

Fall 12-15-2011

# Effects of Menstruation on Women's Likelihood to Forgive

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## Recommended Citation

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**EFFECTS OF MENSTRUATION ON WOMEN'S LIKELINESS TO FOGIVE**  
2011

BY

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Psychology

### **Abstract**

The effect the secretion and ovulation phases of the menstrual cycle has on forgiveness was examined in this study. It was hypothesized that women in either phase of their menstrual cycle would be less likely to forgive than those not in either phase of their menstrual cycle.

Participants ( $N = 146$ ) completed three questionnaires, one measuring their likeliness to forgive, one measuring their forgiveness of others, self, and situations, and the last collecting demographic information and information about their periods. The results showed no significant difference in woman's likeliness to forgive when experiencing a period and when not experiencing a period nor when ovulating and not ovulating. These findings suggests that the secretion and ovulation phases of the menstrual cycle do not affect a woman's likeliness to forgive thus a women's likeliness to forgive may be influenced by other factors.

*Keywords:* menstruation, forgiveness, mood, emotion

### Effects of Menstruation on Women's Likelihood to Forgive

Forgiveness is something that everyone struggles with at one point or another in life. Because forgiveness is an inescapable part of life, it is important to analyze every situation and make a decision about forgiveness rationally. Typically, most people are able to do so once given time to dwell on the situation, but it turns out that this can be more difficult for women, especially while menstruating. According to Dalton (1961), women were 49% more likely to commit some type of crime while menstruating than when not menstruating. Thus, rational thinking, and rational behavior like forgiveness can be impaired while a woman is menstruating. Understanding how forgiveness affects women and how menstruation affects women are crucial to linking the two variables.

### **Sex Differences in Forgiveness**

Many studies have been conducted on the sex differences that occur with forgiveness. Miller, Worthington and McDaniel (2008) found that overall men and women forgive on relatively the same level, but the difference is in the type of act they have to forgive. In the study, a measure on vengeance was used to indicate low levels of forgiveness. Upon analysis of the data, men were less likely to forgive when having to forgive acts of vengeance. The researchers attributed this finding to the fact that men are naturally more aggressive than women. Women prefer to talk and work through situations, while men seek justice. This research conveys that women are more likely to forgive, even in situations in which they were directly wronged and the reason for the wrongdoing is out of revenge. Understanding this about women shows their eagerness to rectify situations and not give up relationships over actions said and done in anger.

It also provides insight into how forgiveness may change with the type of wrong done to a woman.

Buss, Larsen, Westen, and Semmelroth (1992) conducted a study about sex differences in jealousy. They found that when in a committed relationship, men became more jealous if their partner cheated on them in a sexual manner, while women became more jealous if their partner cheated on them in an emotional manner. It is known that jealousy can in most cases lead to some form of anger, and in cases of infidelity, forgiveness must also play a part. In a related study, researchers looked at sex differences in their likelihood to forgive or break up with their partner if cheated on. They found that men were less likely to forgive and more likely to breakup with their partner if sexual infidelity occurred. Conversely, women were less likely to forgive and more likely to breakup with their partner if emotional infidelity occurred (Shackelford, Buss, & Bennett, 2002). This is another indicator of how the type of wrong done to a woman greatly influences how willing a woman will be to forgive. It also provides insight on how the type of relationship also influences how likely a woman would be to forgive.

Due to differences in sex and forgiveness, researchers wondered if empathy, sex, and forgiveness might be related. Macaskill, Maltby and Day (2002) found that although women were more empathetic than men, empathy had no affect on either sexes level of forgiveness. This demonstrates how even though a woman is more understanding of another person's feelings, it does not at all mean that she will forgive the person. Another study by Toussaint and Webb (2005) supported this same idea. In this study, researchers found that men that were more likely to forgive if they expressed empathy for the wrong doer. They also said that because women are more empathetic than men naturally, empathy may not serve as a motivator to forgive as it does with men. Being able to recognize that empathy may not serve as a motivator for forgiveness in

women allows for a better understanding of what aspects do and do not contribute to their likeliness to forgive. Both of these studies suggest that empathy does not contribute to a woman's likeliness to forgive, but there is a study that disagrees. Researchers found that if a woman took the perspective of the offender and bad feelings, such as shame and guilt, were elicited, then the woman would be more likely to forgive (Exline & Zell, 2009). This relates to the previously mentioned findings that women may be more likely to forgive if their emotions are tied into the situation. Since emotion plays a major role in a woman's likeliness to forgive, research should be done on how menstruation affects a woman's emotions.

### **Menstrual Cycle and Mood**

Golub and Harrington (1981) studied adolescent woman and how the premenstrual phase of their menstrual cycle affected their mood. They compared the adolescent women to women over 30 and found that there was no difference in mood among adolescent women, but in women over 30, higher levels of anxiety and depression were reported. This shows that mood change may vary depending on the age of a woman. This same finding is supported by Golub (1976) where she found that women between the age of 30 and 45 had very high levels of depression and anxiety while menstruating, but this mood change did not affect other aspects of their lives. A study was done relating to Golub and Harrington's (1981) study done by Parlee. In this study, Parlee (1982) looked at mood changes in women before and during their menstrual cycle and had participants complete questionnaires about their mood and activity level. She found that participants who already believed that their mood and activity level changes when menstruating reported feelings that matched this thought when asked to complete the same questionnaire while actually menstruating. Conversely, women who were not consciously aware of mood changes or changes in activity level, reported the same feelings as they did when they were not

menstruating. This shows how women may alter their actions to fit them to what they think may be going on while menstruating.

Although the previously mentioned studies indicate that menstruation does not affect mood in a way that would impair their actual thought processes, some studies suggest otherwise. Depending on the amount of reproductive hormones secreted during menstruation, women find it much harder to adapt to day-to-day activities and also found maladaptive ways of dealing with situations (Netter, Henning, Huwe, & Daume, 1998). This suggests that, because day-to-day activities and ways of resolving the problems are so disrupted, high stress situations and actions of resolution may also be disrupted, such as the likeliness to forgive. In addition, a study done by Haselton and Kelly (2011) found that women participate in more risky behavior when in the ovulation phase of their menstrual cycle. This reiterates the point made in the very beginning of the section of how overall behavior is altered during menstruation. Another study was done looking at the relationship between menstruation and suicide (Leenarrs et al., 2009). Although the researchers reiterated throughout the paper that their results could not be overall conclusive, they found that women in the actual secretion phase of their menstrual cycles were more successful at committing suicide as opposed to women in any other phase of their menstrual cycle. The secretion phase is when blood and other bodily fluids are actual being secreted from the woman (Leenarrs, Dogra, Girdhar, Dattagupta, & Leenarrs, 2009). When comparing this study with the studies before it, it suggests that maybe the success in suicide may be a result of a maladaptive behavior to cope with the stress women face day-to-day and also that even general behavior is altered during menstruation.

### **The Current Study**

The past research in sex differences and forgiveness, and how the menstrual cycle affects a woman's emotions are what influenced the development of the current study. The understanding of forgiveness in women, as well as the emotional impacts menstruation makes on women, are the two variables being studied. It is hypothesized that women will be less likely to forgive while in the secretion phase of their menstrual cycles due to its effects on emotion and behavior. The dependent variable of the current study will be the participants overall likeliness to forgive, while the independent variables will be if the participants takes birth control and are in the secretion phase of their menstrual cycle. A better understanding of this relationship prompts more research in how menstruation affects other aspects of emotion as well as help therapists find ways to help women cope with their more intensified emotions and feelings while menstruating.

## **Method**

### **Participants**

The participants used in this study consisted of 98 female undergraduate students at Coastal Carolina University. Although 98 women completed this study, only 83 were used due to incompleteness of the questions about their menstrual cycle, such as when the first day of their last period was and how long it usually lasts. The rationale behind using all women participants is that they are the only ones that have a menstrual cycle and the menstrual cycle is the main independent variable in this study. They were solicited by convenience sampling through an online program called Sona Systems. Participants ranged from ages 17 to 30, 24% were freshman, 34% were sophomores, 24% were juniors, 17% were seniors and 1% declined to answer. Ethnicities of participants were all different, 82% were Caucasian, 11% were African-

American, 2% were Hispanic, and 5% indicated other (Middle Eastern, Albanian, Pacific Islander, and Asian-African American). The study was voluntary; if a participant started the study, they were able to withdraw at any time during the study and they were not forced to answer any question. The only compensation participants received was half of a credit toward their class research participation requirement. They were also provided with contact information if they had any questions and if they wanted to know the results of the study. All participants were treated with proper APA ethics and guidelines for this study (American Psychological Association, 2002).

One year after the study was completed; it was reopened to new participants. A total of 62 females participated in the study. They were solicited in the same way as the original study and were given the same compensation. Participants ranged from ages 18 to 48, 29% were freshman, 33.9% were sophomores, 30.6% were juniors, 4.8% were seniors and 1.7% declined to answer. Ethnicities of participants were all different as well, 77.4% were Caucasian, 16.1% were African-American, 1.6% were Hispanic, and 4.9% indicated other (Middle Eastern, Albanian, Pacific Islander, and Asian-African American).

## **Materials**

Participants were asked to complete two questionnaires. The first was the “Forgiveness Likelihood Scale” which was created by Rye et al. (1998) (Appendix A). This scale used a 5-point Likert response scale ranging from 1 (not at all likely) to 5 (extremely likely). The survey contained 10 scenarios and instructed the participant to read each one and mark how likely they are to forgive the person. It deals with infidelity, trustworthiness, and slander. The instructions were altered and participants were asked to express how they would feel if each scenario were

happening to them at that *exact moment* and how likely they would be to forgive the person that wronged them at that *exact moment*. An example item from the questionnaire is “A friend borrows your most valued possession, and then loses it. The friend refuses to replace it. What is the likelihood that you would choose to forgive your friend?” The higher scores on the scale show an increased willingness to forgive.

The second questionnaire was one that was made for the current study. The questionnaire was mostly free response questions that asked about the participant’s demographics and health. The most important items the questionnaire asked about were about the participant’s menstrual cycle, including when their last period occurred, how long their periods usually lasted, if they were on birth control, and if they had a period (Appendix B). These questions needed to be answered in order to identify participants that did not experience menstrual cycles or had controlled periods. Persons that declined to answer both of these questions were removed before data analysis.

In the second round of data collection, all of the previous materials were used, but one more scale was added about forgiveness. It was called the “Heartland Forgiveness Scale” written by Thompson et al. (2005) (Appendix C). This scaled consisted of 18 statements that measured three different subscales and total forgiveness. The three subscales measured were forgiveness of self, forgiveness of others, and forgiveness of situations. The scale was done on a 7-point Likert scale with 1 being “almost always false of me” and 7 being “almost always true of me.” An example of a statement found on this scale is “I continue to be hard on others who have hurt me.” The average score on subscales were 31 and the average score for total forgiveness was 93. The higher the participant scored the more likely they were to forgive.

## Procedure

Sona Systems was used to for data collection for this study. The online method was used because it allowed participants to participate in the study at their convenience. Another reason is that there were some sensitive nature questions in the study, if done in a place that they felt comfortable, then it would result in more honest answers and increases the chance of them completing the entire study. When participants logged onto Sona Systems, they were able to see the name of the study “Females and Forgiveness” and schedule a time to complete the study. They were first asked to accept the terms of the consent form (Appendix D), which told them what they would be doing as well and let them know that they may withdraw from the study at any time. The consent form also indicated that they may be answering questions of a sensitive nature. If they agreed to these terms, Sona Systems took them to the first section of the study itself which was the likelihood to forgive scale. The first item they saw were the directions that told them to read each scenario and indicate their likelihood to forgive the person that wronged them. The instructions also told them to look at each scenario as if it was happening to them at that moment. Each scenario was presented individually from the rest and they were also given the option to not answer the question. After completing that scale, they were taken to the next section of the study which was the demographic survey. Most of the questions were free response and gave them a maximum of 150 characters to answer the question. Upon completion of the demographic survey, participants were debriefed (Appendix E) about what the study was actually researching. Participants were thanked for their time and honesty and told not to hesitate to contact the researcher for the results of the study. In the reopening of the study, participants followed the same procedure but the difference was that there was another scale that had to be completed. After completing the consent form and the “Forgiveness Likelihood Scale,”

participants then were presented with the “Heartland Forgiveness Scale.” As with the original study, participants were given the demographic questionnaire and were debriefed after that.

### Results

First, the total scores for the forgiveness scale were computed and participants in the secretion phase of their menstrual cycle were identified. To determine the participant’s likelihood to forgive, the numbers corresponding to their answer choices were summed; the higher the number, the more likely they were to forgive. Participants could score a low of 10 and a high of 50, with 25 being a neutral score. To determine whether the participant was menstruating or not, the date that the participant completed the surveys was compared with the first day of their last period as well as how long their period usually lasts. If the date that they took the survey fell within the timeframe of the first day of their last period and the amount of days their period usually lasts, then they were marked as menstruating.

Originally, all participants on birth control were going to be eliminated. However, due to the small sample size and large number of participants on birth control, birth control was tested as an independent variable. To test the effect of the secretion phase of the menstrual cycle on forgiveness, a 2 (birth control: yes or no) x 2 (menstruating: yes or no) ANOVA was performed. Analysis of the data revealed a non-significant main effect for birth control,  $F(1, 83) = .275, p = ns$ , and a non-significant main effect for menstruation,  $F(1, 83) = .077, p = ns$ . Along with non-significant main effects, there was also a non-significant interaction effect,  $F(1, 83) = .260, p = ns$ . The significance level was set as  $p < .05$  and in all three cases the *p-value* exceeded .05.

The mean score for women that were not experiencing a period and were not on birth control was 22.34 ( $SD = 3.93$ ). This was extremely close to those that were not experiencing a

period and were on birth control with  $M = 22.32$  ( $SD = 5.07$ ). The mean score for women experiencing a period and not on birth control was  $23.44$  ( $SD = 8.26$ ) while those experiencing a period and were on birth control was  $22.00$  ( $SD = 4.89$ ) (Figure 1).

For the expansion of the study, the same procedure was used to score the “Likelihood to Forgive” scale with one exception: the averages of all questions answered on the scale were used as opposed to the sum of all questions. For the scale added, the “Heartland Forgiveness Scale” scores had to be hand calculated. For items 1, 3, 5, 8, 10, 12, 14, 16, and 18 the number the participant answered with corresponded with their score. For example if the participant answered with the answer choice 5 for question 10 than 5 would be written down. For items 2, 4, 6, 7, 9, 11, 13, 15, and 17 the answered had to be reversed scored. For example, if the participant answered with answer choice 1 for question 6 than the score for that question would be 7. After all scores were written down, the next step was to sum the scores according to their individual subscales. The entire questionnaire was divided into three subscales that had their own total scores. Questions 1-6 were summed to give the total score on the Forgiveness of Self subscale and questions 7-12 were summed to give the total score for the Forgiveness of Others subscale. Questions 13-18 were summed to give the total score for the Forgiveness of Situations subscale and all 18 of the answer scores were averaged together to give the total forgiveness score. Also, in the expansion, ovulation was examined to see if it made a difference in women’s likelihood to forgive. To determine if the participant was ovulation the date that the participant completed the study was compared with the date of the first day of the participant’s last period. If the date the participant completed the study fell between 11 to 17 days after the first day of their last period, than that participant was marked as ovulating. 2 x 2 ANOVAS were performed on all data for the expansion.

The results of the 2 x 2 ANOVA for the “Likelihood to Forgive” scale in the expansion yielded non-significant data. There was a non-significant main effect for birth control,  $F(1, 61) = .014, p = .841$ , and a non-significant main effect for menstruation,  $F(1, 61) = .302, p = .585$ , as well as non-significant main effects, there was also a non-significant interaction effect,  $F(1, 61) = .018, p = .895$ . The significance level was set as  $p < .05$  just as it was in the original study. The “Heartland Forgiveness” scale had 4 different sets of results; one for each subscale and one for the total forgiveness. For total forgiveness there was a non-significant main effect for birth control,  $F(1, 61) = 1.48, p = .228$ , and a non-significant main effect for menstruation,  $F(1, 61) = .637, p = .428$ , and a non-significant interaction effect,  $F(1, 61) = .506, p = .480$ .

The results for the Forgiveness of Self subscale there was a non-significant main effect for birth control,  $F(1, 61) = 1.84, p = .179$ , and a non-significant main effect for menstruation,  $F(1, 61) = 1.24, p = .270$ , and a non-significant interaction effect,  $F(1, 61) = 1.74, p = .191$ . For the Forgiveness of Others subscale the results were a non-significant main effect for birth control,  $F(1, 61) = .475, p = .493$ , and a non-significant main effect for menstruation,  $F(1, 61) = .028, p = .869$ , and a non-significant interaction effect,  $F(1, 61) = .289, p = .593$ . Lastly, the results for the Forgiveness of Situations subscale the results were a non-significant main effect for birth control,  $F(1, 61) = 1.53, p = .223$ , and a non-significant main effect for menstruation,  $F(1, 61) = 1.45, p = .233$ , and a non-significant interaction effect,  $F(1, 61) = .003, p = .956$ .

As previously mentioned, ovulation was also looked at to see if maybe that had any effect on women’s likeliness to forgive. The results of the 2 (ovulating: yes or no) x 2 (birth control: yes or no) for the “Likelihood to Forgive” scale for ovulation were a non-significant main effect for birth control,  $F(1, 61) = .074, p = .786$ , and a non-significant main effect for menstruation,  $F(1, 61) = .100, p = .753$ , and a non-significant interaction effect,  $F(1, 61) = .772, p = .383$ . The

total forgiveness results for the “Heartland Forgiveness” scale were a non-significant main effect for birth control,  $F(1, 61) = .319, p = .574$ , and a non-significant main effect for menstruation,  $F(1, 61) = .094, p = .761$ , and a non-significant interaction effect,  $F(1, 61) = .392, p = .534$ .

The results for the Forgiveness of Self subscale yielded a non-significant main effect for birth control,  $F(1, 61) = .209, p = .649$ , and a non-significant main effect for menstruation,  $F(1, 61) = .636, p = .428$ , and a non-significant interaction effect,  $F(1, 61) = .584, p = .448$ . The results for the Forgiveness of Others subscale were a non-significant main effect for birth control,  $F(1, 61) = .021, p = .886$ , and a non-significant main effect for menstruation,  $F(1, 61) = .336, p = .565$ , and a non-significant interaction effect,  $F(1, 61) = .402, p = .529$ . As with all of the other scales and subscales the results for the Forgiveness of Situations subscale were non-significant. There was a non-significant main effect for birth control,  $F(1, 61) = .969, p = .329$ , and a non-significant main effect for menstruation,  $F(1, 61) = .538, p = .466$ , and a non-significant interaction effect,  $F(1, 61) = .087, p = .770$ .

The mean scores of the Forgiveness of Self subscale for women that were not experiencing a period was  $M = 49.88 (SD = 9.93)$ . For women experiencing a period the mean was  $M = 51.67 (SD = 12.4)$ . For the Forgiveness of Others subscale for women not experiencing a period the mean was  $M = 46.59 (SD = 10.5)$  and for women experiencing a period the mean was  $M = 46.39 (SD = 13.4)$ . Lastly, for the Forgiveness of Situations subscale, the mean for women not experiencing a period was  $M = 45.24 (SD = 9.74)$  while the mean for those experiencing a period was  $M = 47.83 (SD = 11.2)$  (Figure 2).

## Discussion

Overall, the results for the original study and expansion of the study were non-significant and therefore inconclusive regarding the effects of the secretion phase of the menstrual cycle has on forgiveness. It was initially thought that a woman's willingness and likelihood to forgive would be decreased when in the secretion phase of the menstrual cycle, but the results show no difference. Many factors may have influenced these results, but some were more important than others. The first and most important in the original study was that of the 83 women participants, only 17 of them were actually experiencing a period while actively participating in the study. This outnumbering did not allow for a good comparison of women experiencing a period and women that were not. The mean score for women that were experiencing a period and were not on birth control differed by more than one point from those experiencing a period and were on birth control. If the groups were larger, a significant difference might have been found. In the expansion of the study, the groups were split slightly better with 20 women experiencing a period and 42 not experiencing a period. Even with a better split the results still were not significant which suggest that being in the secretion phase of the menstrual cycle may not be a factor in forgiveness.

Another factor in the initial study is birth control itself. The plan for the first study was to eliminate any females on birth control because their hormones are altered and their periods are controlled. Because over half of the women participating in this study were on birth control, the sample size would have been dramatically decreased if they were eliminated, thus all women had to be used. It is already known that some forms of birth control can help with the anxiety that some women experience while menstruating, which means that those who were experiencing a period but were also on birth control may not elicit the same emotional feelings as they do when not on birth control. This is supported in a study done by Gezginc, Balci, Karatayli, and

Colakoglu (2007). The researchers found that birth control could elicit feeling of anxiety and depress mood. This suggests that some of the participants in the primary study might have been experiencing these symptoms, thus interfering with the results of the study. Conversely, Fleischman, Navarrete, and Fessler (2010) measured women's sensitivity to cuteness. They found that even though oral contraceptive pills decrease hormone production in women, they were not any more or any less sensitive to cuteness. This says that women are not psychologically affected by birth control. This point was supported in the expansion of the original study because the women on birth control and not on birth control were almost even with 32 on birth control and 30 not on birth control. With this roughly even split the results still were not significant which suggest that birth control may not be a factor in forgiveness.

In addition to so few participants experiencing a period, and so many being on birth control in the initial study, there are also other limitations that may have skewed the results of both the initial and the current study. One is that the women that chose to be a part of the study were able to participate in any place in which they had access to the internet and a computer. Initially, it was thought that this may help with the honesty of the participants because they were able to conduct the surveys in a place that they felt most comfortable and did not feel stigmatized or pressured by other participants as well as the researcher. After analyzing the data, it was realized that this might have been a problem. One of the major issues with participants being able to perform the surveys from any place is that of distractions. There was no way to monitor whether or not the participant was watching television, listening to music, talking on the phone, or even talking to others that lived with the individual while participating in the study. All of these factors may have caused the participants to possibly rush through the surveys in order to get back to what they might have been previously engaged in. Also on the forgiveness survey,

questions were asked about different types of relationships including romantic, friendship, and family relationships. If any of those people were present while the women were participating in the study, their answers to the questions might have been adjusted. This same issue stands with the expansion of the original study because it was conducted in the same way. The exact same outside factors could have occurred and influenced the participant's answers.

Another limitation to the studies is that participants did not have direct access to the researcher. Although participants were provided with contact information, depending on the time in which they took the surveys, they might have felt as if it was an inappropriate time to contact the researcher. Without being able to directly and quickly clarify any questions that arose, participants might have had to make assumptions about what certain aspects of the study meant and this could have influenced the ways in which they answered questions. Also, contacting an anonymous person might have made the participants feel uncomfortable, causing them not to ask any of the questions they might have had.

The sample size was relatively large in the original study but the type of sample was a limitation. The ideal sample would have consisted of 100 women that were not on birth control and half of them experiencing a period. This would have yielded two equal groups to compare but in the case of this study, over half were on birth control and only 17 were experiencing a period. Because the sample was selected by convenience, this allowed for no control over the sample and consequently altered the way in which the data had to be analyzed. In the expansion of the study the sample was even smaller than the original study. Although the quality of the sample was a bit better, it was still a convenience sample and it was still far from ideal.

All of these factors coupled with the overall results of the studies make it extremely difficult to generalize likeliness to forgive not being affected by the secretion phase of the menstrual cycle to all women. In addition, the fact that all the participants were college students on a small campus shows that the results cannot be generalized to not only all women but also other women in college because the results might be different on a larger college campus. If this study were to be replicated a third time, a major change would be to select a sample matched as close as possible with the ideal sample. This would eliminate any confounding variables that were not expected to drastically change the results of the study. Another way to modify the study is by monitoring the same women for several months. This would ensure that they experience at least one period and allow the women to take the survey during a period and at a time when they are not in the secretion phase of their menstrual cycle and compare the results. This may yield completely different results than those found in the initial study and the expansion.

In the original study it was suggested that other parts of the menstrual cycle be examined to see if it had an effect on women's likeliness to forgive. In the expansion of the study, the ovulation phase was looked at and the results were still not significant. A factor that could have influenced this was the fact that 44 of the participants were not ovulating while only 18 were. This is pretty even with those that were experiencing a period and those who were not. In both cases the results were not significant which suggest that ovulation may not have and affect on forgiveness. This could be different though if the sample size was larger and participants were not on birth control which again drives home the importance of the replicating this study a third time with an ideal sample size. Although the results of the studies did not reveal any differences in the affect the secretion phase of the menstrual cycle has on forgiveness, there are many ways

to improve the study even further and many other ways to test the effect of the menstrual cycle has on forgiveness.

## References

- American Psychological Association (2002). Ethical principles of psychologists and code of conduct. *American Psychologist*, 57, 1060-1073.
- Buss, D. M., Larsen, R. J., Westen, D., & Semmelroth, J. (1992). Sex differences in jealousy: evolution, physiology, and psychology. *Psychological Science*, 3(4), 251-255.
- Dalton, K. (1961). Menstruation and crime. *British Medical Journal*, 1(148), 1752-1753.
- Exline, J. J. & Zell, A. E. (2009). Empathy, self-affirmation, and forgiveness: the moderating roles of gender and entitlement. *Journal of Social and Clinical Psychology*, 28(9), 1071-1099. DOI: 10.1521/jscp.2009.28.9.1071
- Fleischman, D. S., Navarrete, C. D., & Fessler, D. M. T. (2010). Oral contraceptives suppress ovarian hormone production. *Psychological Science*, 21(5), 750-752. DOI: 10.1177/0956797610368082
- Gezginc, K., Balci, O., Karatayli, R., & Colakoglu, M. C. (2007). Contraceptive efficacy and side effects of implanon. *The European Journal of Contraception and Reproductive Health*, 12(4), 362-365. DOI: 10.1080/13625180701548040
- Golub, S. (1976). The effect of premenstrual anxiety and depression on cognitive function. *Journal of Personality and Social Psychology*, 34(1), 99-104. DOI: 10.1037/0022-3514.34.1.99
- Golub, S. & Harrington, D. M. (1981). Premenstrual and menstrual mood changes in adolescent women. *Journal of Personality and Social Psychology*, 41(5), 961-965. DOI: 10.1037/0022-3514.41.5.961

Haselton, M. G. & Gildersleeve, K. (2011). Can men detect ovulation? *Current Directions in Psychological Science*, 20(2), 87-92. DOI: 10.1177/0963721411402668

Leenaars, A. A., Dogra, T. D., Girdhar, S., Dattagupta, S., & Leenaars, L. (2009). Menstruation and suicide: Histopathological study. *Crisis: The Journal of Crisis Intervention and Suicide Prevention*, 30(4), 202-207. DOI: 10.1027/0022-5910.30.4.202

Macaskill, A., Maltby, J., & Day, J. (2002). Forgiveness of self and others and emotional empathy. *Journal of Social Psychology*, 145(5), 663-665.

Miller, A. J., Worthington, E. L., & McDaniel, M. A. (2008). Gender and forgiveness: A meta-analytic review and research agenda. *Journal of Social and Clinical Psychology*, 27(8), 843-876. DOI: 10.1521/jscp.2008.27.8.843

Netter, P., Henning, J., Huwe, S., & Daume, E. (1998). Disturbed behavioral adaptability as related to reproductive hormones and emotional states during the menstrual cycle. *European Journal of Personality*, 12(4), 287-300.

Parlee, M. B. (1982). Changes in mood and activation levels during the menstrual cycle in experimentally naïve subjects. *Psychology of Women Quarterly*, 7(2), 119-131. DOI: 10.1111/j.1471-6402.1982.tb00824.x

Rye, M. S., Loiacano, D. M., Folck, C. D., Olszewski, B. T., Heim, T. A., & Madia, B. P. (2001). Evaluation of the psychometric properties of two forgiveness scales. *Current Psychology: Development, Learning, Personality, Social*, 20(3), 260-277.

Shackelford, T. K., Buss, D. M., Bennett, K. (2002). Forgiveness or breakup: Sex differences in responses to a partner's infidelity. *Cognition & Emotion*, *16*(2), 299-307. DOI:

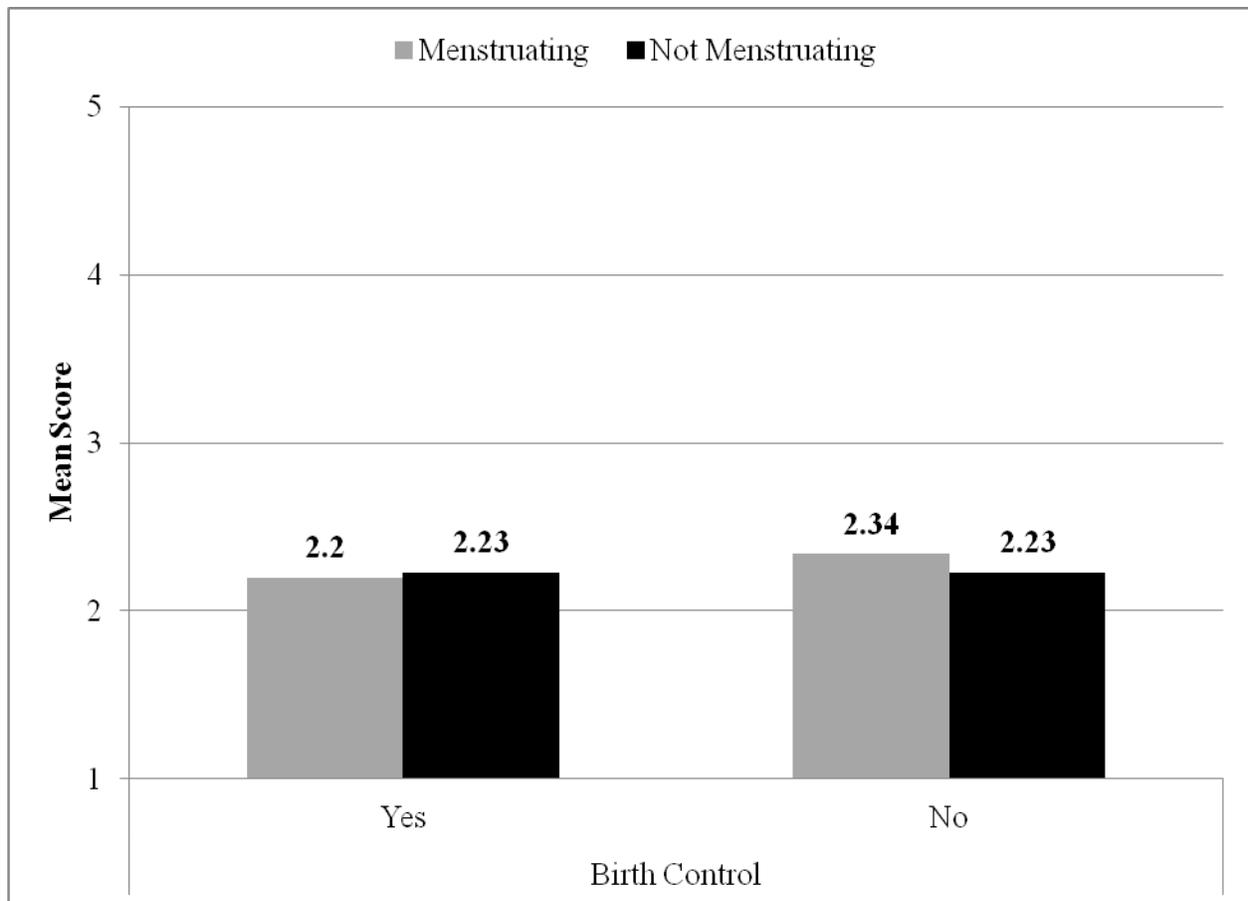
10.1080/02699930143000202

Thompson, L. Y., Snyder, C. R., Hoffman, L., Michael, S. T., Rasmussen, H. N., Billings, L. S., Heinze, L., Neufeld, J. E., Shorey, H. S., Roberts, J. C., & Roberts, D. E. (2005).

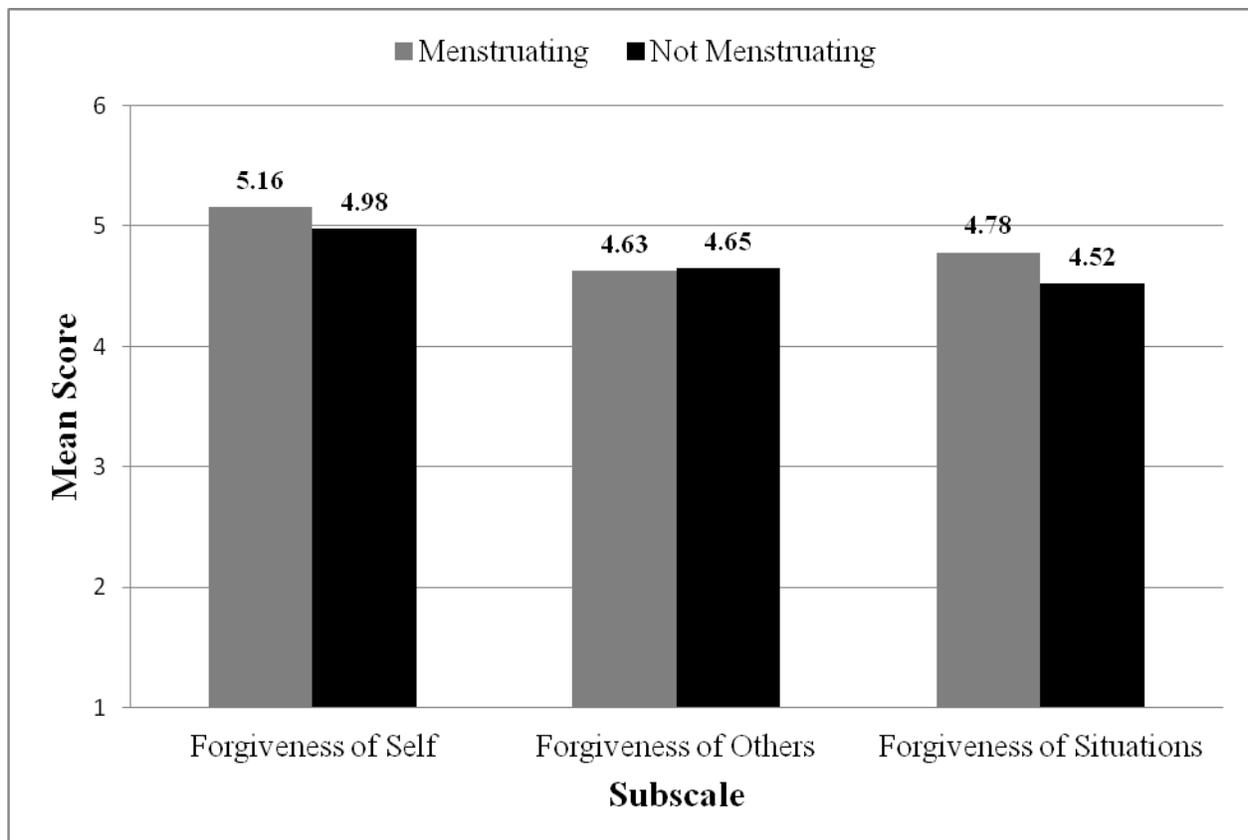
Dispositional forgiveness of self, others, and situations. *Journal of Personality*, *73*, 313-359.

Toussaint, L., & Webb, J. R. (2005). Gender differences in the relationship between empathy and forgiveness. *The Journal of Social Psychology*, *145*(6), 673-685. DOI:

10.3200/SOCP.145.6.673-685



*Figure 1.* Mean scores of likelihood to forgive by menstruation and birth control.



*Figure 2.* Mean scores of “Heartland Forgiveness” scale by subscales and menstruation.

## Appendix A

## Forgiveness Likelihood Scale (Rye, 2001)

Imagine the scenarios below are happening to you right now. Based on the information provided, consider the likelihood that you would forgive the person. Then, circle the response that is most true for you right now.

1. You share something embarrassing about yourself to a friend who promises to keep the information confidential. However, the friend breaks his/her promise and proceeds to tell several people. What is the likelihood that you would choose to forgive your friend?

Extremely Likely 5	Fairly Likely 4	Somewhat Likely 3	Slightly Likely 2	Not at all Likely 1
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2. One of your friends starts a nasty rumor about you that is not true. As a result, people begin treating you worse than they have in the past. What is the likelihood that you would choose to forgive your friend?

Extremely Likely 5	Fairly Likely 4	Somewhat Likely 3	Slightly Likely 2	Not at all Likely 1
--------------------------	-----------------------	-------------------------	-------------------------	---------------------------

3. Your significant other has just broken up with you, leaving you hurt and confused. You learn that the reason for the break up is that your significant other started dating a good friend of yours. What is the likelihood that you would choose to forgive your significant other?

Extremely Likely 5	Fairly Likely 4	Somewhat Likely 3	Slightly Likely 2	Not at all Likely 1
--------------------------	-----------------------	-------------------------	-------------------------	---------------------------

4. A family member humiliates you in front of others by sharing a story about you that you did not want anyone to know. What is the likelihood that you would choose to forgive the family member?

Extremely Likely 5	Fairly Likely 4	Somewhat Likely 3	Slightly Likely 2	Not at all Likely 1
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5. Your significant other has a "one night stand" and becomes sexually involved with someone else. What is the likelihood that you would choose to forgive your significant other?

Extremely Likely 5	Fairly Likely 4	Somewhat Likely 3	Slightly Likely 2	Not at all Likely 1
--------------------------	-----------------------	-------------------------	-------------------------	---------------------------

6. Your friend has been talking about you behind your back. When you confront this person, he/she denies it, even though you know that he/she is lying. What is the likelihood that you would choose to forgive your friend?

Extremely Likely 5	Fairly Likely 4	Somewhat Likely 3	Slightly Likely 2	Not at all Likely 1
--------------------------	-----------------------	-------------------------	-------------------------	---------------------------

7. A friend borrows your most valued possession, and then loses it. The friend refuses to replace it. What is the likelihood that you would forgive your friend?

Extremely Likely 5	Fairly Likely 4	Somewhat Likely 3	Slightly Likely 2	Not at all Likely 1
--------------------------	-----------------------	-------------------------	-------------------------	---------------------------

8. You tell an acquaintance about a job that you hope to be hired for. Without telling you, the acquaintance applies and gets the job for him/herself. What is the likelihood you would choose to forgive your acquaintance?

Extremely Likely 5	Fairly Likely 4	Somewhat Likely 3	Slightly Likely 2	Not at all Likely 1
--------------------------	-----------------------	-------------------------	-------------------------	---------------------------

9. A stranger breaks into your house and steals a substantial sum of money from you. What is the likelihood that you would choose to forgive the stranger?

Extremely Likely 5	Fairly Likely 4	Somewhat Likely 3	Slightly Likely 2	Not at all Likely 1
--------------------------	-----------------------	-------------------------	-------------------------	---------------------------

10. You accept someone's offer to attend a formal dance. However, this person breaks their commitment to take you and goes to the event with someone who they find more attractive. What is the likelihood that you would choose to forgive this person?

Extremely Likely 5	Fairly Likely 4	Somewhat Likely 3	Slightly Likely 2	Not at all Likely 1
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Appendix B

Demographic Survey

**Please provide or mark only one answer**

Age:

Class Rank: Freshman    Sophomore    Junior    Senior

Ethnicity: African-American (black)    Caucasian (white)

Native-American    Asian

Other: \_\_\_\_\_

Are you on birth control? Yes    No

When was the first day of your last period? \_\_\_\_\_

How long does your period usually last? \_\_\_\_\_

Do you participate in any sports? Yes    No

Do you exercise regularly? Yes    No

What kind of birth control do you use? \_\_\_\_\_

## Appendix C

## Heartland Forgiveness Scale (HFS)

Directions: In the course of our lives negative things may occur because of our own actions, the actions of others, or circumstances beyond our control. For some time after these events, we may have negative thoughts or feelings about ourselves, others, or the situation. Think about how you typically respond to such negative events. Next to each of the following items write the number (from the 7-point scale below) that best describes how you typically respond to the type of negative situation described. There are no right or wrong answers. Please be as open as possible in your answers.

- |                              |   |                           |   |                          |   |                             |
|------------------------------|---|---------------------------|---|--------------------------|---|-----------------------------|
| 1                            | 2 | 3                         | 4 | 5                        | 6 | 7                           |
| Almost Always<br>False of Me |   | More Often<br>False of Me |   | More Often<br>True of Me |   | Almost Always<br>True of Me |
- \_\_\_ 1. Although I feel bad at first when I mess up, over time I can give myself some slack.
- \_\_\_ 2. I hold grudges against myself for negative things I've done.
- \_\_\_ 3. Learning from bad things that I've done helps me get over them.
- \_\_\_ 4. It is really hard for me to accept myself once I've messed up.
- \_\_\_ 5. With time I am understanding of myself for mistakes I've made.
- \_\_\_ 6. I don't stop criticizing myself for negative things I've felt, thought, said, or done.
- \_\_\_ 7. I continue to punish a person who has done something that I think is wrong.
- \_\_\_ 8. With time I am understanding of others for the mistakes they've made.
- \_\_\_ 9. I continue to be hard on others who have hurt me.
- \_\_\_ 10. Although others have hurt me in the past, I have eventually been able to see them as good people.
- \_\_\_ 11. If others mistreat me, I continue to think badly of them.
- \_\_\_ 12. When someone disappoints me, I can eventually move past it.
- \_\_\_ 13. When things go wrong for reasons that can't be controlled, I get stuck in negative

thoughts about it.

\_\_\_ 14. With time I can be understanding of bad circumstances in my life.

\_\_\_ 15. If I am disappointed by uncontrollable circumstances in my life, I continue to think negatively about them.

\_\_\_ 16. I eventually make peace with bad situations in my life.

\_\_\_ 17. It's really hard for me to accept negative situations that aren't anybody's fault.

\_\_\_ 18. Eventually I let go of negative thoughts about bad circumstances that are beyond anyone's control.

## Appendix D

## Informed Consent Form

I, \_\_\_\_\_, agree to participate in the research entitled "*Female and Forgiveness*" conducted by **Brittany Gaillard** (CCU student, Email: bkgailla@coastal.edu) under the supervision of **Dr. Terry Pettijohn**, Department of Psychology, Coastal Carolina University, P.O. Box 261954, Conway, South Carolina, 29528-6054, Phone: 843-349-6447, Email: pettijohn@coastal.edu. I understand that this participation is entirely voluntary. I may withdraw my consent at any time without penalty and have the results of my participation returned to me, removed from the research records, or destroyed.

The following points have been explained to me:

- 1-The purpose of this research is to determine the influences on women's willingness to forgive. My participation in this study will further my understanding of the processes and purposes of psychological research.
- 2-I will be imagining scenarios about past, present, or desired experiences and answer a series of questions from a survey to determine my willingness to forgive. I then will answer some questions that may be of a sensitive nature. The entire experiment is expected to last about an hour. In order to make this study valid, some information may be withheld until after the study.
- 3-No psychological or physical discomforts or stresses are foreseen.
- 4-If the sensitive nature questions make me feel uncomfortable, I can skip these questions or discontinue at any time.
- 5-No social or legal risks are foreseen.
- 6- Participation will be anonymous and the results cannot be released in any identifiable manner.
- 7-The investigator will answer any further questions, regarding the research, now or during the course of the project.

\_\_\_\_\_  
Signature of Investigator

\_\_\_\_\_  
Signature of Participant

\_\_\_\_\_  
Date

**PLEASE SIGN BOTH COPIES OF THIS FORM.  
KEEP ONE AND RETURN THE OTHER TO THE INVESTIGATOR.**

**Research at Coastal Carolina University which involves human participants is overseen by the Institutional Review Board. Questions or problems regarding your rights as a participant should be addressed to the IRB, Coastal Carolina University, Office of Grants and Sponsored Research, P.O. Box 261954, 2431 Highway 501, Foundation Center, Conway, SC 29528-6054, Telephone (843) 349-2978.**

## Appendix E

### Debrief

In this study, we were interested in menstruation and the willingness to forgive. Specifically, we were interested in the specific time of the menstrual cycle a female was in and how it affects a women's willingness to forgive as well as if the type of situation affected how willing a women was to forgive. We predicted that most women would be less willing to forgive if they were in the secretion time of their cycle, which is when blood and fluids are actually being released, and if the scenario played on emotions than the female would be less likely to forgive.

The scenario you were instructed to read were meant to prompt you to think about that particular season. Every female in this study was given the same scenarios. After thinking about the scenario you were asked to choose which end result would cause you the most stress then completed a forgiveness inventory. Following the inventory, we asked questions about your personal health including questions about your menstrual cycle and your physical activity on a regular basis. The demographic survey was taken after you completed the forgiveness inventory and imagined the scenario in order to eliminate bias.

Thank you for your participation and please do not discuss this study with other students. If you want to learn more about my results, please attend one of my research presentations at the end of the semester or contact me by email.