. Because of irregular or limited experience with sexual relations, the group studied here may be more influenced by social conditioning and inhibition than Davis' group. The group studied by Kinsey (9) which reported increased sexual desire before and after menstruation, accompanied by increased vaginal secretion during coital activity, was a married group.

Inhibition may have been the source of the low level of sexual response obtained to the TAT pictures. The range of responses was 1 to 8. A score of 5 represented the lowest point at which clear sexual attraction was indicated. Scores below 5 did not indicate clear sexual attraction,

but indicated varying degrees of romance and concern with events related to dating and male-female social behavior. The entire range of pictures, including the strongest stimulus, brought responses which contained a low level of sexual response. To the strongest picture, which showed a man and woman lying on a couch or bed together, a response indicating that the female was comforting the male after some illness or distress, was not unusual. Different results might be obtained if a scoring procedure were used which omitted all weak references to romance. With the present data, this would not have left enough scores for analysis. In further study, it would be advisable to use pictures which are stronger in stimulus-relevance or to select only Ss who are lower in inhibition and sexual guilt, and would, therefore, provide stronger sexual responses.

Failure to establish the hypothetical relationship between strength of sexual response and amount of guilt was due to the generally low level of sexual response for this group as a whole, and the uniformly high guilt scores to questionnaire items, which permitted very little distinction between the high and low sex-guilt groups. It is also probable that, despite some difference in verbal report, the females in this group are uniformly highly inhibited in emotional attitude toward sex.

Further evidence that inhibition or denial of strong sexual drive is strong in the present group is seen in the responses to the questionnaire item on which Ss rated themselves for sexual desire. Seventy-four Ss rated themselves as average or somewhat below average. None of the Ss rated themselves as very strong in sexual desire. It can be argued that unmarried females have little basis for making this kind of self-evaluation,

but inhibition or denial of strong sexual drive appears to be determining responses to some extent. The items of the questionnaire which were designed to measure sex-related guilt tend to substantiate the influence of inhibition on Ss responses. Thoughts of sex and discussion of sex in the presence of males was the source of varied reactions, with a response representative of self-control as the one most commonly chosen ("I can take it or leave it;" "I give them some attention.") Strong positive or negative reactions were uncommon. Sexual intercourse for unmarried girls is a source of strong guilt in most Ss, while "heavy petting" is a source of varying degrees of guilt. "Heavy petting" appears to be a better source of establishing degrees of guilt than the question about sexual intercourse.

The Ss for this study were college sophomores of middle-class backgrounds. They have incorporated into their values those inhibitions which are associated with acceptable sexual conduct in their society. A sample drawn from another segment of our culture might provide considerably different results.

Summary

The relationship between menstrual cycle and sexual desire as determined by both sexual responses to a TAT and self-report on a questionnaire has been studied in order to determine whether periodicity of sexual desire resembles the curve found by investigators who have relied upon self-report alone.

Sex-related guilt, as reported in the questionnaire, was studied to determine its effect upon sexual responses and periodicity of sexual desire.

As measured in this study, there were no consistent variations of sexual drive with phase of the menstrual cycle or with high and low guilt.

The high degree of inhibition of sexual drive has been discussed as the principal cause for the low level of sexual responses and the uniformly high guilt reported by the group as a whole.

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Questionnaire

Name: _____ Age: _____ Married or Single: _____

- I. What is the average time (number of days) between your monthly menstrual periods? (Give the number of days from the beginning of one period to the beginning of the next period.)
 _____ number of days.
- II. How consistent is the time between your monthly periods? (Check one)
 _____ A: Always the same number of days between periods.
 _____ B: Almost always the same number of days between periods -- rarely varies more than a day or two one way or the other.
 _____ C: Generally the same number of days between periods -- but apt to vary three or four days one way or the other.
 _____ D: Usually not the same number of days between periods -- often varies more than five days one way or the other.
 _____ E: Very changeable -- little basis for inferring when periods will occur.
- III. How long do your monthly periods usually last (the time between the beginning and end of menstrual flow)? Check one:
 _____ 2 days
 _____ 3 days
 _____ 4 days
 _____ 5 days
 _____ 6 days
 _____ 7 days
 _____ 8 days or more
- IV. Do you keep calendar records of when your menstrual periods begin?
 Yes _____ No _____
- V. When did your last period begin? (Give exact date, if possible)

 _____ I am sure of the above date.
 _____ I am fairly sure that the above date is within 1 or 2 days.
 _____ I am fairly sure that the above date is within 3 or 4 days.
 _____ I am not at all sure of the above date. It may well be incorrect by more than 5 days.
- VI. Can you tell when you are ovulating? (Ovulation is the release of the egg from the ovary, which usually occurs midway between two menstrual periods.) Yes _____ No _____
 If yes, what signs tell you that you are ovulating? _____

(continued on next page)

VII. General intensity of sexual desire (Check one):

- A. I consider myself to have very strong sexual desire and feelings -- much more so than average.
- B. I consider myself to have strong sexual desires and feelings -- somewhat above average.
- C. I consider myself to have moderate sexual feelings -- about average.
- D. I consider myself to be low in sexual feelings -- probably less than average.
- E. I hardly even notice any sexual feeling in myself.

(Note: Strength of sexual desire was weighted as 1, 2, 3, 4, or 5, corresponding to A, B, C, D, and E.)

VIII. Have you noticed any relationship between the point you are at in your menstrual cycle and the following:

- A. Intensity of sexual feelings and desire. Yes No
If yes, describe: _____
- B. Interest in love stories and movies about romance. Yes No
If yes, describe: _____
- C. Amount of daydreaming of romance and love. Yes No
If yes, describe: _____
- D. Increased interest in the company of males: Yes No
If yes, describe: _____

IX. My feelings about the time when I will be able to (or can) have sexual relations are (Check one):

- A. I look forward to it with pleasure.
- B. I do not think about it at all.
- C. The thought is slightly unpleasant to me.
- D. The thought is definitely upsetting to me.

(Note: Items IX, X, and XI are intended to measure sex-related guilt. The score, 1, 2, 3, or 4, corresponds to the letters A, B, C, and D.)

X. If there is a discussion of sex matters in my presence, I usually : (Check one)

- A. Enjoy contributing to it.
- B. Can take it or leave it.
- C. Think it is childish and immature.
- D. Find it upsetting.

(continued on next page)

- XI. When I have nothing to do and sexual thoughts or feelings come to mind: (Check one)
- A. I enjoy exploring them and thinking them through.
 - B. I give them some attention.
 - C. I try to think of something else.
 - D. I feel ashamed of myself.
- XII. Women sometimes have an increase in vaginal secretions at certain times in their menstrual cycle.
- A. Have you noted such secretions? Yes _____ No _____
- B. If yes, indicate at what times during your menstrual cycle the secretions are strongest (Check one):
- A. Within three or four days before menstruation.
 - B. Within three or four days following menstruation.
 - C. During the six days in the middle of the cycle, between two periods.
 - D. Other days than those listed in A, B, or C. (Describe):
-
-
- XIII. After "heavy petting" I generally feel (or would feel):
- A. That it has been a pleasurable experience and I would have no feelings of guilt.
 - B. That it has been a pleasurable experience, but I have some feelings of guilt. I feel that I would probably want to do it again, however.
 - C. About as much guilt as pleasure. I feel uncertain as to whether I would want to do it again in the future.
 - D. That the guilt slightly outweighs the pleasure. I feel that it would be a good idea to avoid such experiences in the future.
 - D. That guilt strongly outweighs the pleasure. I feel very bad and promise myself never to let it happen again under any circumstances.
- XIV. After sexual intercourse, I would feel (do feel):
- A. That it has been a pleasurable experience and I would have no feelings of guilt.
 - B. That it has been a pleasurable experience, but I have some feelings of guilt. I feel that I would probably do it again, however.
 - C. About as much guilt as pleasure. I feel uncertain as to whether I would want to do it again in the future.
 - D. That the guilt slightly outweighs the pleasure. I feel that it would be a good idea to avoid such experiences in the future.
 - E. That guilt strongly outweighs the pleasure. I feel very bad

(continued on next page)

APPENDIX A

-4-

and promise myself never to let it happen again under any circumstances.

(Note: Items XIII and XIV, together with items IX, X, and XI, are designed to measure sex-related guilt. The score, 1, 2, 3, 4, or 5, corresponds to A, B, C, D, and E.)

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