AGGRESSIVE AND IMPULSIVE BEHAVIORS IN WOMEN: AN EXAMINATION OF THE RELATIONSHIP BETWEEN AGGRESSIVE RESPONDING, MENSTRUAL CYCLE PHASE, AND PREMENSTRUAL SYMPTOMS IN A LABORATORY SETTING

Carin Lea Womack Eubanks

University of Southern Mississippi

Follow this and additional works at: https://aquila.usm.edu/dissertations

Part of the Applied Behavior Analysis Commons, Biological Psychology Commons, Clinical Psychology Commons, Experimental Analysis of Behavior Commons, Mental and Social Health Commons, and the Obstetrics and Gynecology Commons

Recommended Citation

https://aquila.usm.edu/dissertations/1308

This Dissertation is brought to you for free and open access by The Aquila Digital Community. It has been accepted for inclusion in Dissertations by an authorized administrator of The Aquila Digital Community. For more information, please contact Joshua.Cromwell@usm.edu.
AGGRESSIVE AND IMPULSIVE BEHAVIORS IN WOMEN:
AN EXAMINATION OF THE RELATIONSHIP BETWEEN AGGRESSIVE
RESPONDING, MENSTRUAL CYCLE PHASE, AND PREMENSTRUAL
SYMPTOMS IN A LABORATORY SETTING

by

Carin Lea Eubanks

A Dissertation
Submitted to the Graduate Studies Office
of The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy

Approved:

December 2007
AGGRESSIVE AND IMPULSIVE BEHAVIORS IN WOMEN: 
AN EXAMINATION OF THE RELATIONSHIP BETWEEN AGGRESSIVE 
RESPONDING, MENSTRUAL CYCLE PHASE, AND PREMENSTRUAL 
SYMPTOMS IN A LABORATORY SETTING 

by 

Carin Lea Eubanks 

Abstract of a Dissertation 
Submitted to the Graduate Studies Office 
of The University of Southern Mississippi 
in Partial Fulfillment of the Requirements 
for the Degree of Doctor of Philosophy 

December 2007
ABSTRACT

AGGRESSIVE AND IMPULSIVE BEHAVIORS IN WOMEN:
AN EXAMINATION OF THE RELATIONSHIP BETWEEN AGGRESSIVE RESPONDING, MENSTRUAL CYCLE PHASE, AND PREMENSTRUAL SYMPTOMS IN A LABORATORY SETTING

by Carin Lea Eubanks

December 2007

Very few studies have explored the relation between the menstrual cycle and aggression in a laboratory setting. These studies do not support the notion that aggressive responding fluctuates across the menstrual cycle. Rather, the results of these studies suggest that women who report more severe premenstrual symptoms are more aggressive. These laboratory findings are inconsistent with the results from several field studies, which show that aggression increases prior to menstruation (i.e., the luteal phase of the menstrual cycle). The purpose of the present study is to examine this relation under controlled laboratory condition while addressing some of the methodological shortcomings of previous studies. Specifically, the relationship among aggressive responding, reported premenstrual symptoms, impulsivity, and menstrual cycle phase across two phases of the menstrual cycle (follicular and luteal) is examined. Additionally, the potential moderating effect of trait aggression on the relationship between aggressive responding and premenstrual symptoms was examined. The Taylor Aggression Paradigm, a laboratory measure of aggression, was used to assess the relation between reported menstrual symptoms on the Menstrual Distress Questionnaire (MDQ) and aggressive responding in 105 women. Luteinizing Hormone (LH) ovulation home test...
kits was used to ensure accurate demarcation of menstrual cycle phase. Results indicated that neither menstrual cycle phase nor pre-menstrual symptoms was related to aggressive behavior in women. Trait aggression did not serve as a moderator between either phase or symptoms and aggression. Trait aggression in women, however, was positively related to aggressive responding, particularly under higher levels of provocation.
DEDICATION

This document is dedicated to my family, who suffered as much as I did during this process.
ACKNOWLEDGMENTS

I would like to thank my dissertation chair, Dr. Mitchell Berman, and other committee members, Dr. Bradley Green, Dr. Randolph Arnau, Dr. William Goggin, and Dr. David Marcus, for their advice and support during this project. I would also like to extend my gratitude to Dr. Michael McCloskey at The University of Chicago and Dr. James LePage at the Dallas VAMC for assistance with statistical analysis. Special thanks goes to Dr. Alina Suris at the Dallas VAMC, who provided me with encouragement, support, and a much needed shoulder to gripe on.

Most importantly, I would like to thank my family who played an integral role in this accomplishment. In particular, my husband, Chris, who provided me with emotional support and served as my sounding board while I navigated this process. I could not have completed this process without his patience, encouragement, and willingness to move multiple times. He is my favorite study partner. I would like to thank my son Liam, whose laughter and gentle spirit rejuvenated me in times of stress. Last, but not least, I extend my gratitude to my parents for giving me the roots I needed to thrive and the wings to achieve my goals.
# TABLE OF CONTENTS

ABSTRACT ............................................................................................................................ ii

DEDICATION ........................................................................................................................ iv

ACKNOWLEDGMENTS ....................................................................................................... v

LIST OF TABLES ................................................................................................................. vii

LIST OF ILLUSTRATIONS ............................................................................................... viii

CHAPTER

I. INTRODUCTION ........................................................................................................... 1

II. REVIEW OF RELATED LITERATURE ........................................................................... 4

   Menstrual Cycle
   Aggression
   Menstrual Cycle and Aggression
   Current Study

III. METHOD ....................................................................................................................... 18

   Participants
   Measures
   Phase 1: Participant Selection
   Phase 2: Tracking Menstrual Cycle Phase
   Phase 3: The Testing Session

IV. RESULTS ....................................................................................................................... 27

   Regression Analyses of Aggressive Responding

V. DISCUSSION ................................................................................................................... 39

   Central Findings
   Limitations
   Future Research

APPENDIXES .................................................................................................................... 43

REFERENCES ................................................................................................................... 60

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
LIST OF TABLES

Table

1. Mean shock scores across menstrual cycle phase at each level of provocation .......................................................... 29
2. Intercorrelations among predictors of aggressive responding on the Taylor Aggression Paradigm .................................................. 30
3. Summary of regression analysis for variables predicting mean shock, independent of provocation level ........................................... 32
4. Summary of regression analysis for variables predicting mean shock, across increasing provocation .............................................. 35
LIST OF ILLUSTRATIONS

Figure

1. Mean shock scores administered as a function of aggression questionnaire scores and provocation.................................................................38
CHAPTER I

INTRODUCTION

The link between the menstrual cycle and changes in mood and behavior in women has been of interest to the medical community as early as 1931, when R.T. Frank hypothesized that the cyclical nature of many physical and psychological symptoms reported by women were related to hormonal alterations occurring in the course of the menstrual cycle. Over the years, the medical community and researchers have labeled a variety of physical, emotional, and behavioral changes in women as being menstrually related, including aggression. Women have been said to experience greater irritability and increased negative affect during the premenstrual phase of the menstrual cycle, which occurs 3-5 days before menstruation (Clare, 1985). These symptoms, in addition to various physical symptoms, are referred to as premenstrual distress. Premenstrual distress can range from mild to severe, with severe premenstrual distress comprising a clinically significant syndrome known as Premenstrual Dysphoric Disorder (PMDD; American Psychiatric Association, 2000).

In today’s medical community, premenstrual distress is recognized as an issue of concern for as many as 75% of women, with 3 to 8% experiencing PMDD (Steiner & Born, 2000; Steiner & Pearlstein, 2000). Most of the symptoms of PMDD can be placed in one of three categories: (1) physical, (2) behavioral, or (3) mood. The physical symptoms include swelling, breast tenderness, body aches, headache, bloating, and weight gain. Behavioral symptoms include sleep disturbances, appetite changes, poor concentration, decreased interest in usual activities, and social withdrawal. The most
commonly reported mood symptoms are irritability, mood swings, anxiety or tension, depression, and feeling out of control (Freeman, 2003).

Premenstrual mood symptoms have been of particular interest to aggression researchers (D’Orban & Dalton, 1980; Luschen & Pierce, 1972; Ritter, 2003). Survey research indicates that women report higher levels of physically aggressive behavior, and have a greater tendency to commit violent crimes, during the mid-luteal to late-luteal phase (i.e., between ovulation and menstruation) of the menstrual cycle (D’Orban & Dalton, 1980; Ritter, 2003). However, survey research is subject to bias, particularly when participants are asked to recall past co-occurrences of mood states and behavior. Only recently have researchers started studying the relation between aggression and the menstrual cycle in the laboratory. Few laboratory studies on this topic exist, and those existing studies have not been supportive of a link between the premenstrual phase and aggression. For example, Dougherty, Bjork, Cherek, Moeller, and Huang (1998) found no difference in aggressive responding in premenstrual women compared to women in the follicular phase of the menstrual cycle (i.e., the phase following menstruation). However, Dougherty et al. (1998) found that women who reported greater negative affect premenstrually displayed greater aggression irrespective of menstrual cycle phase. This pattern of findings is similar to the results from several other studies by this research group (Dougherty, Bjork, Huang, & Moeller, 1997; Dougherty, Bjork, Moeller, & Swann, 1997).

Given the similar methodology of the studies conducted by Dougherty and colleagues, the studies share similar limitations. First, all three studies had relatively small sample sizes of between 12 (Dougherty, Bjork, Moeller, & Swann, 1997) and 40...
participants (Dougherty, Bjork, Huang, & Moeller, 1997). The relatively small sample sizes used in this series of studies may have been associated with limited statistical power to find differences in aggressive responding between menstrual cycle phases. Moreover, all three studies failed to examine the potential moderating role of trait aggression in the relation between menstrual cycle phase and aggressive responding. It is reasonable to propose that women who are generally aggressive are more likely to behave aggressively during the significant emotional and physiological changes associated with the premenstrual phase compared to women who are generally non-aggressive. More specifically, it is possible that the relation between premenstrual symptoms and aggression depends on one’s predisposition to act aggressively. This proposition, however, has not yet been systematically tested.

The current study used a classic laboratory measure of aggression to examine the relation between reported premenstrual symptoms and aggressive responding in 105 women during two phases of the menstrual cycle: follicular and luteal phase. In addition, a measure of trait aggression was used to examine the potential moderating effect of a generally aggressive disposition in the relation between reports of premenstrual symptoms and aggressive responding across the menstrual cycle. It is expected that trait aggression will moderate the relationship between aggressive responding and reported premenstrual symptoms.
CHAPTER II
REVIEW OF RELATED LITERATURE

Menstrual Cycle

As summarized by Asso (1983) and Gannon (1985), the normal menstrual cycle consists of 28 to 32 days of physiological changes occurring in a specific order that can be broken into two phases: follicular and luteal. Menstrual bleeding marks the onset of the follicular phase and the end of the previous cycle. The follicular phase begins with the development of an immature egg, or follicle, in the ovary. When the egg is fully mature, ovulation occurs. Ovulation, the midpoint in the cycle, is the release of the egg into the fallopian tube, while the remaining portion of the matured follicle develops into the corpus luteum. The phase following the release of the mature egg is referred to as the luteal phase. As the egg travels down the fallopian tube, the lining of the uterus begins to thicken in preparation for implantation, should fertilization occur. If the egg is not fertilized, the egg and the corpus luteum break down. The breakdown of the corpus luteum results in the sloughing of the uterine lining, or menstrual bleeding, which is called menstruation.

In order for changes in cycle phase to occur, proper functioning of the hypothalamus, the anterior pituitary gland, and the ovaries is required. All three of these structures affect the menstrual cycle through the release of hormones. The maturation of a follicle in the ovary begins with the release of Gonadotrophin Releasing Hormone (GnRH) by the hypothalamus, which stimulates the anterior pituitary gland to release Follicle Stimulating Hormone (FSH). The maturing egg secretes increasing amounts of estrogen as it matures, which has three important effects. First, the estrogen acts as a
negative feedback loop for the pituitary gland and the hypothalamus to decrease production of FSH. As the egg matures, the increasing amounts of estrogen prevent the maturation of other follicles by the suppression of FSH (Asso, 1983). Second, the release of estrogen acts on the endometrium, the lining of the uterus, causing a thickening in preparation for fertilization. Lastly, the fully mature egg secretes maximum amounts of estrogen, which causes the anterior pituitary gland to release Luteinizing Hormone (LH). LH initiates the release of the egg into the fallopian tube and the transformation of the remaining follicle into the corpus luteum. Before ovulation, there is a small, yet significant increase in prostaglandin production, which is believed to be involved in the release of the egg (Asso, 1983; Gannon, 1985).

The release of the matured egg and the formation of the remaining follicle into the corpus luteum mark the beginning of the luteal phase. During the luteal phase, the corpus luteum produces both progesterone and estrogen. The production of progesterone and estrogen continues the inhibition of FSH production and continues thickening the endometrium. Additionally, the endometrium also begins secreting prostaglandins. These accumulate from the mid-luteal cycle to menstruation. If the egg is not fertilized, then the egg and the corpus luteum start to degenerate. As the breakdown occurs, the levels of progesterone and estrogen decline. With the decline of hormones, there are two important effects. One, the endometrium starts to break down, which is the start of menstruation. Two, the restraint of FSH slowly reduces until the anterior pituitary gland releases FSH to begin the cycle anew. The aforementioned increase in prostaglandins is believed to be associated with the degeneration of the corpus luteum and menstrual bleeding (Asso, 1983; Gannon, 1985).
Although hormonal fluctuations occur throughout the menstrual cycle, the most dramatic changes occur during the late lutual phase, or premenstrual phase, of the menstrual cycle (Asso, 1983). The changes in hormones during this relatively short span of time (i.e., 4-6 days prior to menstruation) have been associated with a complex and somewhat individualized variety of physical, psychological, and behavioral symptoms (Clare, 1985). Physical symptoms sometimes reported by women during this time include swelling of the extremities, breast tenderness, bodily aches, headache, and weight gain. The behavioral symptoms may include sleep disturbances, appetite changes, poor concentration, decreased interest in activities, and social withdrawal. Typical mood symptoms reported by premenstrual women are irritability, mood swings, anxiety, depressed mood, and feeling out of control (Freeman, 2003). The experience of physical, behavioral, and mood symptoms varies greatly between women, and, in severe situations, may affect social functioning (Campbell, Peterkin, O’Grady, & Sanson-Fisher, 1997; Davis & Yonkers, 1997; Landen & Eriksson, 2003).

**Determining Menstrual Cycle Phase**

For research purposes, the accepted divisions of the menstrual cycle vary from study to study (Gannon, 1985; Girdler, Straneva, Light, Pedersen, & Morrow, 2001). Researchers may separate the menstrual cycle into as few as two phases and as many as four phases. For example, Dougherty et al. (1998) examined aggression in women during four different menstrual cycle phases: menstrual (Day 1-3), mid-follicular (Day 7-9), ovulatory (Day 12-16), and premenstrual (4 days prior to menstruation). However, the most commonly used divisions are the follicular and the luteal phases (Girdler et al., 2001). As described above, the follicular phase starts with menstrual bleeding and ends at
ovulation and the luteal phase lasts from the time of ovulation to menstrual bleeding (Girdler et al., 2001). Because hormone fluctuations are unpredictable at the cusps of these phases (i.e., at ovulation and menstruation), aggression researchers often wait several days before testing a participant (Dougherty et al., 1998; Ritter, 2003). A common time frame is 5 to 10 days after menstrual bleeding for the follicular phase and 9 to 13 days after ovulation for the luteal phase (Straneva, Maixner, Light, Pedersen, Costello, & Girdler, 2002).

Accurate determination of menstrual cycle phase is another issue of concern to researchers. In order to tackle this issue, many researchers have employed the “calendar method” which relies on the onset of menses to estimate ovulation, and thereby estimate the timing of testing within the luteal phase (Dougherty, Bjork, Huang, et al., 1997). For example, Dougherty, Bjork, Huang, et al. (1997) used information gathered from a questionnaire regarding menstruation to “approximate” the menstrual cycle phase in each participant. The calendar method typically estimates ovulation by relying on the assumption that ovulation occurs, on average, 14 days after menstruation begins. However, ovulation in a healthy woman can vary. Due to the variations in the menstrual cycle within a single woman, not to mention between multiple women, the calendar method is notoriously inaccurate (Moghissi, 1980). With the increasing availability of ovulation home test kits, the accuracy in determination of ovulation has improved dramatically. Many researchers have already taken advantage of the opportunity to use ovulation detection kits in their research (Dougherty et al., 1998; Dougherty, Bjork, Moeller, et al., 1997; Girdler et al., 2001; Ritter, 2003).
Aggression

The relation between the menstrual cycle and aggression has been of interest to researchers for many decades. Researchers characterize aggression as any behavior that is destructive or punitive and intentionally directed at other people or objects (Spielberger, Jacobs, Russell, & Crane, 1983). Berkowitz (1993) described aggression as any form of behavior that is intended to harm another person physically or psychologically. A variety of stimuli may elicit or provoke aggressive behavior. The provoking stimuli may range from an external physical or psychological threat to the internal experience of negative affect. Aggression may also be categorized by the goal of the aggressive act. Feshbach (1964) distinguished between two types of aggression: hostile and instrumental. The primary goal of a hostile aggressive act is the injury of the victim, the aggression is typically not premeditated, and may appear impulsive (Berkowitz, 1993). Instrumental aggression is characterized by the pursuit of another goal, such as money or power, rather than the injury of the victim per se. Hostile aggression and instrumental aggression are not mutually exclusive and may co-occur (Cornell et al., 1996). Most acts of aggression, however, tend to be reactive (Bushman & Anderson, 1998). Specifically, reactive aggression occurs in response to perceived threat or provocation, and may be accompanied by the emotional experience that is referred to as “anger.”

Although aggression is typically defined as an overt, observable behavior, the associated experiences of “anger” and “hostility” are considered to be emotional processes. Eckhardt, Norlander, and Deffenbacher (2004) described anger as an experiential state of emotional, cognitive, and physiological components that interact and influence each other. The emotional component of anger is hypothesized to be a feeling
state varying in intensity from mild annoyance and irritation through fury and rage. The cognitive component of anger is conceptualized as consisting of autonomic thoughts and inflammatory imagery. The physiological experience of anger is reflected in increased muscle tension and release of adrenal hormones (Eckhardt et al., 2004). Although anger and hostile experiences may occur in the absence of aggressive responding (Buss & Perry, 1992), overt aggression is usually accompanied by state anger.

State anger is an emotional state aroused by certain circumstances and varying in intensity. Trait anger refers to a disposition to experience anger more frequently, more intensely, and for a longer period of time (Deffenbacher et al., 1996). Berkowitz (1993) describes people with high trait anger as being very ready to detect aggression, threats, and dangers in their environment. They may view a wide range of situations as annoying and may respond accordingly. As expected, trait anger has been shown to be associated with physical and verbal aggression, which is referred to as trait aggressiveness (Hazaleus & Deffenbacher, 1986; Parrott & Zeichner, 2002). Individuals with high trait anger show a tendency to be involved in more aggressive interactions in everyday life and respond more aggressively in laboratory situations (Bushman & Anderson, 1998).

Aggression researchers have shown that certain factors are related to increases in aggressive responding, such as threat or provocation (Bushman & Anderson, 1998; Bushman, Baumeister, & Phillips, 2001). Provocation refers to “acts of harm committed by the target against the person whose aggressive behavior is eventually assessed” (Bushman & Anderson, 1998, p. 36). In a real-world setting, provocation may be as threatening as a physical assault or as innocuous as offensive hand gestures. In the laboratory setting, provocation usually consists of physical attacks (i.e., painful shocks or
noise blasts) or verbal insults. For example, the Taylor Aggression Paradigm, a measure of direct physical aggression, uses increases in perceived shock level set by a fictitious opponent as a provoking stimulus. A meta-analysis performed by Bettencourt and Miller (1996) showed that high provocation increases aggression regardless of the sex of the participant or the sex of a confederate. Overall, provocation has been shown to have a large effect on aggressive responding (Chermack, Berman, & Taylor, 1997; Giancola, Helton, & Osborne, 2002; McCloskey, Berman, & Coccaro, 2005).

**Laboratory Measures of Aggression**

Aggression and its associated emotional processes have been subject to much investigation. One of the challenges in investigating aggression in the laboratory is measuring aggression in a reliable manner that captures the essence of aggression that is observed in the “real world” (Bushman & Anderson, 1998). One of the more common laboratory measures of aggression is the Taylor Aggression Paradigm (TAP; Taylor, 1967). This paradigm is designed to measure direct physical aggression. In the TAP, the participant competes with a fictional “opponent” on a reaction time task. The participant is informed that the slower person will receive an electric shock and that the participant and his or her opponent will set the shock level for the other person before each of the 28 trials. In actuality, the experimenter chooses the “loser” of each trial and the shock is delivered to the participant during a predetermined number of trials and at a predetermined intensity. The measure of aggression is the intensity of the shock set by the participant for the “opponent.”

Another laboratory measure of aggression that is commonly used is referred to as the “free-operant paradigm” or the Point Subtraction Aggression Paradigm (PSAP)
(Cherek, 1981), which is a measure of indirect aggression (Bushman & Anderson, 1998). This procedure allows the participant to choose between performing a task to accumulate points with a monetary value or subtract points from a fictitious “participant.” This laboratory measure of aggression is considered to be an indirect measure because the participant takes the property of the other participant, as opposed to causing physical harm (Bushman & Anderson, 1998).

**Aggression and Impulsivity**

A construct that is related to aggression is impulsivity. Impulsivity is identified in a variety of ways. For example, impulsivity has been defined as the inability to assess a situation as being risky (Eysenck & McGurk, 1980), acting without thinking or failing to plan ahead (Barratt & Patton, 1983), difficulty inhibiting a reaction to a stimulus (Buss & Plomin, 1975), and a failure to inhibit a response that will lead to punishment (Gray, Owen, Davis, & Tsaltas, 1983). Due to the differences in defining impulsivity, researchers have used a variety of measures to assess this construct. These include paper-and-pencil measures and behavioral measures. Researchers have shown that impulsivity is associated with interpersonal aggression and violent crime (Cherek, Moeller, Dougherty, & Rhoades, 1997; Lane & Cherek, 2000). LeMarquand et al. (1998) demonstrated that adolescent males with a history of aggressive behavior showed greater impulsivity on both paper-and-pencil measures and behavioral measures, than did non-aggressive individuals. Overall the impulsivity and aggression literature suggests that impulsivity is an “important precipitant” of aggression (Helmers, Young, & Pihl, 1995).

Very little research has explored the relation between impulsivity and the menstrual cycle. Howard, Gifford, and Lumsden (1988) attempted to identify an
electrocortical measure of impulsivity during the menstrual cycle using a Go/No-Go task. They identified enhanced impulsivity at the premenstrual phase, as compared to the menstrual, follicular, and mid-luteal phases. They also identified a somewhat longer reaction time during the premenstrual phase, but this finding was not significant. No other research has explored the relation between impulsivity and the menstrual cycle. It is very possible, however, that impulsivity plays either a direct or indirect role in this relation between premenstrual symptoms and aggression. To date, however, the role of impulsivity in the putative link between menstruation phase and aggression has not been considered.

Menstrual Cycle and Aggression

Traditionally, aggression research has focused on anger and aggression in men. Many of these studies have cited higher testosterone levels as being related to increases in aggressive behavior (Dabbs & Morris, 1990; Olweus, Mattson, Schalling, & Loew, 1980). However, aggressive behavior has also been linked to other endocrinological phenomena. It has been suggested that the circulation of hormones in women, such as estrogen and progesterone, also has an effect on aggressive responding. Some studies suggest that a decrease in estrogen is related to increased aggression. For example, Wiseman, Souder, and Liem (1997) showed that elderly women who had never received supplemental estrogen scored higher on the Rating Scale for Aggressive Behavior in the Elderly as compared to their counterparts who were currently receiving estrogen.

Estrogen and progesterone levels fluctuate throughout the menstrual cycle. Both estrogen and progesterone peak during ovulation and decline greatly prior to and during menstruation (Gannon, 1985). The decrease in estrogen, and progesterone, during the
premenstrual and menstrual phases has been linked with physical, psychological, and behavioral symptoms. Reported premenstrual negative affect, which typically includes irritability, mood swings, and feeling out of control, has been of particular interest to aggression researchers. Luschen and Pierce (1972) found that undergraduate female college students described themselves differently depending on menstrual cycle phase. The researchers asked 48 women to choose words from a list of adjectives randomly taken from the scales of the Gough Adjective Checklist (Gough & Heilbrum, 1964). Half of the participants were tested during the ovulation phase and the other half were tested during the premenstrual phase, determined via a calendar method. Women in the ovulation phase were more likely to describe themselves as being more affiliative (e.g., good-natured, pleasant, sociable) than women in the premenstrual phase. Women in the premenstrual phase also showed a tendency to describe themselves as being more aggressive than women in the ovulatory phase, but this finding was not statistically significant.

The menstrual cycle may also be related to the occurrence of aggressive acts. D’Orban and Dalton (1980) interviewed 50 women charged with a violent crime. Forty-four percent of the participants committed their crime premenstrually or during the first four days of menstruation. There was also a significant lack of offenses during the ovulatory and the post-ovulatory phases. D’Orban and Dalton determined menstrual cycle phase using a calendar method based on information obtained during the interview.

Ritter (2003) found that undergraduate female college students at menses (2-4 days after menstruation begins) reported higher levels of physically aggressive behavior on the Aggression Questionnaire (Buss & Perry, 1992) as compared to women in the
midluteal phase (i.e., 5-10 days prior to the expected onset of menstruation). However, the participants’ reported anger and hostility did not differ between the menstrual cycle phases. Overall, these self-rating scale studies support the notion that menstrual cycle influences aggressive behavior. More specifically, women may be experiencing the same level of anger and hostility throughout the menstrual cycle, but are more likely to respond aggressively during the premenstrual and menstrual phases of the menstrual cycle.

Bond, Critchlow, and Wingrove (2003) explored the role of the menstrual cycle phase and the severity of reported menstrual cycle symptom on reported aggression. They administered the Conflict Tactics Scale (Straus, 1979) and the Life History of Aggression Questionnaire (Coccaro, Berman, & Kavoussi, 1997) to 42 women who answered an advertisement in a newspaper. Twenty-four of the participants met criteria for PMDD, while 18 participants who denied premenstrual distress served as control subjects. The participants completed the measures during either the follicular phase or the premenstrual phase of the menstrual cycle. Women with PMDD reported using more aggressive tactics to solve conflicts during the premenstrual phase, as compared to the follicular phase. There was no difference between menstrual cycle phases in aggressive responding in women reporting little to no premenstrual distress. Although physical aggression was less commonly used to resolve conflict, as compared to reasoning and verbal aggression, 62% of women diagnosed with PMDD reported using physical aggression over the course of their lives – as compared to 33% of the control group. Women with PMDD used both verbal aggression and physical aggression more frequently than controls and had a higher lifetime history of aggression.
In contrast to the above research, laboratory measures of aggression have found no significant difference in aggressive responding between the phases of the menstrual cycle. Laboratory measures do, however, support differences in aggressive responding between women who report more severe premenstrual symptoms, regardless of menstrual cycle phase (Dougherty, Bjork, Huang, et al., 1997; Dougherty, Bjork, Moeller, et al., 1997; Dougherty et al., 1998). Dougherty et al. (1998) used the Point Subtraction Aggression Paradigm (PSAP; Cherek, 1981), a measure of “indirect” aggression, to examine the effects of menstrual cycle phase on aggression in two groups of women: women reporting little to no premenstrual negative affect and women reporting high levels of premenstrual negative affect. Dougherty et al. (1998) used the Negative Affect scale of the Menstrual Distress Questionnaire (MDQ; Moos, 1969) to screen potential participants. To be included in the study, women had to score below 17 (low symptoms group) or above 28 on the Negative Affect scale (high symptom group). It should be noted that this criteria excluded approximately 60% of women from participating in the study. Twenty-two women were selected and tested 17 times across the course of one menstrual cycle. Two of the days were used as a baseline testing session, with the remaining sessions scheduled during four menstrual cycle phases: menstrual (Days 1-3), midfollicular (Days 7-8), ovulatory (Days 12-16), and premenstrual (4 days prior to expected flow). During the testing session, participants were provoked by subtracting a point at random intervals, which was attributed to the fictitious opponent. Ovulation was determined using an ovulation testing kit. The rates of aggressive responding did not differ across phases of the menstrual cycle, the high symptom group responded more
aggressively regardless of cycle phase, and rates of aggressive responding correlated with the Behavioral and Psychological scales of the MDQ.

Dougherty, Bjork, Moeller, et al. (1997) and Dougherty, Bjork, Huang, et al. (1997) performed similar studies to Dougherty et al. (1998) The former studies explored the relation between testosterone levels and aggressive responding in women with and without perimenstrual affective symptoms (i.e., premenstrual or during menstruation), as defined by the MDQ. Both studies found that women reporting perimenstrual affective symptoms tend to respond more aggressively than the less symptomatic participants, and that testosterone levels were not predictive of aggressive responding in women.

These three studies share similar limitations. First, all three studies had relatively small sample sizes with as few as 12 participants (Dougherty, Bjork, Moeller, et al., 1997) and as many as 40 participants (Dougherty, Bjork, Huang, et al., 1997). This poses the question whether or not each study had enough statistical power to find differences in aggressive responding between menstrual cycle phases. Another limitation related to the division of women into two groups: low symptom and high symptom. This method of dividing women based on their score on the Negative Affect Scale of the MDQ eliminated 60% of potential participants. Extreme scores designs may reduce power in cases in which dichotomous groups are formed, result in category misspecification, and is problematic for detecting interaction effects (Preacher, Rucker, MacCallum, & Nicewander, 2005). Finally, all three studies failed to examine the potential moderating role of trait aggression in the relation between menstrual cycle phase and aggressive responding.
Current Study

The primary aim of this study was to determine if aggressive behavior is higher during the premenstrual phase, and whether trait aggression acts as a moderating variable between aggressive responding and reported premenstrual symptoms, particularly under high levels of provocation. More specifically, the current study used the Taylor Aggression Paradigm, a laboratory measure of aggression, to examine the relation between reported premenstrual symptoms on the Menstrual Distress Questionnaire (MDQ) and aggressive responding in 105 women across two phases of the menstrual cycle. Aggression was operationally defined as the intensity of shock that participants were willing to administer to their “opponent” on the TAP. A secondary purpose of this study was to explore impulsive responding in women as it relates to premenstrual symptoms and aggressive responding. It was hypothesized that trait aggressiveness would moderate the relation between reported premenstrual symptoms and aggressive responding. Greater provocation was expected to increase aggressive responding, particularly in women reporting greater trait aggressiveness. Given the paucity of data on impulsivity and premenstrual symptoms, no specific hypotheses are offered for this construct.
CHAPTER III

METHOD

Participants

Female volunteers were recruited from undergraduate Psychology courses at The University of Southern Mississippi. The 105 participants who completed this study were between 18 and 35 years of age ($M = 21.56$, $SD = 3.6$). The sample consisted of 48 Caucasian (45.7%) and 57 African American (54.3%) women. There were 58 women (55.2%) in the luteal phase and 47 women (44.8%) in the follicular phase. These women were not currently pregnant or breastfeeding, and reported a history of regularly occurring menstrual cycles (i.e., 28 to 32 day cycle). They denied any current use of oral contraceptives, or any equivalent injection or contraceptive patch. Participants with a history of past or current Major Depressive Disorder, Panic Disorder, Dysthymic Disorder, Bipolar Disorder, or a Psychotic Disorder were not eligible to participate.

Four hundred and two women were screened for eligibility. A total of 164 women were found to be eligible for the laboratory session. Of the 238 women who were ineligible, 220 women were excluded for using oral contraceptives, 8 reported being pregnant, 3 stated that they had undergone a hysterectomy, and 7 reported a psychiatric diagnosis. Of the original 164 eligible subjects, 30 women declined to participate, 18 could not be contacted, 8 did not attend their scheduled session, and 3 women did not menstruate within the study time frame. Participants received class credit in their Psychology class for their participation. The required number of participants was determined using a power analysis performed by G-Power with a moderate effect size.
(.15), .80 power, and .05 alpha. One hundred and seven participants were suggested by G-Power to yield the desired power.

Measures

Medical Questionnaire

A medical questionnaire was administered to determine the eligibility of potential participants. Age, medical history, psychiatric history, reproductive history (i.e., pregnancies), contraceptive use, menstrual cycle regularity, and gynecological history of each participant were assessed. In addition, the date of the start of the participant’s last menstrual cycle was ascertained. The start of the menstrual cycle was used to determine a tentative start date for tracking the first menstrual cycle and initiating ovulation testing.

Menstrual Distress Questionnaire

The Menstrual Distress Questionnaire, Form C (MDQ; Moos, 1969) is one of the more frequently used menstrual self-report measures. The MDQ-C assesses menstrual symptoms retrospectively for the menstrual, premenstrual, and intermenstrual phases. For the purposes of this study, premenstrual reporting was of primary interest. The MDQ-C contains 47 symptoms that are rated on a six-point scale ranging from no experience of symptoms to an acute or partially disabling experience of the symptom. Each participant rated these symptoms for her most recent menstrual cycle. The 47 symptoms have been empirically divided into eight subscales: Pain, Impaired Concentration, Behavior Change, Autonomic Reaction, Water Retention, Negative Affect, Arousal, and Control. Symptoms from each scale are rated for severity at the premenstrual phase, menstrual phase, and remainder of the cycle. For the present study, a total premenstrual MDQ score was used by summing the scale scores for the premenstrual phase.
Low to high internal consistency has been demonstrated ranging from .53 to .89 for each subscale (Markum, 1976). In assessing construct validity, the MDQ has been correlated with the PMS Diary, Daily Rating Form, and The General Health Questionnaire. The correlations among the total scores and individual scales that measured similar constructs have produced correlation coefficients ranging from .60 to .80 (Thys-Jacobs, Alvir, & Fratarcangelo, 1995).

**Aggression Questionnaire**

The Aggression Questionnaire (AQ; Buss & Perry, 1992) is a self-report measure that assesses trait aggression. The AQ consists of 29 items answered on a five point likert scale ranging from 1, “extremely uncharacteristic of me”, to 5, “extremely characteristic of me.” The AQ assesses four factors of aggression: Physical Aggression, Verbal Aggression, Anger, and Hostility. The AQ total score consists of the sum of the factor scores. The AQ has been shown to have a test-retest reliability of .80. The internal consistency of each scale is as follows: Physical Aggression (α = .85), Verbal Aggression (α = .72), Anger (α = .83), and Hostility (α = .77). Buss and Perry (1992) examined the construct validity of the AQ by comparing AQ total scores and subscale scores of undergraduate students to peer ratings of aggressive behavior. Peer ratings of aggressive behavior were significantly related to the AQ total score and all subscale scores.

**Barratt Impulsiveness Scale – Version 11**

The Barratt Impulsiveness Scale (BIS; Patton, Stanford, & Barratt, 1995) is a self-report measure that assesses the extent to which participants exhibit motoric impulsivity (i.e., acting on the spur of the moment), attentional impulsivity (i.e. distractibility), and non-planning impulsivity (i.e., not thinking situations through). The
BIS consists of 30 items answered on a four point likert scale with higher scores indicating increasing levels of impulsiveness. The BIS has been found to have adequate internal consistency ($\alpha = .82$). Patton et al. (1995) examined the construct validity of the scale in a study by showing significant differences between undergraduate students and prison inmates on the BIS.

*Taylor Aggression Paradigm*

The Taylor Aggression Paradigm (TAP) is a laboratory measure of aggressive behavior (Taylor, 1967). Construct validity for the TAP has been supported through comparison with self-report and interview measures of trait aggressiveness (Bernstein, Richardson, & Hammock, 1987; Giancola & Zeichner, 1995). Multiple sources also support the validity of the inferences that can be construed from the TAP and related laboratory measures of aggression (Anderson & Bushman, 1997; Giancola & Chermack, 1998; McCloskey & Berman, 2003). In addition, individuals divided into a “high aggression” group based on aggression history have been shown to respond more aggressively on the TAP (Bushman, Baumeister, & Phillips, 2001).

Furthermore, when participants are divided into groups based on aggression history, high aggression groups respond more aggressively on the TAP when unprovoked, and even more so when provoked (Bushman, Baumeister, & Phillips, 2001). The paradigm also discriminates groups of participants theoretically expected to evidence elevated levels of aggression, such as psychopathic individuals (Dengerink, 1971), prejudiced persons (Genthner & Taylor, 1973), and individuals with high levels of endogenous testosterone (Berman, Gladue, & Taylor, 1993).
Phase 1: Participant Selection

The researcher recruited participants from undergraduate courses at The University of Southern Mississippi. Each participant received a packet containing a preliminary informed consent form and a medical questionnaire. First, the potential participants were asked to read and sign the preliminary informed consent (Appendix A). The preliminary consent form explained that the information provided by the participant determined her eligibility for future participation in the study. Next, the potential participants were administered a medical questionnaire (Appendix B). During administration of the above measures, potential participants were asked to remain quiet to prevent discussion of the questions and observation of other participant’s responses. Eligible participants were contacted via phone and asked to participate in the second half of the experiment.

Phase 2: Tracking Menstrual Cycle Phase

Based on the information gathered during the screening, eligible participants were asked to continue in the study via a telephone call. Each participant was randomly assigned to be tested in the laboratory during either her follicular phase or her luteal phase. Participants were contacted by telephone to explain the second phase of the study in greater detail. The participant was informed that the study would involve tracking the menstrual cycle and participating in a laboratory session lasting approximately one hour. Participants who were assigned to the luteal testing phase were asked to meet with the experimenter briefly to receive the ovulation test kit.

Each participant was tested during one of two menstrual phases: follicular or luteal. Scheduling a testing session during the follicular phase was based solely on the
start of menstrual bleeding, which is the best indicator of the start of the follicular phase. Follicular testing sessions were scheduled 5 to 10 days after the start of menstrual bleeding. Scheduling a testing session during the luteal phase was based on confirmation of ovulation with a home ovulation kit, which detects Luteinizing Hormone in urine (generic LH ovulation test strips). Luteal testing sessions were scheduled 9 to 13 days following ovulation confirmation. Although scheduling the luteal testing session was based on results of the home test ovulation kit, the start of ovulation testing, which occurs once a day for up to seven days, was determined by the start of menstrual bleeding and the typical length of the participant’s menstrual cycle. Based on the chart provided in the Luteinizing Hormone (LH) Test Strip Instructions (Appendix C) and information gathered from the Medical Questionnaire, the experimenter determined the appropriate day after the start of menstrual bleeding to begin ovulation testing.

Upon confirmation of the beginning of the participant’s menstrual cycle (i.e., start of menstrual bleeding), participants being tested during the luteal phase were reminded to start ovulation testing on the appropriate day. Participants testing for ovulation were reminded daily to test until the test was positive. In addition, participants testing for ovulation returned the ovulation test strips to the experimenter to allow for verification of ovulation detection. Once ovulation was confirmed, a laboratory session was scheduled. The laboratory session for participants placed in the follicular phase group was scheduled when the start of menstruation was established. Due to the cost of testing for ovulation, this practice had to be limited to those being scheduled in the lab during the luteal phase.

The LH ovulation test strips have a sensitivity of 25 mIU/ml and a specificity (i.e., accuracy) of >99.8%. The test detects Luteinizing Hormone with minimum
concentration of 15-25 mIU/ml (G. Finn, www.SaveOnTests.com, Personal Communication, February 4, 2003). G. Finn (personal communication, February 4, 2003) stated that cross reactivity of these strips have been tested with regular levels of the hormones Human Chorionic Gonadotrophin and Follicular Stimulating Hormone (both hormones commonly produced in women and related to menstrual activity) and no cross reactivity was detected.

Phase 3: The Testing Session

The testing session was scheduled based on confirmation of ovulation by ovulation testing or on the start of menstrual bleeding, depending on the menstrual phase in which the participant was being tested. Upon arrival to the Clinical Studies Laboratory (CSL), the participant was escorted to a room marked Subject A, which contains a personal computer. The participant was seated at a table with the personal computer. The participant was asked to read and sign an informed consent (Appendix D). The informed consent explained that the study involved examining reaction time across the menstrual cycle. As is common when using the Taylor Aggression Paradigm (TAP), participants were not informed that this study was exploring aggression. Upon agreement to participate in the second phase, the participant was administered the Menstrual Distress Questionnaire (MDQ).

After completing the MDQ, the participant was prepared for the Taylor Aggression Paradigm (TAP), which involved attaching two fingertip electrodes to the index and middle finger of the participant’s non-dominant hand. The participants were falsely informed that they would be competing against another “participant” who is
currently in the room marked Subject B. The experimenter then excused herself to prepare the “opponent” for the new task.

After an approximately 5 minute delay, the lower shock threshold and upper shock threshold for the participant, and then the fictitious opponent, were determined using scripted instructions (Appendix E). The lower shock threshold was determined by administering increasingly intense shocks at 100-microampere intervals until the participant reported that she first experience the shock. The upper shock threshold was determined by continuing to administer the shocks at increasingly intense levels until the shock is reported as being “definitely unpleasant.” This process was repeated with the fictitious opponent using a pre-recorded female voice, so that the participant can hear the process. Acting out the process with the fictitious opponent served to increase the credibility of the experimental situation.

After determining the upper and lower shock thresholds for the participant, the TAP task instructions were provided via an intercom system to “both” participants. It was explained that the purpose of the task is to lift your finger off the reaction-time key faster than your opponent, with the slower participant receiving a shock. The level of shock received, as explained during the instructions, will be determined by your “opponent” prior to each of the 28 reaction-time trials. Before each reaction-time trial, each participant was instructed to select a shock level from 0 to 10 or 20 by pressing one of 12 buttons at the top to the keyboard. The participant was informed that the level 10 shock was equivalent to the shock that she judged as being “definitely unpleasant.” The level 9 shock was set at 95% of the maximum level; 8 at 90%; 7 at 85%, and so forth. Participants were informed that the level 20 shock is a severe shock that is twice the
intensity of the level 10 shock. In actuality, during the one instance in which the fictitious opponent does administer a 20, the shock is not delivered because the participant “wins” that particular trial. Selection of a level 20 shock by the participant indicates extreme aggression toward the “opponent” with unequivocal intent to inflict harm. Participants were told that if level 0 shock is chosen that no shock will be delivered, which is a non-aggressive response action.

Once the instructions are complete, participants began the 28-trial TAP task. The series of 28-trials can be broken down into 4 blocks of 6 trials each, with a transition trial between blocks and an initial trial before the first block. Each block of trials successively increases provocation by increasing the “opponent’s” administered shock levels, which are displayed on the computer screen after each trial. The average of each block is as follows: Block 1= 2.5, Block 2= 5.5, Block 3 and Block 4= 8.5. Block 4 also contains one trial where the “opponent” administers a level 20 shock, which is not included in the block average.

Following the TAP task, participants were asked to complete a post-task questionnaire (Appendix F), the Barratt Impulsiveness Scale (Appendix G) and the Aggression Questionnaire (Appendix H). The post-task questionnaire examined the participant’s perception of the influence of the experimental situations on behavior, recall of shock setting during the task, and perception of the maximum shock administered by the “opponent” and its influence on her performance.
CHAPTER IV

RESULTS

Regression Analyses of Aggressive Responding

Data Preparation

The primary goal of this study was to explore whether trait aggression acts as a moderating variable between aggressive responding and reported premenstrual symptoms, particularly under high levels of provocation. As secondary goal was to examine the role of impulsivity, which has not been explored with regard to the menstrual cycle, in the relationship between aggressive responding, trait aggression and premenstrual symptoms. Therefore, trait aggression, menstrual cycle phase, reported premenstrual symptoms, and reported impulsivity served as predictor variables in a moderated multiple regressions. Use of regression analysis is indicated due to the continuous nature of trait aggression, premenstrual symptom scores, and reported impulsivity. Provocation was treated as a within-subjects variable, and separate regression analyses were conducted for mean shock across provocation level (i.e., within subjects) and independent of provocation level (i.e., between subjects). Participant 20 shocks were re-coded as 11 before data analysis to minimize the influence of outliers.

Prior to performing the regression analyses, the following procedures were performed. The provocation condition was coded as follows: Block 1 = -2, Block 2 = -1, Block 3 = 1, Block 4 = 2 and interaction terms were created by obtaining the cross-products of pertinent first-order variables (Jaccard, Turrisi, & Wan, 1990). Aiken and West (1991) indicate that it is important to create interaction terms using z-scores rather than raw scores because standardizing cross-products after they have been created does
not yield the same regression coefficients as multiplying standardized values. In order to reduce multicollinearity between interaction terms and the component lower-order terms, the first order variables were standardized to center the values (Aiken & West, 1991). In interpreting the results of this procedure, the unstandardized regression solutions were examined, rather than the standardized. Standardized solutions are not scale invariant for interaction terms and may yield incorrect regression coefficients for these effects. Therefore, the parameter estimated for the regression equations coefficients were reported as unstandardized b weights.

All main effect variables, 2-way interactions and 3-way interactions were entered into the regression model. Due to the fact that the dependent variable in this study is a repeated-measure (i.e., provocation level), the use of standard regression is not possible unless separate models are computed for each provocation level. However, if separate models were computed then this would not allow for examination of any interaction terms involving provocation. Therefore, the Sum/Difference regression method was used because it allows for the assessment of interaction terms involving repeated measure variables (Judd, Kenny, & McClelland, 2001). In effect, the Sum/Difference regression method is comparable to a between-within, or mixed model, ANOVA. Interpretation of any interaction terms was conducted by plotting the effect and testing to determine whether the slopes of the simple regression lines (1 SD above and 1 SD below the overall mean) differ significantly from zero (Aiken & West, 1991).

Mean Shock Data

The Taylor Aggression Paradigm (TAP) was utilized to assess the level of aggressive responding. The hypothesis that trait aggression moderates the relationship
between reported premenstrual symptoms and aggressive responding was assessed.

Participants' mean shock score was used to examine this hypothesis. Table 1 displays the means and standard deviations for mean shock across menstrual cycle phase at each level of provocation.

Table 1

<table>
<thead>
<tr>
<th>Provocation</th>
<th>Follicular</th>
<th>Luteal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>3.45 (1.54)</td>
<td>3.39 (1.48)</td>
</tr>
<tr>
<td>High</td>
<td>6.37 (2.38)</td>
<td>6.06 (2.62)</td>
</tr>
</tbody>
</table>

To determine how mean shock varied as a function of trait aggression (AQ; \( \alpha = .90 \)), reported premenstrual symptoms (MDQ; \( \alpha = .94 \)), reported impulsivity (BIS-11; \( \alpha = .80 \)), and provocation across the menstrual cycle, two regression models were created. One regression model examined how mean aggression varied as a function of trait aggression (AQ), reported premenstrual symptoms, and menstrual cycle phase independent of provocation (Table 3). Another regression model looked at within subject effects for extreme aggression across provocation (Table 4). The relationship between all first order variables and cross-products for the regression models are presented prior to the regression tables (Table 2).
Table 2

*Intercorrelations Between Predictors Variables (N = 105)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. AQ</td>
<td>-.01</td>
<td>.36*</td>
<td>.21*</td>
<td>.70*</td>
<td>.21*</td>
<td>.22*</td>
<td>.26*</td>
<td>.21*</td>
<td>.31*</td>
<td>.23*</td>
<td>.29*</td>
<td>.27*</td>
<td>.19*</td>
<td></td>
</tr>
<tr>
<td>2. Ph</td>
<td>-.19</td>
<td>-.21*</td>
<td>-.01</td>
<td>-.04</td>
<td>-.07</td>
<td>-.11</td>
<td>-.16</td>
<td>-.23*</td>
<td>-.16</td>
<td>-.17</td>
<td>-.19</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. BIS</td>
<td>.17</td>
<td>.31*</td>
<td>.03</td>
<td>.24*</td>
<td>.84*</td>
<td>.19*</td>
<td>.23*</td>
<td>.02</td>
<td>.24*</td>
<td>.15</td>
<td>.35*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. MDQ</td>
<td>.23*</td>
<td>.28*</td>
<td>.25*</td>
<td>.18</td>
<td>.78*</td>
<td>.21*</td>
<td>.24</td>
<td>.11</td>
<td>.22*</td>
<td>.29*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. AQ x Ph</td>
<td>.29*</td>
<td>.31*</td>
<td>.37*</td>
<td>.29*</td>
<td>.32*</td>
<td>.33*</td>
<td>.42*</td>
<td>.39*</td>
<td>.28*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. AQ x BIS</td>
<td>.21*</td>
<td>-.02</td>
<td>.22*</td>
<td>.36*</td>
<td>.83*</td>
<td>.16</td>
<td>.39*</td>
<td>.16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. AQ x MDQ</td>
<td>.19*</td>
<td>.09</td>
<td>.43*</td>
<td>.15</td>
<td>.72*</td>
<td>.29*</td>
<td>.37</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: AQ = Aggression Questionnaire; Ph = Menstrual Cycle Phase; BIS = Barratt Impulsivity Scale; MDQ = MDQ Premenstrual Total Score*

*p < .05
Table 2 (continued).

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. Ph x BIS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.22*</td>
<td></td>
<td>.13</td>
<td>.01</td>
<td>.27*</td>
<td>.16</td>
<td>.39*</td>
<td></td>
</tr>
<tr>
<td>9. Ph x MDQ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.22*</td>
<td>.29*</td>
<td>.13</td>
<td>.26*</td>
<td>.36*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. BIS x MDQ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.39*</td>
<td>.33*</td>
<td>.83*</td>
<td>.15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. AQ x Ph x BIS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.22*</td>
<td>.48*</td>
<td>.22*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. AQ x Ph x MDQ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.40*</td>
<td>.52*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Ph x BIS x MDQ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.19</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. AQ x Ph x BIS x MDQ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: AQ = Aggression Questionnaire; Ph = Menstrual Cycle Phase; BIS = Barratt Impulsivity Scale; MDQ = MDQ Premenstrual Total Score

*p < .05.
Table 3

Summary of Regression Analysis for Variables Predicting Mean Shock, Independent of Provocation Level (Between Subjects; N = 105)

<table>
<thead>
<tr>
<th>Variable</th>
<th>b</th>
<th>SE b</th>
<th>β</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIS</td>
<td>.01</td>
<td>.39</td>
<td>.02</td>
<td>.14</td>
<td>.89</td>
</tr>
<tr>
<td>AQ</td>
<td>.87</td>
<td>.39</td>
<td>.24</td>
<td>2.22</td>
<td>.03</td>
</tr>
<tr>
<td>Ph</td>
<td>.33</td>
<td>.76</td>
<td>.04</td>
<td>.43</td>
<td>.67</td>
</tr>
<tr>
<td>MDQ</td>
<td>-.19</td>
<td>.38</td>
<td>-.05</td>
<td>-.52</td>
<td>.61</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIS</td>
<td>.90</td>
<td>.70</td>
<td>.24</td>
<td>1.29</td>
<td>.20</td>
</tr>
<tr>
<td>AQ</td>
<td>.86</td>
<td>.39</td>
<td>.23</td>
<td>2.16</td>
<td>.03</td>
</tr>
<tr>
<td>Ph</td>
<td>.51</td>
<td>.75</td>
<td>.07</td>
<td>.67</td>
<td>.50</td>
</tr>
<tr>
<td>MDQ</td>
<td>-.23</td>
<td>.62</td>
<td>-.06</td>
<td>-.38</td>
<td>.71</td>
</tr>
<tr>
<td>BIS x AQ</td>
<td>-.36</td>
<td>.39</td>
<td>-.09</td>
<td>-.91</td>
<td>.37</td>
</tr>
<tr>
<td>MDQ x BIS</td>
<td>.48</td>
<td>.45</td>
<td>.12</td>
<td>1.07</td>
<td>.29</td>
</tr>
<tr>
<td>BIS x Ph</td>
<td>-1.12</td>
<td>.81</td>
<td>-.25</td>
<td>-1.39</td>
<td>.17</td>
</tr>
<tr>
<td>AQ x MDQ</td>
<td>-.22</td>
<td>.17</td>
<td>-.19</td>
<td>-1.16</td>
<td>.25</td>
</tr>
<tr>
<td>MDQ x Ph</td>
<td>.51</td>
<td>.78</td>
<td>.10</td>
<td>.65</td>
<td>.52</td>
</tr>
<tr>
<td>Step 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIS</td>
<td>.99</td>
<td>.76</td>
<td>.27</td>
<td>1.30</td>
<td>.19</td>
</tr>
<tr>
<td>AQ</td>
<td>.83</td>
<td>.42</td>
<td>.22</td>
<td>1.96</td>
<td>.06</td>
</tr>
<tr>
<td>Ph</td>
<td>.62</td>
<td>.85</td>
<td>.08</td>
<td>.73</td>
<td>.47</td>
</tr>
<tr>
<td>MDQ</td>
<td>-.28</td>
<td>.70</td>
<td>-.07</td>
<td>-.39</td>
<td>.70</td>
</tr>
</tbody>
</table>
Table 3 (continued).

<table>
<thead>
<tr>
<th>Variable</th>
<th>$b$</th>
<th>$SE\ b$</th>
<th>$\beta$</th>
<th>$t$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 3 (continued)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIS x AQ</td>
<td>-.57</td>
<td>.73</td>
<td>-.15</td>
<td>-.78</td>
<td>.44</td>
</tr>
<tr>
<td>MDQ x BIS</td>
<td>.27</td>
<td>.85</td>
<td>.07</td>
<td>.32</td>
<td>.75</td>
</tr>
<tr>
<td>BIS x Ph</td>
<td>-1.28</td>
<td>.89</td>
<td>-.28</td>
<td>-1.44</td>
<td>.15</td>
</tr>
<tr>
<td>AQ x MDQ</td>
<td>-.75</td>
<td>.55</td>
<td>-.25</td>
<td>-1.37</td>
<td>.18</td>
</tr>
<tr>
<td>MDQ x Ph</td>
<td>.46</td>
<td>.85</td>
<td>.09</td>
<td>.54</td>
<td>.59</td>
</tr>
<tr>
<td>MDQ x BIS x AQ</td>
<td>.22</td>
<td>.39</td>
<td>.07</td>
<td>.56</td>
<td>.58</td>
</tr>
<tr>
<td>Ph x BIS x AQ</td>
<td>.23</td>
<td>.88</td>
<td>.05</td>
<td>.26</td>
<td>.79</td>
</tr>
<tr>
<td>Ph x MDQ x BIS</td>
<td>.30</td>
<td>1.03</td>
<td>.06</td>
<td>.29</td>
<td>.77</td>
</tr>
<tr>
<td>Ph x MDQ x AQ</td>
<td>-.01</td>
<td>.73</td>
<td>-.01</td>
<td>-.08</td>
<td>.94</td>
</tr>
<tr>
<td><strong>Step 4 ($\Delta R^2 = .15, p = .51$)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIS</td>
<td>1.03</td>
<td>.77</td>
<td>.28</td>
<td>1.34</td>
<td>.18</td>
</tr>
<tr>
<td>AQ</td>
<td>.77</td>
<td>.43</td>
<td>.21</td>
<td>1.77</td>
<td>.08</td>
</tr>
<tr>
<td>Ph</td>
<td>.57</td>
<td>.86</td>
<td>.08</td>
<td>.66</td>
<td>.51</td>
</tr>
<tr>
<td>MDQ</td>
<td>-.44</td>
<td>.75</td>
<td>-.12</td>
<td>-.59</td>
<td>.56</td>
</tr>
<tr>
<td>BIS x AQ</td>
<td>-.70</td>
<td>.76</td>
<td>-.19</td>
<td>-.92</td>
<td>.36</td>
</tr>
<tr>
<td>MDQ x BIS</td>
<td>.14</td>
<td>.88</td>
<td>.04</td>
<td>.16</td>
<td>.88</td>
</tr>
<tr>
<td>BIS x Ph</td>
<td>-1.25</td>
<td>.89</td>
<td>-.28</td>
<td>-1.41</td>
<td>.16</td>
</tr>
<tr>
<td>AQ x MDQ</td>
<td>-.83</td>
<td>.56</td>
<td>-.28</td>
<td>-1.48</td>
<td>.14</td>
</tr>
<tr>
<td>MDQ x Ph</td>
<td>.69</td>
<td>.93</td>
<td>.14</td>
<td>.75</td>
<td>.46</td>
</tr>
</tbody>
</table>
Table 3 (continued).

<table>
<thead>
<tr>
<th>Variable</th>
<th>b</th>
<th>SE b</th>
<th>β</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDQ x BIS x AQ</td>
<td>.64</td>
<td>.74</td>
<td>.22</td>
<td>.86</td>
<td>.39</td>
</tr>
<tr>
<td>Ph x BIS x AQ</td>
<td>.39</td>
<td>.92</td>
<td>.09</td>
<td>.43</td>
<td>.67</td>
</tr>
<tr>
<td>Ph x MDQ x BIS</td>
<td>.41</td>
<td>1.04</td>
<td>.09</td>
<td>.39</td>
<td>.69</td>
</tr>
<tr>
<td>Ph x MDQ x AQ</td>
<td>.13</td>
<td>.78</td>
<td>.03</td>
<td>.16</td>
<td>.87</td>
</tr>
<tr>
<td>Ph x MDQ x BIS x AQ</td>
<td>-.58</td>
<td>.88</td>
<td>-.16</td>
<td>-.66</td>
<td>.51</td>
</tr>
</tbody>
</table>

*Note: AQ = Aggression Questionnaire; BIS = Barratt Impulsivity Scale; MDQ = MDQ Premenstrual Total Score*

*p < .05.*
Table 4

Summary of Regression Analysis for Variables Predicting Mean Shock Across Provocation (Within Subjects; \( N = 105 \))

<table>
<thead>
<tr>
<th>Variable</th>
<th>( b )</th>
<th>( SE_{b} )</th>
<th>( \beta )</th>
<th>( t )</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1 (( R^2 = .05, p = .26 ))</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIS</td>
<td>-.01</td>
<td>.18</td>
<td>-.03</td>
<td>-.32</td>
<td>.75</td>
</tr>
<tr>
<td>AQ</td>
<td>.36</td>
<td>.18</td>
<td>.21</td>
<td>1.99</td>
<td>.04</td>
</tr>
<tr>
<td>Ph</td>
<td>.14</td>
<td>.35</td>
<td>.04</td>
<td>.41</td>
<td>.68</td>
</tr>
<tr>
<td>MDQ</td>
<td>-.21</td>
<td>.17</td>
<td>-.12</td>
<td>-1.21</td>
<td>.23</td>
</tr>
<tr>
<td><strong>Step 2 (( \Delta R^2 = .08, p = .67 ))</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIS</td>
<td>-.01</td>
<td>.33</td>
<td>-.03</td>
<td>-.16</td>
<td>.87</td>
</tr>
<tr>
<td>AQ</td>
<td>.31</td>
<td>.19</td>
<td>.18</td>
<td>1.63</td>
<td>.11</td>
</tr>
<tr>
<td>Ph</td>
<td>.18</td>
<td>.36</td>
<td>.05</td>
<td>.49</td>
<td>.62</td>
</tr>
<tr>
<td>MDQ</td>
<td>-.28</td>
<td>.29</td>
<td>-.16</td>
<td>-.97</td>
<td>.34</td>
</tr>
<tr>
<td>BIS x AQ</td>
<td>.01</td>
<td>.19</td>
<td>.05</td>
<td>.41</td>
<td>.68</td>
</tr>
<tr>
<td>MDQ x BIS</td>
<td>.27</td>
<td>.22</td>
<td>.15</td>
<td>1.26</td>
<td>.21</td>
</tr>
<tr>
<td>BIS x Ph</td>
<td>.01</td>
<td>.39</td>
<td>.01</td>
<td>.03</td>
<td>.97</td>
</tr>
<tr>
<td>AQ x MDQ</td>
<td>-.19</td>
<td>.16</td>
<td>-.14</td>
<td>-1.20</td>
<td>.23</td>
</tr>
<tr>
<td>MDQ x Ph</td>
<td>.11</td>
<td>.37</td>
<td>.05</td>
<td>.29</td>
<td>.77</td>
</tr>
<tr>
<td><strong>Step 3 (( \Delta R^2 = .11, p = .53 ))</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIS</td>
<td>.01</td>
<td>.36</td>
<td>.03</td>
<td>.12</td>
<td>.91</td>
</tr>
<tr>
<td>Ph</td>
<td>.26</td>
<td>.39</td>
<td>.08</td>
<td>.66</td>
<td>.52</td>
</tr>
<tr>
<td>MDQ</td>
<td>-.24</td>
<td>.33</td>
<td>-.14</td>
<td>-.73</td>
<td>.47</td>
</tr>
</tbody>
</table>

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
Table 4 (continued)

<table>
<thead>
<tr>
<th>Variable</th>
<th>$b$</th>
<th>$SE_b$</th>
<th>$\beta$</th>
<th>$t$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 3 (continued)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIS x AQ</td>
<td>0.01</td>
<td>0.36</td>
<td>0.05</td>
<td>0.26</td>
<td>0.79</td>
</tr>
<tr>
<td>MDQ x BIS</td>
<td>0.24</td>
<td>0.19</td>
<td>0.14</td>
<td>0.61</td>
<td>0.54</td>
</tr>
<tr>
<td>BIS x Ph</td>
<td>-0.18</td>
<td>0.39</td>
<td>-0.09</td>
<td>-0.44</td>
<td>0.66</td>
</tr>
<tr>
<td>AQ x MDQ</td>
<td>-0.47</td>
<td>0.26</td>
<td>-0.34</td>
<td>-1.86</td>
<td>0.07</td>
</tr>
<tr>
<td>MDQ x Ph</td>
<td>0.01</td>
<td>0.39</td>
<td>0.01</td>
<td>0.02</td>
<td>0.98</td>
</tr>
<tr>
<td>MDQ x BIS x AQ</td>
<td>0.19</td>
<td>0.18</td>
<td>0.14</td>
<td>1.07</td>
<td>0.29</td>
</tr>
<tr>
<td>Ph x BIS x AQ</td>
<td>-0.01</td>
<td>0.41</td>
<td>-0.04</td>
<td>-0.20</td>
<td>0.84</td>
</tr>
<tr>
<td>Ph x MDQ x BIS</td>
<td>0.01</td>
<td>0.48</td>
<td>0.04</td>
<td>0.19</td>
<td>0.85</td>
</tr>
<tr>
<td>Ph x MDQ x AQ</td>
<td>0.38</td>
<td>0.34</td>
<td>0.20</td>
<td>1.12</td>
<td>0.27</td>
</tr>
</tbody>
</table>

Step 4 ($\Delta R^2 = .12, p = .62$)

<table>
<thead>
<tr>
<th>Variable</th>
<th>$b$</th>
<th>$SE_b$</th>
<th>$\beta$</th>
<th>$t$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIS</td>
<td>0.01</td>
<td>0.36</td>
<td>0.03</td>
<td>0.16</td>
<td>0.87</td>
</tr>
<tr>
<td>AQ</td>
<td>0.22</td>
<td>0.20</td>
<td>0.13</td>
<td>1.06</td>
<td>0.29</td>
</tr>
<tr>
<td>Ph</td>
<td>0.24</td>
<td>0.40</td>
<td>0.07</td>
<td>0.60</td>
<td>0.54</td>
</tr>
<tr>
<td>MDQ</td>
<td>-0.29</td>
<td>0.35</td>
<td>-0.17</td>
<td>-0.85</td>
<td>0.39</td>
</tr>
<tr>
<td>BIS x AQ</td>
<td>0.01</td>
<td>0.36</td>
<td>0.03</td>
<td>0.13</td>
<td>0.90</td>
</tr>
<tr>
<td>MDQ x BIS</td>
<td>0.19</td>
<td>0.41</td>
<td>0.11</td>
<td>0.48</td>
<td>0.64</td>
</tr>
<tr>
<td>BIS x Ph</td>
<td>-0.17</td>
<td>0.42</td>
<td>-0.08</td>
<td>-0.42</td>
<td>0.68</td>
</tr>
<tr>
<td>AQ x MDQ</td>
<td>-0.51</td>
<td>0.26</td>
<td>-0.36</td>
<td>-1.92</td>
<td>0.06</td>
</tr>
<tr>
<td>MDQ x Ph</td>
<td>0.01</td>
<td>0.43</td>
<td>0.04</td>
<td>0.21</td>
<td>0.83</td>
</tr>
<tr>
<td>MDQ x BIS x AQ</td>
<td>0.34</td>
<td>0.35</td>
<td>0.25</td>
<td>0.98</td>
<td>0.33</td>
</tr>
</tbody>
</table>

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
Table 4 (continued)

<table>
<thead>
<tr>
<th>Variable</th>
<th>$b$</th>
<th>$SE_b$</th>
<th>$\beta$</th>
<th>$t$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 4 (continued)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ph x BIS x AQ</td>
<td>-.01</td>
<td>.43</td>
<td>-.01</td>
<td>-.06</td>
<td>.95</td>
</tr>
<tr>
<td>Ph x MDQ x BIS</td>
<td>.13</td>
<td>.49</td>
<td>.06</td>
<td>.26</td>
<td>.79</td>
</tr>
<tr>
<td>Ph x MDQ x AQ</td>
<td>.45</td>
<td>.37</td>
<td>.24</td>
<td>1.22</td>
<td>.23</td>
</tr>
<tr>
<td>Ph x MDQ x BIS x AQ</td>
<td>-.20</td>
<td>.41</td>
<td>-.12</td>
<td>-.49</td>
<td>.62</td>
</tr>
</tbody>
</table>

*Note: AQ = Aggression Questionnaire; BIS = Barratt Impulsivity Scale; MDQ = MDQ Premenstrual Total Score*

As presented in Table 3, the regression model examining predictors of aggressive responding independent of provocation (i.e., between subjects) was not significant. However, there was a significant main effect for Aggression Questionnaire in Step 1 of the regression model ($b = .87, SE = .39, t = 2.22, p < .05$) and Step 2 ($b = .86, SE = .39, t = 2.16, p < .05$), with greater AQ scores being related to greater aggressive responding regardless of provocation level ($r = .23, p < .05$). Table 4 displays the regression analysis of aggressive responding across provocation level (i.e., within subjects), which did not reveal a significant full model. However, a significant main effect for Aggression Questionnaire ($b = .36, SE = .18, t = 1.99, p < .05$) was found, which suggests that the Aggression Questionnaire and level of provocation were predictive of aggressive responding. As can be seen in Figure 1, participants with the highest AQ scores were most reactive to provocation. That is, higher AQ scores were associated with high mean
shock scores when provokes. The high versus low provocation differences in mean shock scores appear to decrease as AQ scores decreased. Since the full model was not significant for either regression model, the findings presented regarding the Aggression Questionnaire should be interpreted cautiously.

![Figure 1. Mean shock scores administered as a function of aggression questionnaire scores and provocation.](image-url)
CHAPTER V
DISCUSSION

Central Findings

The goal of this research was to examine the relation between reported premenstrual symptoms and aggressive responding during a laboratory measure of aggression. Trait aggression was examined as a potential moderating variable in this relationship. In previous research, Dougherty et al. (1998) demonstrated that women reporting higher levels of premenstrual negative affect aggressed more during a laboratory measure of aggression, independent of menstrual cycle phase. However, there was no examination of the role of trait aggression on this relationship and provocation was not examined. The current study sought to assess the contributing role of trait aggression and provocation, as well as premenstrual reported symptoms, in aggressive responding across the menstrual cycle. A secondary goal of the study was to examine the relationship between the role of impulsivity in the relationship between aggressive responding, trait aggression, and provocation.

Initially it was considered that women who exhibited greater trait aggression might be more sensitive to the emotional and physical changes associated with menstruation, which, in turn, may result in greater premenstrual symptom reporting. It was expected that trait aggression would moderate the relationship between premenstrual reporting and aggressive responding. Given that provocation has been shown to be an important factor in increasing aggression, greater provocation was expected to increase aggressive responding, particularly in women with greater trait aggression.
The primary hypothesis that trait aggression would moderate the relationship between aggressive responding and reported premenstrual symptoms was not supported by the results. These findings are not consistent with previous research, which showed that women reporting greater premenstrual symptoms exhibited more aggressive responding (Dougherty et al., 1998). However, Dougherty and his colleagues looked specifically at the MDQ Negative Affect Subscale rather than a total score for reported premenstrual symptoms on the MDQ. The current study did not examine the eight subscales due to the potential for Type I error when conducting multiple analyses. Also, Dougherty and colleagues used a different aggression paradigm than the current study. The Point Subtraction Aggression Paradigm (PSAP), which was used by Dougherty, involves subtraction of points as a means to aggress against an “opponent,” whereas the TAP uses a series of shocks as a means of aggressing. Bushman and Anderson (1998) describe the PSAP as a measure of indirect aggression, while the TAP is considered to be a measure of direct physical aggression (Taylor, 1967). The use of different aggression paradigms may explain the differences between results.

The hypothesis that women with higher trait aggression would aggress more, particularly under higher provocation, was supported. However, it should be noted that the full model was not significant, so these findings should be viewed with some caution. This finding is consistent with previous research that shows that individuals who report higher trait aggression do tend to aggress more on the TAP (Bushman & Anderson, 1998). Previous research indicates that increased provocation does tend to increase the difference in aggressive responding between individuals with high trait aggression scores and those with low aggression scores (Bettencourt & Miller, 1996). Overall, the findings
of the current study suggest that women who report higher trait aggression do aggress more in general and that this tendency is exacerbated by higher provocation. This trend seems to be unaffected by menstrual cycle phase.

Due to the nature of the study and focus on premenstrual symptoms, it was essential to include menstrual cycle phase in the analysis. The findings of the current study showing no phase differences in aggressive responding are consistent with previous laboratory research conducted by Dougherty et al. (1998). The current study also found no relationship between aggressive responding and premenstrual symptoms. These findings suggest that behavioral aggression in a non-treatment seeking, non-forensic sample is not related to overall reported premenstrual symptoms or phase. It is possible that the correlation between aggression and menstrual cycle phase suggested by survey research (D'Orban & Dalton, 1980) may be due to certain aspects of the self-report, cross-sectional research approach used, including common method variance and biases in self perception that lead to elevated scores on both menstrual symptoms and aggressive disposition.

Impulsivity has been shown to be an “important precipitant” of aggression (Helmers, Young, & Pihl, 1995). However, this study showed no significant relationship between reported impulsivity, premenstrual symptoms, menstrual cycle phase, and aggressive responding on a self-report measure. The reasons for these null finding are unclear, but it is possible that the relation between impulsivity, premenstrual symptoms, and aggressive responding may indeed exist, but only for specific populations, such as women with PMDD or women in a forensic setting.

Limitations
Potential limiting factors for this study include the use of retrospective reporting of premenstrual symptoms and excluding women for oral contraceptive use. Requesting that participants rate their current symptoms at the time of the lab session might provide a clearer symptom picture at the time of the testing, rather than asking them to report on symptoms from a previous menstrual cycle. For the purposes of this study, the retrospective form of the MDQ was used because it was consistent with previous research in this area. Finally, although it is expected that women using contraceptives be excluded from menstrual cycle research, it would be important to know whether or not the women excluded for using oral contraceptives differed in some important manner from the women who do not use oral contraceptives. For example, administering the Aggression Questionnaire with the other screening measures would allow one to compare trait aggression in oral contraceptive users and non-users. It would be important to know if more aggressive or less aggressive women are removing themselves from the subject pool by the choice to use contraceptives.

Future Research

Based on the findings of the current study and previous research, it appears that the typical woman may not experience significant increases in aggression as she enters into the premenstrual phase of her menstrual cycle. Since previous research has suggested that women in a forensic setting and women with PMDD have a tendency toward more extreme changes in aggression across the menstrual cycle, future research in this area may want to focus on specific populations of women. It is recommended that future research utilize daily reporting techniques for menstrual symptom and assess any potentially important differences between oral contraceptive users and non-users.
APPENDIX A

UNIVERSITY OF SOUTHERN MISSISSIPPI
PREIMINARY CONSENT DOCUMENT FOR RESEARCH PARTICIPANTS

Research Laboratory: USM Psychophysiology Research Laboratory
Primary Researcher: Carin L. Eubanks, M.A. / Mitchell Berman, Ph.D.
Project Title: Reaction time across the menstrual cycle

Participant Name

PURPOSE
The overall purpose of this study is to examine the relationship between menstrual symptoms and reaction time in undergraduate women between the ages of 18 and 30 years of age. The purpose of today’s data collection is to obtain preliminary information regarding your menstrual experiences and other health related issues. The information gathered in today’s session will determine if you meet the criteria to continue to the next phase of this study.

PROCEDURE
During today’s session, you will be asked to complete a questionnaire related to overall health, menstrual symptoms, and health practices. The questionnaires should take approximately 10 minutes to complete. If the questionnaire indicates that you meet the required criteria, then you will be contacted to schedule a laboratory session. The laboratory session will last approximately 1 hour and involve you competing with another participant in a reaction time task. Should you be contacted to continue with this study, the laboratory procedures will be explained in greater detail and your permission to continue will be obtained through written consent.

If you are eligible to participate in the laboratory session and agree to take part in this study, you may be asked to track your menstrual cycle using an ovulation detection kit supplied by the researcher. The scheduling of the laboratory session will be based on information that you supply regarding your menstrual cycle. More specifically, your laboratory session will be scheduled several days following the start of your period or several days after ovulation.

BENEFITS
The information obtained in this study will not directly benefit you. However, your participation may provide a better understanding of reaction time and the menstrual cycle.

RISKS
The risks associated with today’s data collection are minimal. A possible risk might include some discomfort resulting from completing a questionnaire with some potentially sensitive questions regarding menstrual symptoms and sexual health practices.
CONFIDENTIALITY
All identifying data will never be associated with data that is stored or used in statistical analysis and individual participants would never be identified in any publication or presentation. The information gathered will be used for research purposes only and will be kept strictly confidential. Each participant will be assigned a participant number for data analysis purposes, and the lists associating identifying information and participant number will be held confidential and secure by Dr. Mitchell Berman.

Participation in this study is voluntary. If you give your permission to participate, you are free to withdraw your consent and discontinue participation at any time without penalty or embarrassment. If you have any questions regarding this research project, please contact:

Mitchell Berman, Ph.D.
University of Southern Mississippi
Department of Psychology
Hattiesburg, MS 39406
(601) 266-4588

This project has been reviewed by the Human Subjects Protection Review Committee, which ensures that research projects involving human subjects follow federal regulations. Any questions or concern about rights as a research participant should be directed to:

Chair of the Institutional Review Board
University of Southern Mississippi
Box 5147
Hattiesburg, MS 39406
(601) 266-6820

_________________________________________ Date
Signature of Research Participant

_________________________________________ Date
Signature of Investigator
APPENDIX B
MEDICAL HISTORY QUESTIONNAIRE

The following questions will determine your eligibility to participate further in this experiment. All of your responses will be held in strict confidence. We protect the privacy of participants by withholding their names and other identifying information from all persons not connected with this study.

Participant Name _______________________________________________________
USM ID # _____________________ Age __________ Race ___________________
Current Phone No. _____________________ 2nd Phone No. _____________________
Preferred E-mail Address (please print)

1. Have you ever been diagnosed with hearing loss (please circle one)? Yes / No
   If yes, please describe the extent of your hearing loss.

   ________________________________________________________________

   If yes, do you use a hearing aid (please circle one)? Yes / No

2. Have you ever been diagnosed with impaired vision (please circle one)? Yes / No
   If yes, do you wear corrective lenses (please circle one)? Yes / No

3. Have you ever been diagnosed with any of the following medical conditions:
   thyroid problem? Yes / No
   migraine headaches? Yes / No
   Chronic Fatigue Syndrome? Yes / No
   Seizures? Yes / No
   Anemia? Yes / No

   If you answered yes to any of the above, please explain further. ___________________

4. Have you ever been diagnosed with any of the following psychiatric disorders?
   Major Depressive Disorder Yes / No
   Panic Disorder Yes / No
   Dysthymic Disorder Yes / No
Personality Disorder: Yes / No
Other

5. Are you currently taking any prescription medications (please circle one)? Yes / No
If yes, please list.

6. Are you currently taking any over-the-counter medications or herbal remedies on a regular basis (please circle one)? Yes / No
If yes, please list.

7. Do you use any tobacco products on a regular basis (please circle one)? Yes / No

8. Are you currently pregnant or breastfeeding (please circle one)? Yes / No

9. Do you currently use (or have you used in the past 3 months) any form of birth control (please circle one)? Yes / No
If yes, please check all types of birth control you use or have used in the past 3 months:

____ Birth control pill  ____ Contraceptive Injection
____ Contraceptive Patch  ____ Other

10. Has a physician ever diagnosed you with any of the following gynecological disorder, pelvic disorder, or uterine abnormality?

Chronic Pelvic Pain: Yes / No  Ovarian Cysts: Yes / No
Endometriosis: Yes / No  Pelvic Floor Disorder: Yes / No
Fibroids: Yes / No  Pelvic Inflammatory Disease: Yes / No
Fibromyalgia: Yes / No  Primary Dysmenorrhea: Yes / No
Inflammatory Bowel Disease: Yes / No  Vaginitis: Yes / No
Irritable Bowel Syndrome: Yes / No  Vulvodynia: Yes / No
Premenstrual Syndrome: Yes / No  Premenstrual Dysphoric Disorder: Yes / No
Other

11. Are you currently being treated or have you been treated for the disorder(s) checked above (please circle one)? Yes / No
If yes, please describe the treatment.
12. Do you menstruate on a regularly occurring cycle (please circle one)?  Yes / No
   If yes, what is the typical length of your menstrual cycle? _________________
   If no, please explain further. ___________________________________________________________________

13. Estimate the starting date of your last menstrual period. _________________
APPENDIX C
LUTEINIZING HORMONE (LH) TEST STRIP INSTRUCTIONS

The LH Ovulation Test is a qualitative test that detects the Luteinizing Hormone surge, and in turn, when you are likely to ovulate. Luteinizing Hormone is a hormone released by the pituitary gland, a small gland at the base of the brain. Luteinizing Hormone stimulates the ovaries to release an egg each month during the menstrual cycle. The highest levels of Luteinizing Hormone in blood and urine occur just before ovulation. This increase in hormone levels is called a “surge”.

When to begin testing:
First, you must determine the length of your menstrual cycle. This is the number of days from the first day of your menstrual bleeding to the day before your next menstrual bleeding begins again. Please refer to the chart to the right to determine when you should start testing. If you do not know your cycle, you may begin the test 11 days after menstrual bleeding, since the average cycle length is 28 days. After menstruation begins, perform 1 LH ovulation test once each day over a 5 day period or until the LH surge has been detected.

<table>
<thead>
<tr>
<th>Cycle Length</th>
<th>Start Testing On</th>
</tr>
</thead>
<tbody>
<tr>
<td>21 days</td>
<td>6</td>
</tr>
<tr>
<td>22 days</td>
<td>6</td>
</tr>
<tr>
<td>23 days</td>
<td>7</td>
</tr>
<tr>
<td>24 days</td>
<td>7</td>
</tr>
<tr>
<td>25 days</td>
<td>8</td>
</tr>
<tr>
<td>26 days</td>
<td>9</td>
</tr>
<tr>
<td>27 days</td>
<td>10</td>
</tr>
<tr>
<td>28 days</td>
<td>11</td>
</tr>
<tr>
<td>29 days</td>
<td>12</td>
</tr>
<tr>
<td>30 days</td>
<td>13</td>
</tr>
<tr>
<td>31 days</td>
<td>14</td>
</tr>
<tr>
<td>32 days</td>
<td>15</td>
</tr>
<tr>
<td>33 days</td>
<td>16</td>
</tr>
<tr>
<td>34 days</td>
<td>17</td>
</tr>
<tr>
<td>35 days</td>
<td>18</td>
</tr>
<tr>
<td>36 days</td>
<td>19</td>
</tr>
<tr>
<td>37 days</td>
<td>20</td>
</tr>
<tr>
<td>38 days</td>
<td>21</td>
</tr>
</tbody>
</table>

Urine Collection:
- Do not use first morning urine samples as LH is synthesized in your body early in the morning. It will not show up in your urine until later in the day.
- The best time to collect your urine is between 10 am – 8 pm.
- Collect urine at about the same time every day.
- Reduce liquid intake about 2 hours before collecting your urine as a diluted urine sample can prevent the test from detecting the LH surge.

Test Procedure:

Step 1
Keep the test pouch at room temperature (18-30 degrees Celsius). Collect urine into a clean container (i.e. a plastic cup). The best way to collect the urine sample is by placing a cup in the middle of the urination process. To begin testing, open the sealed pouch by tearing along the notch. Remove the test from the pouch when you are ready to use it.

Step 2
Immerse the test strip into the urine with the arrow end pointing towards the urine. Do not immerse past the MAX line (maximum). Hold test strip in urine for 5 seconds. Remove the test strip from the urine and lay the strip flat on a clean, dry, non-absorbent surface (e.g. mouth of the urine container). Do not immerse for longer than 7 seconds.
Step 3
Wait for colored bands to appear. Depending on the concentration of LH in the urine, positive results may be observed in as short as 40 seconds. However, to confirm negative results, the complete reaction time (10 minutes) is required. Please wait the entire 10 minutes before confirming the test results. Do not read the results after 30 minutes as this type of test is designed for rapid determination only.

**Interpretation of Results (see Diagram 2):**

**No LH Surge (Negative Result)**
Only one color band appears on the control region or the test band is present but lighter in color intensity than the control band. There is no LH surge even if two lines are present – as long as the test line is fainter than the control line the result is negative.

**LH Surge (Positive Result)**
If two color bands are visible and the test band is nearly equal to or darker than the control band, then high levels of LH have been detected and ovulation will likely occur within 24-48 hours.

**Invalid Test Results**
No visible bands in the control and test regions. Make sure to follow the above-specified instructions for optimum results.

Test results may vary for different individuals depending on the concentration of LH your body produces, as well as monitoring frequency, and testing technique. The best method is to test once a day, preferably later in the afternoon or early evening since LH is best synthesized during the active times of your day.

**Precautions:**
- For single in vitro diagnostic use only – use each test strip only once for urine screening.
- Do not use test kit beyond the expiration date.
- Do not open the foil packet until you are ready to use the test strip.
- Store tests at room temperature (below 86 degrees Farenheight). Do not freeze.
- Keep away from direct sunlight, moisture, and children.
APPENDIX D

UNIVERSITY OF SOUTHERN MISSISSIPPI
INFORMED CONSENT DOCUMENT FOR RESEARCH PARTICIPANTS

Research Laboratory: USM Psychophysiology Research Laboratory
Primary Researcher: Carin L. Eubanks, M.A. / Mitchell Berman, Ph.D.
Project Title: Reaction time across the menstrual cycle

Participant Name

PURPOSE
You are being asked to take part in a research study on the relationship between attention, reaction time and the menstrual cycle in undergraduate women. During this study you will be asked to participate in a task assessing attention and a competitive reaction-time task. During the competitive reaction-time task you will compete against another person in a “game” in which you will be asked to press a button and release it as fast as you can. Your laboratory session will be scheduled based on information you supply regarding your menstrual cycle.

PROCEDURE
You must be 18 to 45 years old to participate in this study and not currently pregnant or breastfeeding. You must experience regularly occurring menstrual cycles (i.e., 28 to 32 day cycle) and refrain from the current use of oral contraceptives, contraceptive injection, or the contraceptive patch. If you have been diagnosed with psychiatric disorder (i.e., Major Depressive Disorder, Panic Disorder, Dysthymic Disorder, Bipolar Disorder, or a Psychotic Disorder), then you cannot participate in this study.

If you agree to take part in this study, you may be asked to track your menstrual cycle using an ovulation detection kit supplied by the researcher. The scheduling of the laboratory session will be based on information that you supply regarding your menstrual cycle. More specifically, your laboratory session will be scheduled several days following the start of your period or several days after ovulation.

During the laboratory session, you will be asked to complete several questionnaires about your feelings, thoughts, impulses, and menstrual experiences. The questionnaires will take approximately 30 minutes to complete. Once the questionnaires are complete, you will be asked to participate in a task measuring attention. During this task you will be asked to attend to a computer screen and press a button when a certain item flashes on the screen. This task will take approximately 20 minutes.

After the attention task, you will participate in the reaction time game task, which will last less than 30 minutes. In this task, you will compete with another person to learn whom as the faster reaction time. The task involves the use of mild electrical stimulation (i.e., electric shock). The person with the slower reaction time on each trial will receive one second of shock stimulation. Before each reaction-time trial, you will select the level of stimulation your opponent will receive should your opponent be slower on the reaction-time task. This level may be uncomfortable or unpleasant, but will not injure you in any way. Similarly, your opponent will select the level of stimulation that you will receive before each reaction time trial.
BENEFITS
The information obtained in this study will not directly benefit you. However, your participation may provide a better understanding of the effect of the menstrual cycle on reaction time and attention. Finally, you may be eligible to earn class credit in those classes that encourage students to engage in research participation.

RISKS
You may experience mild to moderate discomfort from the electrical stimulation used in the competitive reaction-time task. You may get bored or tired during the session. You should also be aware that although ovulation may be assessed as part of this experiment, ovulation can and does change timing over time, and no reproductive decisions should be made based on results from the procedure used in this experiment.

CONFIDENTIALITY
All identifying data will never be associated with data that is stored or used in statistical analysis and individual participants would never be identified in any publication or presentation. The information gathered will be used for research purposes only and will be kept strictly confidential. Each participant will be assigned a participant number for data analysis purposes, and the lists associating identifying information and participant number will be held confidential and secure by Dr. Mitchell Berman.

Participation in this study is voluntary. If you give your permission to participate, you are free to withdraw your consent and discontinue participation at any time without penalty or embarrassment. If you have any questions regarding this research project, please contact:

Mitchell Berman, Ph.D.
University of Southern Mississippi
Department of Psychology
Hattiesburg, MS 39406
(601) 266-4588

This project has been reviewed by the Human Subjects Protection Review Committee, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research subject should be directed to:

Chair of the Institutional Review Board
The University of Southern Mississippi
118 College Drive #5147
Hattiesburg, MS 39406-0001
(601) 266-6820.

Signature of Research Participant Date

Signature of Investigator Date
APPENDIX E
SCRIPTED INSTRUCTIONS

Instructions for Setting Shock Threshold:

"Okay Subject A and B. I'm going to open the microphone so we can all hear each other. We're going to start by calculating discomfort thresholds for both of you. First, I will give you a series of shocks, increasing the intensity with each one. When the shock is first presented, it will be below your threshold and you will not feel it. As the intensity increases, first, you will become aware of it; second, it will feel like a tingling sensation; third, it will feel like a vibration; and finally, the shock will reach an intensity that is painful. I want you to tell me two things: one, report when you first feel the shock, and two, report when you don't want anymore, that is, when it is painful. Let's start the procedure with Subject A in the room closest to the door. Okay Subject A, tell me when you first feel the shock. All you have to say is 'I feel it.'"

"Okay Subject A, now I want you to tell me when the shock becomes painful. By painful I mean that it is so unpleasant that you really couldn't take anymore. Don't say it is painful unless it really is. Just say 'That's enough' when it is painful"

"Subject A, is it okay if I try just a couple more to make sure that I have it right."

"Okay Subject A, we'll stop there. (Pause 4 seconds). Subject B, your turn. Tell me when you first feel the shock."

"Okay Subject B, same with you-now I want you to tell me when the shock becomes definitely painful. By painful I mean that it is so unpleasant that you really couldn't take anymore. Don't say it is painful unless it really is."

Task Instructions:

"Okay Subject A and B. We'll do the task now. The purpose of this task is to examine the effect of menstrual cycle phase on the speed with which a finger can be pulled off the space bar on the computer. Two of you, situated in separate rooms, will be competing against each other to see who has the fastest reaction time. Both of you have the same apparatus in front of you and the same task to perform.

You will see the instructions "Wait, Get Ready, Hold Spacebar, and Release" on the computer screen. When the computer says to Hold Spacebar, you are to press and hold down the space bar. When the release signal comes on the screen, you are to remove your finger from the space bar as fast as you can. Of course, you both will receive the release signal at the same time. The object of each trial is to get your finger off the space bar as fast as possible in order to beat your competitor. The person who
does not get her finger off in the shortest time, that is, the person with the slower reaction time, will receive a shock at a level determined by her opponent. The level of shock will be chosen before each trial. The winner of an individual trial will not receive a shock, but the shock level set by her opponent will be displayed on the screen.

If either of you lift your finger off the space bar before the release signal comes on, a message saying ‘Subject released space bar too soon’ will come on and the two of you will repeat the trial.

There are 12 different intensities of shock you can choose to select if your opponent has the slower reaction time. When you see a message that says choose shock level, push a number from 1 through 20 or 0 on the top row of the keyboard. The 1-button corresponds to the least intense shock. The 10-button corresponds to the shock level that you judged painful in the preliminary trials. The 9 shock is 95% of the 10 shock, 8 is 90%, 7 is 85% and so on down to the 1 shock. The 20-button corresponds to a severe shock, about twice the intensity of the shock you judged painful in the preliminary trials. The 0-button corresponds to no shock. Your opponent will receive the shock level you choose, if she is slower on the reaction time trial.

We’ll repeat this process for a number of trials. You will be informed after each trial whether you won or lost that trial and the level of shock chosen by your opponent. If you lose a trial you will receive the level of shock chosen prior to the trial.

To summarize: Prior to each trial you will choose a shock level for your opponent, if they are slower than you on the reaction time trial. After choosing a shock level you will press the space bar down and hold it down when signaled, until the 'release' signal flashes. At this time, you are to remove your finger as fast as possible. The slower person on that trial will receive a shock at the level set by her opponent. The faster person will not receive a shock, but will be informed about the shock level set by her opponent.

Okay, I am going to turn on the computer monitors for both of you, and we’ll start the task. Give me a ‘thumbs up’ if you can see your monitor.”
APPENDIX F
POST-TASK QUESTIONNAIRE

Please answer the following questions. If you do not know the answer, please give your best guess.

1. Do you think the competition made your reaction time faster or slower?
   Faster __________  Slower __________

2. Were you following any system with regard to the reaction time key (e.g., were you pulling your finger to the side or up, etc.)? Please write a brief sentence.

3. Was it important for you to win?
   Not at all  1  2  3  4  5  6  7  8 Very Much

4. Were you following any system with regards to the shock buttons? Please explain.

5. Do you think you opponent followed any system? Please explain.

6. How anxious did you feel about the experimental situation?
   Not at all  1  2  3  4  5  6  7  8 Very Much

7. How much did you enjoy the experimental situation?
   Not at all  1  2  3  4  5  6  7  8 Very Much

8. How confident do you feel?
   Not at all  1  2  3  4  5  6  7  8 Very Much

9. Did you feel that you were in control of the situation?
   Not at all  1  2  3  4  5  6  7  8 Very Much

10. How concerned were you with what the experimenter thought of you?
    Not at all  1  2  3  4  5  6  7  8 Very Much
11. How concerned were you with what your opponent thought of you?
   Not at all 1 2 3 4 5 6 7 8 Very Much

12. How important is it for you to know your opponent?
   Not at all 1 2 3 4 5 6 7 8 Very Much

13. Did you feel afraid at any time during the experimental situation?
   Not at all 1 2 3 4 5 6 7 8 Very Much

14. How uncomfortable was the highest shock you received?
   Not at all 1 2 3 4 5 6 7 8 Very Much

15. What was the lowest shock level you administered during the competition task?
   0 1 2 3 4 5 6 7 8 9 10 20
   How many times did you administer this level of shock during this task? ______

16. What was the lowest shock level your opponent administered during the competition task?
   0 1 2 3 4 5 6 7 8 9 10 20
   How many times did your opponent administer this level of shock during this task? ______

17. What was the highest shock level you administered during the competition task?
   0 1 2 3 4 5 6 7 8 9 10 20
   How many times did you administer this level of shock during this task? ______

18. What was the highest shock level your opponent administered during the competition task?
   0 1 2 3 4 5 6 7 8 9 10 20
How many times did your opponent administer this level of shock during this task? _______

19. If you received 20 shock, how painful was it?
   Not Painful  1 2 3 4 5 6 7 8   Extremely Painful

20. If you did not receive a 20 shock, how painful would you expect a 20 to be?
   Not Painful  1 2 3 4 5 6 7 8   Extremely Painful

21. How concerned were you that your opponent would give you a 20?
   Not at all  1 2 3 4 5 6 7 8   Very Much

22. Did you know anything about the experiment before you participated (other than what the experimenter told you)? Please explain:

________________________________________________________________________

23. As best as you can recall, your opponent was:   Male ____ Female ____

24. You best guess about your opponent’s age:   ____ years old

25. What level of shock did you expect your opponent to set on the first trial?
   0 1 2 3 4 5 6 7 8 9 10 20

26. Briefly state what the lights at the top of the panel indicated.

________________________________________________________________________

27. What do you think the purpose of this study is?

________________________________________________________________________
APPENDIX G
BARRATT IMPULSIVITY SCALE (BIS-11)

Instructions: For each item, please circle the number corresponding to how often the statement is true of you.

1 = Rarely/Never  2 = Occasionally  3 = Often  4 = Almost always/Always

1. I plan tasks carefully.  1 2 3 4
2. I do things without thinking.  1 2 3 4
3. I make-up my mind quickly.  1 2 3 4
4. I am happy go luck.  1 2 3 4
5. I don’t “pay attention.”  1 2 3 4
6. I have “racing” thoughts.  1 2 3 4
7. I plan trips well ahead of time.  1 2 3 4
8. I am self-controlled.  1 2 3 4
9. I concentrate easily  1 2 3 4
10. I save regularly.  1 2 3 4
11. I “squirm” at plays or lectures.  1 2 3 4
12. I am a careful thinker.  1 2 3 4
13. I plan for job security.  1 2 3 4
14. I say things without thinking.  1 2 3 4
15. I like to think about complex problems  1 2 3 4
16. I change jobs.  1 2 3 4
17. I act “on impulse”.  1 2 3 4
18. I get easily bored when solving thought problems.  1 2 3 4
19. I act on the spur of the moment.  1 2 3 4
20. I am a steady thinker.  1 2 3 4
21. I change residences.  1 2 3 4
22. I buy things on impulse.  1 2 3 4
23. I can only think about one problem at a time.  1 2 3 4
24. I change hobbies.  1 2 3 4
25. I spend or charge more than I earn.  1 2 3 4
26. I often have extraneous thoughts when thinking  1 2 3 4
27. I am more interested in the present than in the future.  1 2 3 4
28. I am restless at theaters or lectures.  1 2 3 4
29. I like puzzles.  1 2 3 4
30. I am future oriented.  1 2 3 4
APPENDIX H
AGGRESSION QUESTIONNAIRE

Instructions: Using the 5-point scale shown below, indicate how uncharacteristic or characteristic each of the following statements is in describing you. Place your rating in the space to the right of the statement.

1=extremely uncharacteristic of me
2=somewhat uncharacteristic of me
3=neither uncharacteristic nor characteristic of me
4=somewhat characteristic of me
5=extremely characteristic of me

1. Some of my friends think I am a hothead ______________________________
2. If I have to resort to violence to protect my rights, I will ___
3. When people are especially nice to me, I wonder what they want ___
4. I tell my friends openly when I disagree with them. ___
5. I have become so mad that I have broken things ___
6. I can’t help getting into arguments when people disagree with me. ___
7. I wonder why sometimes I feel so bitter about things. ___
8. Once in a while, I can’t control the urge to strike another person ___
9. I am an even-tempered person. * ___
10. I am suspicious of overly friendly strangers. ___
11. I have threatened people I know. ___
12. I flare up quickly but get over it quickly. ___
13. Given enough provocation, I may hit another person. ___
14. When people annoy me, I may tell them what I think of them. ___
15. I am sometimes eaten up with jealousy. ___
16. I can think of no good reason for ever hitting a person * ___
17. At times I feel I have gotten a raw deal out of life. ___
18. I have trouble controlling my temper. ___
19. When frustrated, I let my irritation show. ___
20. I sometimes feel that people are laughing at me behind my back. ___
21. I often find myself disagreeing with people. ___
22. If somebody hits me, I hit back. ___
23. I sometimes feel like a powder keg ready to explode. ___
24. Other people always seem to get the breaks. ___
25. There are people who pushed me so far that we came to blows. ___
26. I know that “friends” talk about me behind my back. ___
27. My friends say that I’m somewhat argumentative. ___
28. Sometimes I fly off the handle for no good reason. ___
29. I get into fights a little more than the average person. ___

* The two questions with the asterisk are reversed scored.
APPENDIX I

HUMAN SUBJECTS REVIEW FORM

The University of Southern Mississippi
Institutional Review Board
118 College Drive #5147
Hattiesburg, MS 35406-0001
Tel: 601.266.6820
Fax: 601.266.5509
www.usm.edu/irb

HUMAN SUBJECTS PROTECTION REVIEW COMMITTEE
NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Human Subjects Protection Review Committee in accordance with Federal Drug Administration regulations (21 CFR 21, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months. Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: 25112801
PROJECT TITLE: Aggression & Impulsivity Across the Menstrual Cycle
PROPOSED PROJECT DATES: 12/01/05 to 13/31/07
PROJECT TYPE: Dissertation or Thesis
PRINCIPAL INVESTIGATORS: Carin Eubanks
COLLEGE/DIVISION: College of Education & Psychology
DEPARTMENT: Psychology
FUNDING AGENCY: N/A
HSPRC COMMITTEE ACTION: Expedited Review Approval
PERIOD OF APPROVAL: 12/15/05 to 12/14/06

Lawrence A. Hosman, Ph.D. Date
HSPRC Chair
REFERENCES


Derogatis, L. R. (1975). Brief Symptom Inventory. Clinical Psychometric Research:
Baltimore.


relations between anxiety and impulsivity. In M. Zuckerman (Ed.) *Biological bases of sensation seeking, impulsivity, and anxiety*, Hillsdale, NY: Lawrence Erlbaum.


LeMarquand, D. G., Pihl, R. O., Young, S. N., Tremblay, R. E., Sequin, J. R., Palmour,


Parrott, D. J., & Zeichner, A. (2002). Effects of alcohol and trait anger on physical
aggression. *Journal of Studies on Alcohol, 63*, 196–204.


Steiner, M., & Pearlstein, T. (2000). Premenstrual dysphoria and the serotonin system:


