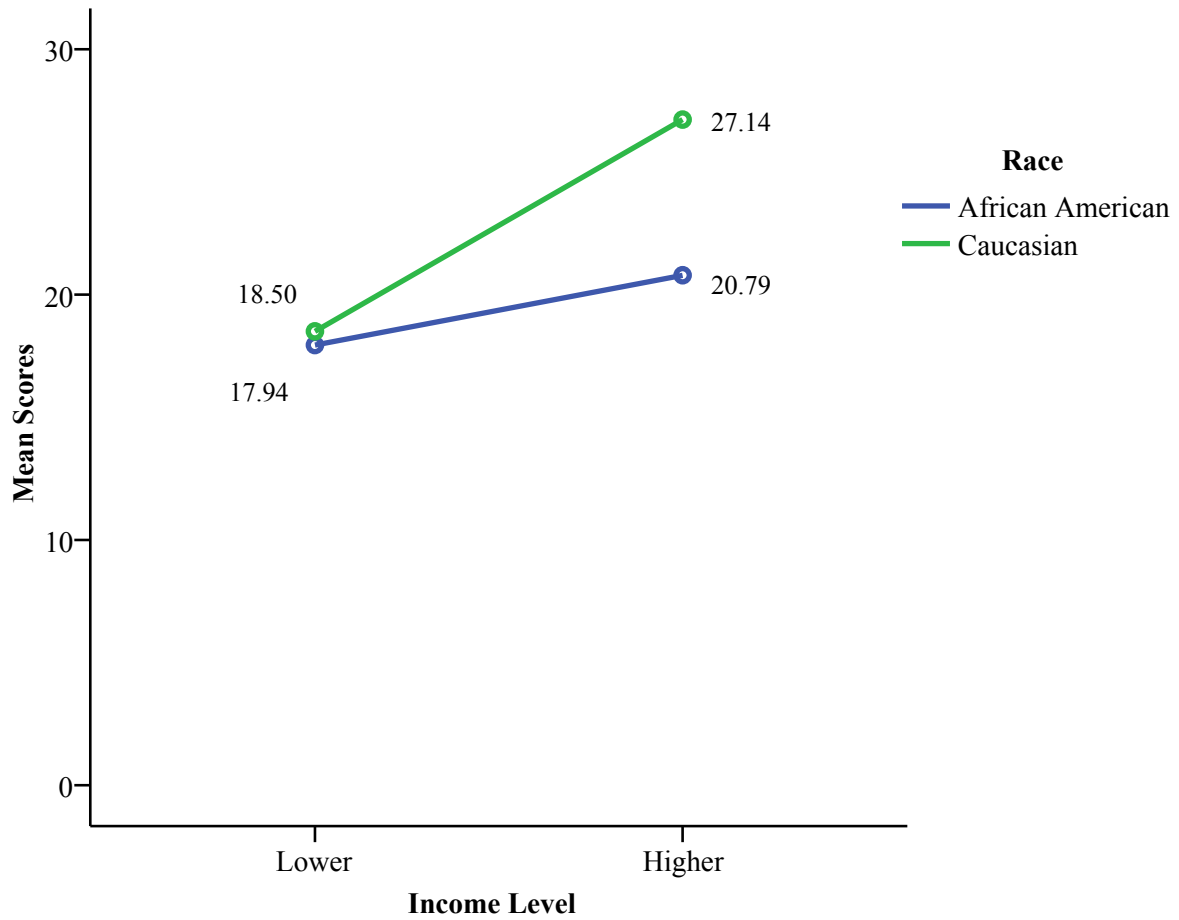


Table 8. Two-Way ANOVA Summary Table for Preparation for Menarche

Source	SS	df	MS	F	Sig
Race	486.672	1	486.672	10.245	.002
Income Level	1345.574	1	1345.574	28.325	.000
Race*Income Level	342.379	1	342.379	7.207	.008
Error	7838.170	165	47.504		

As illustrated in Figure 2, the interaction was similar to that for menstrual knowledge. Again, the simple effects test indicated that there was no difference between the African American and Caucasian participants' means at the lower income level, but at the higher income level, the Caucasian mean was significantly higher than that of the African American group. Within the African American groups, there was also no difference across income levels, whereas the income mean difference was significant for Caucasian participants. The higher income Caucasian participants on average felt more prepared for menarche than the other groups.

Figure 2. Interaction of Race and Income Level on Preparation for Menarche Scores



Because of the nature of this interaction, the main effects of race and income, although significant, were not meaningful.

5.3.2 Qualitative analysis of preparation for menarche

Responses to the question of who provided information about menstruation revealed that mothers and step-mothers were the most popular sources of menstrual information. Other family members, including fathers, siblings, aunts, and grandmothers, were the second most common source reported. This was followed by healthcare and educational professionals (e.g., doctors, teachers), media and reading materials (e.g., books, websites, magazines, television), and, lastly, friends and peers. The types of individuals who reportedly provided participants with menstrual information are presented in Table 9.

Table 9. Types of Menstrual Information Sources

Source Type	H.I.A.A. (N)	H.I.C. (N)	L.I.A.A. (N)	L.I.C. (N)	Overall (N)
Mother/Step-Mother	24	36	20	46	126
Other Family Members	26	23	49	7	105
Friends/Peers	4	8	3	4	19
Healthcare/Educational Professionals	6	18	2	6	32
Media/Reading Materials	0	6	0	22	28
None	0	0	4	0	4
Blank/Skipped	0	0	3	0	3
Total	60	91	81	85	317

Note. Although there were only 166 individuals who indicated the types of menstrual information sources, many participants reported more than source. The number of individuals who skipped or left the item blank and the number of participants who indicated that they received no information sources are also presented. As a result, the total *N* reported is 317.

^a H.I.A.A. indicates higher income African Americans (i.e., African American participants who *did not* qualify for a free or reduced lunch). ^b H.I.C. indicates higher income Caucasians (i.e., Caucasian participants who *did not* qualify for a free or reduced lunch). ^c L.I.A.A. indicates lower income African Americans (i.e., African American participants who *did* qualify for a free or reduced lunch). ^d L.I.C. indicates lower income Caucasians (i.e., Caucasians participants who *did* qualify for a free or reduced lunch).

When answers were examined by respondents' race and income group, a pattern emerged wherein both lower and higher income Caucasian participants most often reported their mothers or step-mothers as sources of menstrual information (54.1% and 39.6%, respectively), while both lower and higher income African American participants were more likely to receive information from family members other than their mothers (62.8% and 43.3%, respectively). Furthermore, higher income Caucasian respondents were at least three times more likely than any other race and income level grouping to report healthcare and educational professionals as a source of menstrual information. Similarly, lower income Caucasian participants were more than three times more likely than any other race and income level grouping to indicate the media and reading materials (e.g., books, websites, magazines, television) as a source of menstrual information. Additionally, the only individuals who indicated that they had not received any menstrual information prior to menarche were from the lower income African American group.

A second open-ended question asked participants if there was anything they wished they had known before reaching menarche. Out of the 169 participants, only 30 (17.8%) responded to this item. While the reason behind such a small response rate is unclear, it is interesting that such a small number of participants responded to the item when it is considered that the majority of preparation scores fell between the "disagree" and "neutral" value. Also worthy of note is that the group with the most responses to this item, higher income Caucasian participants, is also the highest scoring group on menarcheal preparation and the only group to score close to the "agree" value of preparation. The 30 responses were organized into categories as listed in Table 10. However, due to the fact that less than a fifth of participants responded to the question, these findings should be viewed with caution as they are a subset of the sample.

Table 10. Categories of Qualitative Responses of What Participants Wished They Knew Before Menarche

Response Categories	H.I.A.A. (N)	H.I.C. (N)	L.I.A.A. (N)	L.I.C. (N)	Overall (N)
Cramps Related	0	2	2	0	4
Concealment/Avoid Embarrassment	0	10	0	4	14
Feelings and Expectations	0	3	0	1	4
Normalcy of Menstrual Experience	0	4	0	1	5
Product-Related	2	3	1	0	6
No Previous Knowledge Wanted	0	10	1	0	11
Blank/Skipped	32	13	50	44	139
Total	34	45	54	50	183

Note. Although there were only 30 individuals who responded to the question of what they wished they knew before menarche, some responses fit more than one category. The number of individuals who skipped or left the item blank are also presented. As a result, the total *N* reported is 183.

^a. H.I.A.A. indicates higher income African Americans (i.e., African American participants who *did not* qualify for a free or reduced lunch). ^b. H.I.C. indicates higher income Caucasians (i.e., Caucasian participants who *did not* qualify for a free or reduced lunch). ^c. L.I.A.A. indicates lower income African Americans (i.e., African American participants who *did* qualify for a free or reduced lunch). ^d. L.I.C. indicates lower income Caucasians (i.e., Caucasians participants who *did* qualify for a free or reduced lunch).

Answers ranged from a desire for more practical knowledge (e.g., “How to use tampons” and “How many pads I would need each day”) to more theoretical knowledge (e.g., “I wanted to know what it feels like when the blood is coming out” and “How to know if my period is normal, like the other girls”). Responses also related to concealment and secrecy. For example, many girls indicated a desire to know how to avoid telltale leaks, how to ensure others are not aware of their menstruation, and a yearning to be able to predict exactly when menstruation would begin so that they would “always be ready for it”. One participant went so far as to specifically state that she wanted to know “how to keep it secret.”

When answers were examined by respondents’ race and income group, the data revealed that almost all lower and higher income African American participants left this item blank (94.1% and 92.6%, respectively). Other answers provided by individuals from these two groups focused on a need for more practical information such as how to deal with the painful experience

of menstrual cramps and how to correctly use menstrual products like pads and tampons. Individuals in the higher income Caucasian grouping had more variety in their responses and included desires for both practical (e.g., the most effective menstrual products; number of pads and tampons needed per cycle) and experiential knowledge (e.g., what menstruation actually feels like), as well as information on secrecy and concealment of menstruation and ways to determine when menstruation was going to begin. However, approximately half of the higher income Caucasian participants either left the item blank or simply stated that there was no additional information they wished they had prior to menarche. Lower income Caucasian participants had similar responses with the exception that they did not report a premenarcheal desire for practical information. Additionally, 88% of lower income Caucasian participants failed to respond to the question.

5.4 ANALYSES FOR MEASURE OF MENSTRUAL ATTITUDES

Participants responded to 24 statements regarding their attitudes toward menstruation on a five-point Likert scale from 1 = Strongly Disagree to 5 = Strongly Agree. The possible score range was from 24 to 120, with higher scores indicating a more positive attitude. The means in Table 11 ranged from 64.96 to 85.46 and scores showed a great deal of variability between each race and income category. Responding to all statements with a “neutral” answer would yield a score of 72.

Table 11. Menstrual Attitudes Mean Scores by Race and Income Level

Race	Income Level	N	Range	Mean	Std. Deviation
African American	Lower	53	30-111	64.96	24.77
	Higher	33	27-118	77.42	25.34
Caucasian	Lower	46	25-119	73.00	28.35
	Higher	37	25-119	85.46	26.26

Note. Scores can range from 24 to 120 (24 = strongly disagree, 48 = disagree, 72 = neutral, 96 = agree, 120 = strongly agree); higher scores indicate more positive/less negative menstrual attitudes.

As reported in Table 12, the interaction of race and income level and the main effect for race were not statistically significant. However, the main effect for income level revealed a significant difference between groups. Regardless of race, higher income participants reported more positive menstrual attitudes ($M = 81.44$, $SD = 25.96$) than lower income participants ($M = 75.21$, $SD = 27.07$). Both means are closest to the “neutral” verbal label on this attitude scale, although individual attitudes varied greatly within the groups.

Table 12. Two-Way ANOVA Summary Table for Menstrual Attitudes

Source	SS	df	MS	F	Sig
Race	2637.811	1	2637.811	3.836	.052
Income Level	6341.601	1	6341.601	9.222	.003
Race*Income Level	0.0000648	1	0.0000648	.000	1.000
Error	113461.174	165	687.643		

6.0 DISCUSSION

The main goal of this study was to determine if race and income level are associated with early adolescents' reactions to menarche and menstruation in present American culture. Past research on the topic of menarche and menstruation has very nearly focused solely on the experience of middle-class Caucasians (Yeung et al., 2005). Rarely has the influence that race and socioeconomic status have on this stage of adolescent development been taken into consideration (Adler et al., 1993; Evans & Stoddart, 1990; Feinstein, 1993; Keating & Hertzman, 1999). The present investigation attempted to fill that gap by examining the menstrual knowledge, feelings of preparation for menarche, and menstrual attitudes of newly postmenarcheal adolescent girls from various combinations of racial and income level backgrounds to determine if race and income level are associated with reactions to menarche and menstruation. Specifically, it was hypothesized that both African American participants and participants from lower income households would (a) score lower on menstrual knowledge, (b) report feeling less prepared for menarche, and (c) report more negative menstrual attitudes than their counterparts (i.e., Caucasian participants and participants from higher income households). It was further hypothesized that lower income African Americans would (a) score lower on a menstrual knowledge, (b) report feeling less prepared for menarche, and (c) report disproportionately more negative menstrual attitudes than any other race and income level group combination.

The outcomes indicated that (a) overall, participants' lacked accurate menstrual knowledge, (b) overall, participants felt either unprepared or, at best, only somewhat prepared for menarche, (c) overall, participants held ambivalent menstrual attitudes, (d) as a group, the responses of higher income Caucasian participants stood apart from and indicated that they fared better than the other race and income level groupings, and (e) participants appeared to incorporate menstrual taboos into how they approached learning about menstruation and preparing for menarche. Results related to each of the three dependent variables (i.e., menstrual knowledge, preparation for menarche, and menstrual attitudes) are examined further in this section. Also examined are how higher income Caucasian participants were different from the other race and income level groupings in this study, as well as, the qualitative results and how they are associated to menstrual taboos. Limitations and directions for future research are then discussed, followed by conclusions and implications of the study.

6.1 RESULTS RELATED TO THE DEPENDENT MEASURES OF MENSTRUAL KNOWLEDGE, PREPARATION FOR MENARCHE, AND MENSTRUAL ATTITUDES

With regard to menstrual knowledge, the results revealed that three of the four race and income level groupings had mean knowledge scores that indicated a very poor understanding of menstruation. The fourth group, higher income Caucasians, had a mean knowledge score that represented only a partial understanding of menstruation. Consequently, the key finding was that, irrespective of participants' race and income level, the girls in the study did not, as a whole, have a full understanding of why they menstruate. This was not a surprising finding when results of participants' preparation for menarche are taken into account. Like the menstrual knowledge

results, three of the race and income level groupings had mean preparation scores that indicated a lack of readiness for menarche. The fourth group, higher income Caucasians, was the only one to report feeling at least some level of preparedness. Overall, preparation scores indicated that, on average, participants felt unprepared or in doubt about their preparation for menarche. These results are cause for great concern because it suggests that the current efforts in place to educate girls about menstruation are deficient, particularly when it is considered that studies from several decades ago had similar results. For example, in a study of late adolescents' and young women's reproductive knowledge, Johnson, Snow, and Mayhew (1978) found that well over half of their sample did not know why menstruation occurred or the correct time of ovulation. So whether the instruction comes from mothers, other family members, or educational and healthcare professionals, it appears that, in the last thirty years, little progress has been made in the area of menstrual education and, that presently, adequate menstrual information is still not getting across to adolescent girls. This may be evidence of a cycle wherein girls who are not appropriately prepared end up passing misinformation to peers, younger siblings, and in the future, their own daughters. The consequences of this continued ignorance, which include, but are not limited to the development of low self-esteem and early engagement in sexual behaviors, can be dire.

As previous research has identified (e.g., Cumming, Cumming, & Kieren, 1991; Laws, 1990; Rierdan, Koff, & Flaherty, 1986), ignorance in the realm of menstruation and lack of preparation for the event perpetuates myths and misbeliefs. Not understanding menstruation puts girls in a position where they are more susceptible to developing low self-esteem and negative menstrual attitudes. In addition, girls who are unknowledgeable about menstruation are also more likely to engage in sexual behaviors at an earlier age (Padilla & Baird, 1991; Scott-Jones & Turner, 1988), which can result in exposure to sexually transmitted diseases and unwanted

pregnancies. This was further highlighted by results of a study on adolescent knowledge of sexual development (Hockenberry, Richman, Dilorio, Rivero, & Maibach, 1996), where researchers concluded that a lack of menstrual knowledge also accompanied a lack of sexual and birth control knowledge.

Given that the girls in this study lacked menstrual knowledge and preparation and were clearly uneasy about the experience of menarche and menstruation and it would be expected that menstrual attitudes would be largely negative. However, this was not the case. Instead participants' overall menstrual attitudes were neutral. This is contrary to other studies, both domestic and international, which have documented that menstrual knowledge and feelings of preparation for menarche are positively correlated with menstrual attitudes (Brooks-Gunn & Ruble, 1982; Brumberg, 1997; Houppert, 1999; Koff & Rierdan, 1995; McPherson & Korfine, 2004; Moore, 1995; Tang et al., 2003). For example, McPherson and Korfine (2004) maintained that women who reported having had a negative menarcheal experience due in part to a lack of menstrual education also reported far more negative menstrual attitudes in adulthood than those participants who reported a positive experience at menarche. Similarly, a study of sixth graders' social constructions of menarche suggested that girls who had limited menstrual knowledge held more negative menstrual attitudes than their counterparts (Moore, 1995). In a study of Chinese adolescent girls emotional responses to menarche, Tang and colleagues (2003) concluded that negative menstrual attitudes were positively correlated with perceptions of menstruation as a negative event and feelings of inadequate preparation for menarche.

There are two reasons why the results in the present study were not aligned with those of previous studies. Firstly, many of the participants may not have been aware that the menstrual knowledge they rely on is flawed. Many turned to myth and superstition to explain menstruation

while others used more scientific resources. However, for the vast majority of participants, neither source appeared to provide a fully accurate understanding of menstruation. Nonetheless, there was no evidence to indicate that participants did not feel confident with the information that they do have, however incorrect that information may be. As a result, there is no reason for a lack of accurate menstrual knowledge to have any noteworthy influence on their menstrual attitudes. Moreover, many participants reported having little access to preparatory materials and a lack of desire to have been further prepared for menarche. This may be an indication of low expectations about preparation. As with the lack of menstrual knowledge, there is then no cause to presume that lack of preparation would substantially impact the menstrual attitudes of participants.

6.2 RESULTS RELATED TO HYPOTHESES

Not all hypotheses were fully supported by the current results. The order in which the hypotheses are reviewed are not in numerical sequence so as to allow for interactions to be discussed before main effects. Hypothesis 3, which claimed that lower income African American participants would score lower on the measure of menstrual knowledge, preparation for menarche, and menstrual attitudes than any other racial and income level grouping was not supported. While lower income African American participants were indeed the lowest scoring group on knowledge and preparation, the simple main effects test revealed that the differences between groups were only statistically significant between higher income Caucasian participants and each of the other race and income level groupings. With regard to menstrual attitudes, lower income African American participants again scored the lowest on the measure. But the differences among the

four groups were not statistically significant. This is peculiar when one considers that (a) results from the measures of menstrual knowledge and feelings of preparation showed a significant interaction among race and income level and (b) it has been documented that menstrual knowledge and feelings of preparation for menarche are positively correlated with menstrual attitudes (Brooks-Gunn & Ruble, 1982; Brumberg, 1997; Houppert, 1999; Koff & Rierdan, 1995).

Hypothesis 1, which postulated that African American participants would score lower on measures of menstrual knowledge, preparation for menarche, and menstrual attitudes, was partially corroborated. Although African American participants did, on average, have lower attitude scores than Caucasian participants, there was no significant difference between the two groups. However, African American participants were significantly less knowledgeable about menstruation and less prepared for menarche than Caucasian participants. Regardless, the nature of the interaction effect, wherein significant differences were found only when higher income Caucasian participants were involved, rendered these findings inconsequential.

Hypothesis 2, which proposed that participants from a lower income level would score lower than participants from a higher income level on measures of menstrual knowledge, preparation for menarche, and menstrual attitudes was fully confirmed. However, as in the results of the first hypothesis, the discoveries regarding knowledge and preparation were deemed not meaningful in light of the interaction effects. Furthermore, while the difference between the income levels in their menstrual attitudes was significant, both means were closest to the “neutral” scoring range. Therefore, caution should be taken when interpreting this finding. Although higher income participants had less negative menstrual attitudes than lower income

participants, the actual average scores on the measures and their ambivalent meaning indicate that the difference among the income groups may not be of major importance.

Taken together, the key information revealed by the findings of this study is that, on average, higher income Caucasians were notably different from the other race and income level groupings. As many other studies have concluded (e.g., Adler et al., 1993; Bradley & Corwyn, 2002; Evans & Stoddart, 1990; Feinstein, 1993; Keating & Hertzman, 1999; National Research Council, 1995), being Caucasian and coming from a higher income level is a protective factor against maladjustment in development and provides better prospects for education, social opportunities, access to quality health care services, and general well-being. Therefore, it is not surprising that higher income Caucasians in the present study fared better than the other race and income level groupings in their reactions to menarche and menstruation.

6.3 RESULTS RELATED TO THE QUALITATIVE DATA

As part of the exploration of participants' menstrual knowledge and preparation for menarche, qualitative data was collected. With regard to the question of why girls menstruate, overall, participants' responses tended to be framed in a negative light, a finding that is not surprising given that history has shown that menstruation has been stigmatized over time and across cultures (Delaney et al., 1988). Notably, however, over one quarter of respondents stated that they did not know why girls menstruate. However, it is unclear as to whether participants in this study truly did not know why girls menstruate or if their lack of answer is evidence of the presence of the menstrual communication taboo (Hewitt, 2000; Kissling, 1996; Williams, 1983), which stipulates that discussions of menstruation should be nonexistent or, at the very least,

covert. This taboo particularly appeared to be the case for lower income African American participants whom were much more likely than their counterparts to indicate no knowledge about the cause of menstruation. This finding echoes results from a recent study wherein 17 low-income African American women of various ages were interviewed about menstrual communications (Cooper & Koch, 2007). While all the women in the Cooper & Koch study expressed a desire for better communication, they described themselves as avoidant about discussing menstrual events throughout their lives, no doubt leading to confusion, negative menstrual attitudes, and inaccurate knowledge about menstruation, menopause, and menstrual-related health.

Apparently, contributing to the extremely low knowledge scores from lower income African American participants was their reliance on folk knowledge to describe why girls menstruate. Much of this folk knowledge was religious in nature, a source that, traditionally, through its seclusion, exclusion, and purification practices of menstruating women, has presented negative messages about menstruation (Delaney et al., 1988; Schuman, 2001; Shuttle & Redgrove, 2005; Smith, 1991; Weideger, 1976). Additionally, while the responses of lower income Caucasian participants were more mixed in terms of folk knowledge and scientific knowledge, their overall answers were still incorrect. Furthermore, lower income African American and lower income Caucasian participants were the only groups whom described the reason for menstruation as a form of punishment against women. Given the cultural history of menstruation, these findings are expected. Even so, they are striking when one takes into account that most of the participants in the study attended the same school and received similar, if not the same, menstrual education in their health classes. While higher income African American participants were the third highest scoring group, as a whole their responses still tended to be

incorrect. Lower income African American, lower income Caucasian, and higher income African American participants apparently continued to rely on less accurate sources of information about menstruation than higher income Caucasian participants whom reported the most correct menstrual knowledge of the four race and income level groupings.

Future research should examine (a) why lower income African American girls with similar access to menstrual education in schools as Caucasian girls and girls from higher income families continue to hold beliefs that emerge from folk wisdom, (b) why both lower income African American and lower income Caucasian girls were more likely to describe menstruation as a form of punishment, and (c) why higher income Caucasian girls were more likely to have correct menstrual knowledge than their counterparts. One possible cause may be that African American and Caucasian girls from lower income families and African American girls from higher income backgrounds may have less appropriate and accurate resources for information about menstruation outside of the school setting. This suggestion is supported by the number of sources of menstrual information reported in this study. Higher income Caucasian girls reported more menstrual education sources than the other groups. They were also significantly more likely to report healthcare and educational professionals as sources utilized to learn about menstruation. Because of the nature of their work, healthcare and educational professionals can be expected to provide more quality menstrual information than perhaps family members, peers, or the media.

Concerning the question of what participants would have liked to have known about menstruation before reaching menarche, the most interesting finding was that the vast majority of these participants either failed to indicate what information they would have liked to have known about menstruation before reaching menarche or they stated that there was nothing they would

have liked to have know prior to menarche. This is an alarming result when it is considered that three of the four race and income level groupings (all but the higher income Caucasian group) admitted feeling unprepared for menarche.

The previously discussed communication taboo (Hewitt, 2000; Kissling, 1996; Williams, 1983) may be an explanation for participants' lack of desire for information prior to menarche. Respondents who claimed no need for premenarcheal menstrual preparation may simply be working to avoid the topic. This would help explain why so many participants reported feeling underprepared for menarche, but unwilling to seek more information. Results imitate outcomes from Cooper and Koch's (2007) menstrual communications study, in which respondents reported steering clear of menstrual discussions in their daily lives. Even so, more studies need to examine the lack of preparation for menstruation of girls' from various race and income levels, particularly the factors that may be preventing them from seeking out information that would help ready them for menarche.

Another interesting finding was that, of those few participants who did respond to the question, it was both lower and higher income Caucasian participants who specifically requested concealment knowledge. With responses relating to wanting to know how to avoid embarrassing situations and keep menstruation secret, these participants appeared to be influenced by the concealment taboo, which stipulates that menstruation is something that should be hidden and kept secret (Laws, 1990). A possible reason for this focus on concealment may be these girls' reliance on the media (i.e., magazines, websites, and television) for information about menstruation, a source that is notorious for its negative messages and for making concealment and secrecy a chief selling point for their products (Brumberg, 1997; Erchull et al., 2002; Havens & Swenson, 1988; Houppert, 1999). For example, *Seventeen*, one of the most popular magazines

read by adolescents, carries a column devoted to readers' stories of humiliating moments. Many of these accounts focus on embarrassing menstruation stories. The magazine has even gone on to publish a book for adolescents with a collection of these stories entitled *Seventeen: Trauma-Rama: Life's Most Embarrassing Moments*. Additionally, *Seventeen* continues to sponsor the concealment taboo by running ads that remind girls that "Surprises are good for birthdays. Not periods!" (March 2008).

Accompanying lower and higher income Caucasian participants' requests for information on concealing menstruation was the desire for information associated with emotional and psychological needs, such as learning how to tell if their menstrual experience is normal and wanting to know what it feels like to menstruate. This is consistent with previous research in which girls have indicated feeling unprepared for menarche, particularly as it related to their emotional and psychological needs (Koff & Rierdan, 1995, 1996; Koff et al., 1982; Lee et al., 1996; McGrory, 1990; McKeever, 1984; Menke, 1983; Moore, 1995). The menstrual education literature sponsored by the feminine hygiene industry, which was no doubt used by some participants of this study, fails to adequately address the emotional and psychological needs of individuals for which the literature is intended (Brumberg, 1997; Erchull et al., 2002; Havens & Svenson, 1988; Houppert, 1999; Whisnant et al., 1975).

Altogether, the findings from this study suggest that, as a whole, girls lack knowledge and preparation for menstruation, but their attitudes do not appear to be negatively affected by their ignorance. Additionally, by themselves race and income level do not seem to play a substantial role in adolescents' understanding of menarche and menstruation. They do, however, seem to interact, with the real differences lying between higher income Caucasians and each of the other three racial and income level groupings.

6.4 LIMITATIONS OF THE CURRENT STUDY

There are several limitations inherent in the current study that must be considered in the interpretation of results. Two major limitations relate to the appropriate generalizability of the results. Firstly, income level was solely determined by adolescents' self-report of whether or not they qualify for a free or reduced lunch. While this measure has been used in previous studies to indicate socioeconomic status, using only this benchmark fails to make distinctions between all the levels of poverty, education, occupational status, and wealth that fall on the continuum of socioeconomic status. Future studies should utilize multiple methods of identifying income level. Doing so would allow for comparisons among those living in extreme poverty, middle-class adolescents, the wealthy, and all other class divisions within. Additionally, the study focused only on African American and Caucasian adolescents. All other races or combination of races (i.e., bi-racial and multi-racial) were excluded from the sample, thus failing to account for those individuals' experiences and viewpoints. Because so many racial groups are present in America, it is vital that these populations be considered in future research. It may be of particular interest to focus on individuals who come from bi- and multi-racial groups. How they respond to menarche and menstruation may reflect the racial group with which they most identify. Broadening the scope of income level and racial groups included in studies of adolescents' reactions to menarche and menstruation will also allow for more generalizability of future findings.

Another obvious limitation is that this study utilized only postmenarcheal participants; therefore, some of the responses provided are of a retrospective nature and are, consequently, suspect to potential problems inherent in recall. This study also relied on self-report measures. While this enhances participants' anonymity and privacy, it also fails to allow for clarification of

items which some participants may have found confusing. Furthermore, this study was not an experimental design. As a result, only associations and not causal inferences regarding the finding can be made.

Finally, the adolescent girls in this study represent a convenience sample, thus it must be considered that the results are affected by volunteer bias. Because this study dealt with minors who required parental permission to participate, the volunteer bias may be further magnified. A girl had to express a desire to participate and she had to have a parent that was supportive of that desire and willing to complete a consent form. So the biases of both the participants and her parent have to be considered. However, it should be noted that this is a difficult population to reach, especially given the sensitive nature of the questions asked within the study. Therefore, the findings should not be disregarded simply because of the limitations inherent in this research.

6.5 SUGGESTIONS FOR FUTURE RESEARCH

There are several directions in which future research should proceed. In addition to broader sampling of racial and economic diversity, it is imperative to determine why girls from certain racial and income level groups are less knowledgeable about menstruation and feel less prepared for menarche. Specifically, why does accurate menstrual knowledge seem to be missing for lower income African Americans and Caucasians and higher income African Americans, especially in the present case, when they are receiving the same in-school education as higher income Caucasian girls? Why do they continue to hold beliefs that emerge from folk wisdom and view menstruation as a form of punishment? What is preventing them from seeking out information that would help prepare them for menarche?

The role that menstrual taboos appear to play in girls' menstrual knowledge and menarcheal preparation should also receive more attention. Why are low-income African American girls so susceptible to the communication taboo and, therefore, so avoidant about the topic of menstruation? Why do certain groups of girls, such as the higher and lower income Caucasians in this study, seem more likely to internalize the concealment taboo? Identifying vulnerabilities that make some girls more predisposed to feeling a need for silence or secrecy may lead to ways of preventing those behaviors in the future and effectively addressing the feeling of shame inherent in present day menstrual taboos.

Future studies should also consider using premenarcheal participants from diverse racial and socioeconomic backgrounds. This would allow for comparisons between girls awaiting their first periods and those who have already experienced it and the specific issues associated with each group. What's more, identifying problems with which premenarcheal girls from various racial groups and social classes struggle provides opportunities to address them before menarche occurs.

From a measurement standpoint, having participants complete both self-report measures and face-to-face interviews could be valuable. While self-report measures completed in private may result in more honest answers there is great potential for participants to skip or ignore certain questions or items. Face-to-face interviews provide the opportunity to ask probing and follow-up questions based on participants' responses, thus providing more detailed answers. Combining those answers with the self-report responses would offer a richer understanding of how adolescents from differing racial and socioeconomic backgrounds experience menarche and menstruation.

6.6 SUMMARY AND CONCLUSIONS

The results of the three dependent measures revealed that, on the whole, participants had a poor understanding of menstruation, were unprepared for menarche, and had ambivalent menstrual attitudes. In particular, higher income Caucasians participants, with significantly better knowledge and preparation scores, stood apart from the other three racial and income level groupings. This is not surprising given that previous researchers (e.g., Adler et al., 1993; Bradley & Corwyn, 2002; Evans & Stoddart, 1990; Feinstein, 1993; Keating & Hertzman, 1999; National Research Council, 1995) have suggested that being Caucasian and from a higher socioeconomic status allows for better general well-being, as well as better education, social opportunities, and access to health care.

Furthermore, participants appeared to incorporate menstrual taboos into how they approached learning about menstruation and preparing for menarche, but not necessarily in their development of menstrual attitudes. It is well established that taboos are a dominant part of the framework in which menstruation is viewed (Britton, 1996; Delaney, et al., 1988; Deutsch, 1944; Houppert, 1999; Laws, 1990; Thompson, 1942; Williams, 1983). Previous studies have shown that young girls internalize these menstrual taboos, which then impact their outlook of menstruation and their menstrual behaviors (Britton, 1996; Hewitt, 2000; Houppert, 1999; Kissling, 1996; Roberts, et al., 2002; Williams, 1983). Findings from this study seem to support that notion, particularly in terms of the communication and concealment taboos.

The communication taboo restricts discussion about menstruation and, in turn, limits what girls can learn and understand about menstruation. Participants' adherence to this taboo may have played a role in the low menstrual knowledge and preparation scores they received. This would also explain why so many participants had a tendency to fail to answer the question

about why girls get periods and to state that there was no additional preparatory information they would have liked before menarche.

The concealment taboo encourages discretion and secrecy around the event of menstruation. It stipulates that no evidence of menstruation should exist. Based on participants' answers regarding the type of information wanted before menarche, both higher and lower income Caucasian participants appeared to be the only group overtly influenced by this taboo. The type of information they wanted centered on how to, as one participant put it, "keep it secret" and how to avoid leaks and other embarrassing menstrual situations.

What effect these taboos had, if any, on participants' menstrual attitudes is unclear. Because, overall, participants reported neutral attitudes, this implies that the lack of knowledge and preparation reported by participants and the strength of the taboos they appear to have internalized did not extend to their menstrual attitudes. For higher income Caucasian participants in particular, having greater menstrual knowledge and preparation for menarche than their counterparts may not have been a protective factor when it came to the menstrual attitudes they had developed.

Taken together, the findings from this study indicate that, as a whole, girls are unknowledgeable and unprepared for menstruation, but their attitudes do not seem to be negatively affected by their ignorance. Additionally, by themselves race and income level do not seem to play a significant role in adolescents' understanding of menarche and menstruation. However, they do seem to interact, with the real differences lying between higher income Caucasians and each of the other three racial and income level groupings.

It is evident that theories' regarding girls understanding of menarche and menstruation need to take various social and cultural factors into account. Daily practices in how professionals

broach the topic of menstruation both with adolescents and their parents should also consider these factors. The results from this study could be useful for health care providers and educators in improving the ways in which information about menstruation is addressed and disseminated. For those who work with various race and income populations, they will be able to tailor the delivery method of information so that it is better received by different racial and income groups. These results would also prove useful in the development of programs targeted to specific racial or income level groups to educate and empower adolescent girls about menstruation and their health.

APPENDIX A

CONSENT FORM

CONSENT TO ACT AS A SUBJECT IN A RESEARCH STUDY

TITLE: Adolescents' Understanding of Menstruation

PRINCIPAL INVESTIGATOR: Lisandra R. White, Graduate Student
WWPH 5940, Pittsburgh, PA 15213; Phone: 412.401.6334
e-mail: lmrst38@pitt.edu

FACULTY MENTOR: Jane E. Pizzolato, Ph.D., Professor of Psychiatry
WWPH 5940, Pittsburgh, PA 15213; Phone: 412.624.6356
e-mail: pizzolat@pitt.edu

The purpose of this study is to investigate the attitudes, feelings, and knowledge girls have about menstruation. Approximately 250 female adolescent girls will be invited to participate in this research study. If you participate, you will complete a survey that asks questions about your understanding of and opinions about menstruation. The survey will take approximately 15-20 minutes to complete.

There is little risk involved in this study. No invasive procedures or medications are included. You will not be required to put your name on the survey; therefore, your responses will be anonymous. The only risk associated with your participation is that you may feel uncomfortable by some of the items in the survey, but you do not have to answer any questions you do not want to. In addition, you may discuss any feelings and concerns with me if you would like.

There is no cost to you for participating in this study, and you will not directly benefit from participating in this study. However, your participation could help us understand the needs of and challenges faced by girls who are adjusting to puberty, which can benefit you indirectly. In the future, this study may help make it easier for other girls to go through puberty.

No data collected for this study will have your name or any other information that identifies you on it. The only record with your name on it will be this consent form. These consent forms will be kept strictly confidential and will be stored in locked files and retained for five years. Your identity will not be revealed in any description or publications of this research. Your individual results will not be shared with your parents or teachers. However, a report may be provided to the school discussing the results. This report will combine all participants' answers and no names will be included. It is possible that authorized representatives from the University of Pittsburgh Research Conduct and Compliance Office (including the University of Pittsburgh IRB) may review your data for the purpose of monitoring the conduct of this study. In very unusual cases, your research records may be released in response to an order from a court of law. Also, if the investigators learn that you or someone with whom you are involved is in serious danger of potential harm, they will need to inform the appropriate agencies, as required by Pennsylvania law.

Your participation in this study is completely voluntary. You may refuse to take part in it, or may stop participating at any time. Your decision will not affect your relationship with your school or the University of Pittsburgh.

If you have questions about this research study, you may contact the investigators listed at the beginning of this consent form. If you have questions about your rights as a research subject, please contact the Human Subjects Protection Advocate at the University of Pittsburgh IRB Office, 1.866.212.2668.

SUBJECT'S CERTIFICATION

- I have read the consent form for this study and any questions I had, including explanation of all terminology, have been answered to my satisfaction. A copy of this consent form has been provided to me.
- I understand that I am encouraged to ask questions about any aspect of this research study during the course of this study, and that those questions will be answered by the researchers listed on the first page of this form.
- I understand that my participation in this study is voluntary and that I am free to refuse to participate or to withdraw my consent and discontinue my participation in this study at any time without affecting my future relationship with this institution.
- I agree to participate in this study.

Subject's Printed Name

Subject's Signature

Date

PARENT'S CERTIFICATION

- I have read the consent form for this study and any questions I had, including explanation of all terminology, have been answered to my satisfaction. A copy of this consent form has been provided to me.
- I understand that I am encouraged to ask questions about any aspect of this research study during the course of this study, and that those questions will be answered by the researchers listed on the first page of this form.
- As the parent, I agree to allow the youth to participate in this study.

Parent's Printed Name

Parent's Signature

Date

CERTIFICATION OF INFORMED CONSENT

I certify that I have explained the nature and purpose of this research study to the above-named individual, and I have discussed the potential benefits and possible risks of study participation. Any questions the individual has about this study have been answered, and we will always be available to address future questions as they arise.

Lisandra Rodriguez White
Printed Name of Person Obtaining Consent

Principal Investigator
Role in Research Study

Signature of Person Obtaining Consent

Date

APPENDIX B

QUESTIONNAIRE

Please help me learn what girls like you already know or want to know about having your period and becoming a woman.

1. **What is your date of birth? (mm/dd/yy)** _____

2. **How long have you had your period?** _____ years and _____ months

3. **What is your racial background?** (circle all that apply)
- a. African-American or Black
 - b. Caucasian or White (for example, Italian, Irish, German, etc.)
 - c. Asian, Asian American, or Indian (for example, Japanese, Chinese, etc.)
 - d. Hispanic or Latina (for example, Puerto Rican, Cuban, etc.)
 - e. Native American (for example, Cherokee, Apache, etc.)
 - h. Other

4. **What is your home zip code?** _____

5. **Do you qualify for a free lunch or a reduced lunch? If you are not sure about the answer to this question, please ask a parent.**
- a. No
 - b. Yes

6. **Circle all the people you live with listed in the checklist below.**
- a. Mother
 - b. Father
 - c. Step-mother
 - d. Step-father
 - e. Brother(s)
 - f. Sister(s)
 - g. Step- or half- brother
 - h. Step- or half-sister
 - i. Aunt
 - j. Uncle
 - k. Cousin
 - l. Grandmother
 - m. Grandfather
 - n. Other people (please list the relationship to you):

7. **Tell me in your own words why girls get periods.**

8. **Circle all the people who gave you information about periods.**

- a. Mother
- b. Father
- c. Step-mother
- d. Step-father
- e. Brother(s)
- f. Sister(s)
- g. Step- or half- brother
- h. Step- or half-sister
- i. Aunt
- j. Uncle
- k. Cousin
- l. Grandmother
- m. Grandfather
- n. Doctor/Nurse
- o. Teacher
- p. Other people:

9. **Is there anything you wish you knew before you got your first period?**

Please read each sentence and tell me how much you agree or disagree with each one. Please circle only one answer for each sentence.

	1	2	3	4	5
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
10.	I was given helpful information about periods before I got my first one.				1 2 3 4 5
11.	I felt ready when I got my first period.				1 2 3 4 5
12.	I knew what to do when I got my first period.				1 2 3 4 5
13.	I understood what was happening to my body when I got my first period.				1 2 3 4 5
14.	I had enough stuff (like pad or tampons) when I got my first period.				1 2 3 4 5

	1	2	3	4	5
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
15.	I knew how to use pad or tampons when I got my first period.				1 2 3 4 5
16.	I knew what to expect before I got my first period.				1 2 3 4 5
17.	When I am having my period, I am scared that the boys will find out.				1 2 3 4 5
18.	I have not told anyone that my periods have started.				1 2 3 4 5
19.	I was happy when I found out about menstruation.				1 2 3 4 5
20.	I am bothered by buying tampons or pads at school or at a store.				1 2 3 4 5
21.	Just the fact that I have my period makes me uncomfortable.				1 2 3 4 5
22.	I was scared stiff when my first period started.				1 2 3 4 5
23.	I worry a lot about my periods starting unexpectedly.				1 2 3 4 5
24.	I do not like to be seen putting pads in the garbage.				1 2 3 4 5
25.	When I talk with my friends about periods, I feel uncomfortable about it.				1 2 3 4 5
26.	I worry a lot that blood will leak through my clothes.				1 2 3 4 5
27.	I couldn't wait to get my first period.				1 2 3 4 5
28.	I like to talk about periods with my friends.				1 2 3 4 5
29.	I am embarrassed to ask questions about periods.				1 2 3 4 5
30.	I feel excited when I get my period.				1 2 3 4 5
31.	I feel very grown up when I have my period.				1 2 3 4 5
32.	I am terrified that people will find out when I have my period.				1 2 3 4 5

	1	2	3	4	5
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
33.	I feel uncomfortable studying about menstruation at school.				1 2 3 4 5
34.	I feel it's OK to discuss periods with boys.				1 2 3 4 5
35.	Every time someone mentions "period", I get nervous.				1 2 3 4 5
36.	I am glad I have grown mature enough to menstruate.				1 2 3 4 5
37.	I feel special when I have my period.				1 2 3 4 5
38.	I feel proud when I have my period.				1 2 3 4 5
39.	When I began having my period, I changed into a woman.				1 2 3 4 5
40.	I feel ugly and gross when I have my period.				1 2 3 4 5

Thank you for participating in this study!

APPENDIX C

COVER LETTER

May 30, 2008

Dear Parent,

I am writing to you because you have a daughter who may be interested in participating in a research study I am conducting. I am a graduate student at the University of Pittsburgh and would like to ask you to consider allowing your daughter to participate in this study. Your daughter's participation in the study will involve her completing a brief survey about her experiences with menstruation. Attach is a consent form for your daughter to participate. This study has received approval from the University of Pittsburgh's Institutional Review Board.

Please carefully read the consent form with your daughter. If you agree to allow her to participate in the study, please sign your name under the section titled "Parent's Certification" and initial the bottom of each page where indicated. Your daughter will also need to sign under the section titled "Subject's Certification". Return the signed consent form in one of the provided self-addressed, stamped envelope. After your daughter has completed the survey, return it in the second self-addressed, stamped envelope. She does not need to put her name on the survey. The purpose of having two separate envelopes is to protect you and your daughter's privacy.

Please return the signed consent form and the completed survey by June 15, 2008. Should you have any questions or concerns please don't hesitate to contact me at 412.401.6334 or lmrst38@pitt.edu.

Sincerely,

Lisandra Rodriguez White
Doctoral Candidate, Psychology in Education
University of Pittsburgh

REFERENCES

- Abraham, S., Fraser, L., Gebski, V., Knight, C. Llewellyn-Jones, D., Mira, M., & McNeil, D. (1985). Menstruation, menstrual protection, and menstrual cycle problems. *The Medical Journal of Australia*, *142*, 247-251.
- Adler, N. E., Boyce, W. T., Chesney, M. A., Folkman, S., and Syme, S. L. (1993). Socioeconomic inequalities in health: No easy solution. *Journal of the American Medical Association*, *269*, 3140-3145.
- Belsky, J., Steinberg L., & Draper, P. (1991). Childhood experience, interpersonal development, and reproductive strategy: An evolutionary theory of socialization. *Child Development*, *62*, 647-670.
- Benedict, R. (1944). *Patterns of culture*. Boston: Houghton Mifflin.
- Benjet, C., & Hernandez-Guzman, L. (2002). A short-term longitudinal study of pubertal change, gender, and psychological well-being of Mexican early adolescents. *Journal of Youth and Adolescence*, *31*, 429-442.
- Blum, R. W., Beuhring, T, Shew, M. L., Bearinger, L. H., Sieving, R. E., & Resnick, M. D. (2000). The effects of race/ethnicity, income, family structure on adolescent risk behaviors. *American Journal of Public Health*, *90*, 1879-1884.
- Bradley, R. H., & Corwyn, R. F. (2002). Socioeconomic status and child development. *Annual Review of Psychology*, *53*, 371-399.
- Britton, C. J. (1996). Learning about 'the curse': An anthropological perspective on experiences of menstruation. *Women's Studies International Forum*, *19*, 645-653.
- Brooks-Gunn, J. (1992). Growing up female: Stressful events and the transition to adolescence. In T. M. Field, P. McCabe, & N. Schneiderman (Eds.), *Stress and coping in infancy and childhood* (pp. 119-145). Hillsdale, NJ: Erlbaum.
- Brooks-Gunn, J., & Petersen, A. (Eds.). (2004). *Girls at puberty: Biological and psychosocial perspectives*. (2nd ed.). New York: Springer.

- Brooks-Gunn, J., Petersen, A., & Eichorn, D. (1985). The study of maturation timing effects in adolescence. *Journal of Youth and Adolescence*, *14*, 149-161.
- Brooks-Gunn, J., & Ruble, D. N. (1982). The development of menstrual related beliefs and behaviors during early adolescence. *Child Development*, *53*, 1567-1577.
- Brumberg, J. J. (1997). *The body project: An intimate history of American girls*. Random House: New York.
- Buchanan, M. C., Villagran, M. M., & Ragan, S. L. (2001). Women, menopause, and (ms.)information: Communication about the climacteric. *Health Communication*, *14* (1), 99-119.
- Chrisler, J. C., & Zittel, C. B. (1998). Menarche stories: Reminiscences of college students from Lithuania, Malaysia, Sudan, and the United States. *Health Care for Women International*, *19*, 303-312.
- Chumela, W. C., Schubert, C. M., Roche, A. F., Kulin, H. E., Lee, P. A., Himes, J. H., et al. (2003). Age at menarche and racial comparisons in U.S. girls. *Pediatrics*, *111*, 110-113.
- Cooper, S. C., & Koch, P. B. (2007). "Nobody told me nothing": Communication about menstruation among low-income African-American women. *Women and Health*, *46*, 57-78.
- Costos, D., Ackerman, R., & Paradis, L. (2002). Recollections of menarche: Communication between mothers and daughters regarding menstruation. *Sex Roles*, *46*, 49-59.
- Cumming, D., Cumming, C., Kieren, D. (1991). Menstrual mythology and sources of information about menstruation. *Educational Psychology and Family Studies*, *164*, 472-476.
- Danza, R. (1983). Menarche: Its effects on mother-daughter and father-daughter interactions. In S. Golub (Ed.), *Menarche: The transition from girl to woman* (pp. 99-106). Lexington, MA: Lexington Books.
- Delaney, J., Lupton, M. J., & Toth, E. (1988). *The curse: A cultural history of menstruation* (2nd ed.). Chicago: University of Illinois Press.
- De Troyer, K., Herbert, J. A., Johnson, J. A., & Korte, A. (Eds.). (2003). *Wholly woman, holy blood: A feminist critique of purity and impurity*. New York: Continuum International Publishing Group.
- Deutsch, H. (1944). *The psychology of women: A psychoanalytic interpretation*. New York: Grune & Stratton.

- Erchull, M. J., Chrisler, J. C., Gorman, J. A., & Johnston-Robledo, I. (2002). Education and advertising: A content analysis of commercially produced booklets about menstruation. *Journal of Early Adolescence, 22*, 455-474.
- Evans, R.G., & Stoddart, G. (1990). Producing health: Consuming health care. *Social Science and Medicine, 31*, 1347-1363.
- Farran, D. C., & Margolis, L. H. (1987). The family economic environment as a context for children's development. *New Directions for Child Development, 35*, 69-87.
- Federal Register (2007). *Income Eligibility Guidelines, 72* (38), 8685-8688.
- Feinstein, J.S. (1993). The relationship between socioeconomic status and health: A review of the literature. *Milbank Quarterly, 71*, 279-322.
- Frazer, J. G. (1951). The golden bough. In J. Delaney, M. J. Lupton, & E. Toth. *The curse: A cultural history of menstruation* (2nd ed.), (pp. 7-17). Chicago: University of Illinois Press.
- Ge, X., Conger, R. D., & Elder, G. H. (1996). Coming of age too early: Pubertal influences on girls' vulnerability to psychological distress. *Child Development, 67*, 3386-3400.
- Geronimus, A. T. (1996). Black/White differences in the relationship of maternal age to birth weight: A population-based test of the weathering hypothesis. *Social Science and Medicine, 42*, 589-597.
- Gillock, K. L., & Reyes, O. (1999). Stress, support, and academic performance of urban, low-income, Mexican-American adolescents. *Journal of Youth and Adolescence, 28*, 259-282.
- Gillooly, J. (1998). *Before she gets her period: Talking with your daughter about menstruation*. Los Angeles: Perspective Publishing.
- Golub, S. (1992). *Periods: From menarche to menopause*. Newbury Park: Sage Publications.
- Graber, J. A., Brooks-Gunn, J., & Warren, M. P. (1995). The antecedents of menarcheal age: Heredity, family environment, and stressful life events. *Child Development, 66*, 346-359.
- Havens, B., & Svenson, I. (1988). Imagery associated with menstruation in advertising targeted to adolescent women. *Adolescence, 23*, 89-97.
- Herman-Giddens, M. E., Slora, E. J., Wasserman, R. C., Bourdony, C. J., Bhapkar, M. V., Koch, G. G., et al. (1997). Secondary sexual characteristics and menses in young girls seen in office practice: A study from the Pediatric Research in Office Settings Network. *Pediatrics, 99*, 505-512.

- Hewitt, J. P. (2000). *Self and society: A symbolic interactionist social psychology* (8th ed.). Needham Heights, MA: Allyn and Bacon.
- Houppert, K. (1999). *The curse: Confronting the last unmentionable taboo: Menstruation*. New York: Farrar, Straus, & Giroux.
- Hockenberry-Eaton, M., Richman, M. J., Dilorio, C., Rivero, T., Maibach, E. (1996). Mother and adolescent knowledge of sexual development: The effects of age, gender, and sexual experience. *Adolescence*, 31, 35-47.
- Janes, B. A., & Morse, J. M. (1990). Adolescent girls' perceptions of and preparation for menarche. *The Canadian Journal of Nursing Research*, 22, 47-59.
- Jargowsky, P. A., & Bane, M. (1990). Ghetto poverty: Basic questions. In L. E. Lynn, Jr., & M. G. H. McGeary (Eds.), *Inner-city poverty in the United States* (pp. 16–67). Washington, DC: National Academy Press.
- Jencks, C., & Mayer, S. E. (1990). Residential segregation, job proximity and Black job opportunities. In L. E. Lynn, Jr., & M.G.H. McGeary (Eds.), *Inner-city poverty in the United States* (pp.187–222). Washington, DC: National Academy Press.
- Johnson, S. M., Snow, L. F., & Mayhew, H. E. (1978). Limited patient knowledge as a reproductive risk factor. *Journal of Family Planning*, 6, 855-862.
- Keating, D.P., & Hertzman, C. (Eds.). (1999). *Developmental health and the wealth of nations: Social, biological and educational dynamics*. New York: Guilford Press.
- Kim, K., & Smith, P. K. (1998). Retrospective survey of parental marital relations and child reproductive development. *International Journal of Behavioral Development*, 22, 729–751.
- Kissling, E. A. (1996). 'That's just a basic teen-age rule': Girls' linguistic strategies for managing the menstrual communication taboo. *Journal of Applied Communication Research*, 24, 292-309.
- Koff, E., & Rierdan, J. (1995). Early adolescent girls' understanding of menstruation. *Women and Health*, 22, 1-19.
- Koff, E., & Rierdan, J. (1996). Pre-menarcheal expectations and post-menarcheal experiences of positive and negative menstrual related changes. *Journal of Adolescent Health*, 18, 286-291.
- Koff, E., Rierdan, J., & and Jacobson, S. (1981). The personal and interpersonal significance of menarche. *The Journal of the American Academy of Child Psychiatry*, 20, 148-158.

- Koff, E., Rierdan, J., & Sheingold, K. (1982). Memories of menarche: Age, preparation, and prior knowledge as determinants of initial menstrual experience. *Journal of Youth and Adolescence*, *11*, 1-9.
- Koff, E., Rierdan, J., & Stubbs, M. L. (1990). Conceptions and misconceptions of the menstrual cycle. *Women and Health*, *16*, 119-135.
- Laws, S. (1990). *Issues of Blood: The Politics of Menstruation*. London: Macmillan.
- Lee, A. (2001). Premenstrual distress: Its measurement and relationship with psychosocial variables among Chinese women in Hong Kong. *Dissertation Abstract International*, *61*, 4413.
- Lee, J., & Sasser-Coen, J. (1996). Memories of menarche: Older women remember their first period. *Journal of Aging Studies*, *10*, 83-101.
- Lindahl, C., McNamara, J., & Lindow, J. (Eds.). (2002). *Medieval folklore: A guide to myths, legends, tales, beliefs, and customs*. Oxford: Oxford University Press.
- Livson, N., & Peskin, H. (1980). Perspectives on adolescence from longitudinal research. In J. Adelson (Ed.), *Handbook of adolescent psychology* (pp. 47-98). New York: Wiley.
- Ludwig, J., Ladd, H. F., & Duncan, G. J. (2001). The effects of urban poverty on educational outcomes: Evidence from a randomized experiment. In W. G. Gale & J. Pack (Eds.), *Brookings-Wharton Papers on Urban Affairs, Vol. 2* (pp. 147-201). Washington DC: Brookings Institution Press.
- Ludwig, J., Duncan, G. J., & Hirschfield, P. (2001). The effects of urban poverty on juvenile crime: Evidence from a randomized housing-mobility experiment. *Quarterly Journal of Economics*, *116*, 665-679.
- Malina, R. M., Bouchard, C., & Beunen, G. (1988). Human growth: Selected aspects of current research on well-nourished children. *Annual Review of Anthropology*, *17*, 187-219.
- Marvan, M. L., Morales, C., & Cortes-Iniestra, S. (2006). Emotional reactions to menarche among Mexican women of different generations. *Sex Roles*, *54*, 323-330.
- Marvan, M. L., Vacio, A., & Espinosa-Hernandez, G. (2001). A comparison of menstrual changes expect by pre-menarcheal and post-menarcheal adolescents in Mexico. *Journal of School Health*, *71*, 458-461.
- McGrory, A. (1990). Menarche: Responses of early adolescent females. *Adolescence*, *25*, 265-270.
- McKeever, P. (1984). The perpetuation of menstrual shame: Implications and directions. *Women and Health*, *9*, 33-45.

- McPherson, M. E., & Korfine, L. (2004). Menstruation across time: Menarche, menstrual attitudes, experiences, and behaviors. *Women's Health Issues, 14*, 193-200.
- Meggitt, M. J. (1964). Male-female relationships in the Highlands of Australian New Guinea. *American Anthropologist, 66*, 204-224.
- Menke, E. M. (1983). Menstrual beliefs and experiences of mother-daughter dyads. In S. Golub (Ed.), *Menarche: The transition from girl to woman* (pp.133-137). Lexington, MA: Lexington Books.
- Moffitt, T. E., Caspi, A., Belsky, J., & Silva, P. A. (1992). Childhood experience and the onset of menarche: A test of a sociobiological model. *Child Development, 63*, 47-58.
- Moore, S. M. (1995). Girls' understanding and social constructions of menarche. *Journal of Adolescent Health, 18*, 87-104.
- Morse, J. M., Kieren, D., & Bottorff, J. (1993). The adolescent menstrual attitude questionnaire, part I: Scale construction. *Health Care for Women International, 14*, 39-62.
- National Research Council (1995). *Losing Generations: Adolescents in High-Risk Settings*. Washington, D.C.: National Academy Press.
- Novak, E. (1916). The superstition and folklore of menstruation. *John Hopkins Hospital Bulletin, 27*, 86-95.
- Padilla, A. M., & Baird, T. L. (1991). Mexican-American adolescent sexuality and sexual knowledge: An exploratory study. *Hispanic Journal of Behavioral Sciences, 13*, 95-104.
- Paige, K. E. (1973). Women learn to sing the menstrual blues. *Psychology Today, 7*(4), 41-46.
- Petersen, A. C. (1983). Menarche: Meaning of measures and measuring meaning. In S. Golub (Ed.), *Menarche: The transition from girl to woman* (pp.63-76). Lexington, MA: Lexington Books.
- Pipher, M. (1994). *Reviving Ophelia: Saving the selves of adolescent girls*. New York: Ballantine Books.
- Pliny, C. (1989). *Natural history: Books 3-7* (H. Rackham, Trans.). Cambridge: Harvard University Press. (Original work published 77 AD).
- Pogrebin, L. (1991). *Deborah, Golda, and me: Being female and Jewish in America*. New York: Crown.
- Rambam, Hilchot *Issurei Biah*, 11:16.

- Rempel, J. K., & Baumgartner, B. (2003). The relationship between attitudes toward menstruation and sexual attitudes, desires, and behavior in women. *Archives of Sexual Behavior*, 32, 155-163.
- Richardson, J. L., Radziszewska, B., Dent, C. W., & Flay, B. R. (1993). Relationship between after-school care of adolescents and substance use, risk taking, depressed mood, and academic achievement. *Pediatrics*, 92, 32-38.
- Rierdan, J., Koff, E., & Flaherty, J. (1983). Guidelines for preparing girls for menstruation. *Journal of the American Academy of Child Psychiatry*, 22, 480-486.
- Rierdan, J., Koff, E., & Flaherty, J. (1986). Conceptions and misconceptions of menstruation. *Women and Health*, 10, 33-45.
- Robert-McComb, J. J., Norman, R. L., & Zumwalt, M. (2007). *The active female: Health issues throughout the lifespan*. Totowa, NJ: Humana Press.
- Roberts, T. A., Goldenberg, J. L., Power, C., & Pyszczynski, T. (2002). "Feminine protection": The effect of menstruation on attitudes toward women. *Psychology of Women Quarterly*, 26, 131-139.
- Ruble, D. N., & Brooks-Gunn, J. (1982). The experience of menarche. *Child Development*, 53, 1557-1566.
- Schuman, M. (2001). *Mayan and Aztec mythology*. Berkeley Heights, N.J.: Enslow Publishers.
- Scott-Jones, D. & Turner, S. L. (1988). Sex education, contraceptive and reproductive knowledge, and contraceptive use among black adolescent females. *Journal of Adolescent Research*, 3, 171-187.
- Seventeen*. (2008, March).
- Shuttle, P., & Redgrove, P. (2005). *The wise wound: Menstruation and every woman*. New York: Marion Boyars Publishers.
- Silbereisen, R. K., Walper, S., & Albrecht, H. T. (1990). Family income loss and economic hardship: Antecedents of adolescents' problem behavior. *New Directions for Child Development*, 46, 27-47.
- Simmons, R. G., & Blyth, D. A. (1987). *Moving into adolescence: The impact of pubertal change and school context*. New York: Aldine DeGruyter.
- Simmons, R. G., Blythe, D. A., & McKinney, K. (1983). The social and psychological effects of puberty on white females. In J. Brooks-Gunn & A. Petersen (Eds.), *Girls at puberty* (pp. 111-140). New York: Putnam.

- Skandhan, K. P., Pandya, A. K., Skandhan, S., & Mehta, Y. B. (1988). Menarche: Prior knowledge and experience. *Adolescence*, 23, 149-154.
- Smith, H. (1991). *The world's religions: Our great wisdom traditions*. New York: Harper Collins.
- Stattin, H., & Magnusson, D. (1990). *Pubertal maturation in female development*. Hillsdale, N.J.: Erlbaum.
- Steinberg, L. (1988). Reciprocal relation between parent-child distance and pubertal maturation. *Developmental Psychology*, 24, 122-128.
- Stoltzman, S. M. (1986). Menstrual attitudes, beliefs, and symptom experiences of adolescent females, their peers, and their mothers. *Health Care for Women International*, 7, 97-114.
- Stubbs, M. L., Rierdan, J., & Koff, E. (1989). Developmental differences in menstrual attitudes. *Journal of Early Adolescence*, 9, 480-498.
- Surbey, M. K. (1990). Family composition, stress, and the timing of human menarche. In T. E. Ziegler & F. B. Bercovitch (Eds.). *Socioendocrinology of Primate Reproduction* (pp. 11-32). New York: Wiley.
- Surbey, M. K. (1998). Parent and offspring strategies in the transition at adolescence. *Human Nature*, 9, 67-94.
- Tang, C. S. K., Yeung, D. Y. L., & Lee, A. M. (2004). Psychosocial correlates of emotional responses to menarche among Chinese adolescent girls. *Journal of Adolescent Health*, 33, 193-201.
- The Tampax report*. (1981). New York: Ruder, Finn, & Rotman.
- Thompson, C. (1942). Cultural pressures in the psychology of women. *Psychiatry*, 5, 331-339.
- Tiger, L. (1970). Male dominance? Yes, alas. A sexist plot? No. In S. Golub, *Periods: From menarche to menopause* (p. 85). Newbury Park: Sage Publications.
- Walker, B. (1983). Menstrual blood. In B. Walker (Ed.), *The woman's encyclopedia of myths and secrets* (pp. 635-645). San Francisco: Harper Collins.
- Walsh, M. R. (1979). The quirks of a woman's brain. In R. Hubbard, M. S. Henifin, & B. Fried (Eds.), *Women looking at biology looking at women* (pp. 103-125). Cambridge: Schenkman Publishing Co.
- Wasserfall, R. (Ed.). (1999). *Women and water: Menstruation in Jewish life and law*. Hanover, N.H.: Brandeis University Press.

- Webster, H. (1942). *Taboo: A sociological study*. Stanford: Stanford University Press.
- Weideger, P. (1976). *Menstruation and menopause: The physiology and psychology, the myth and the reality*. New York: Knopf.
- Whisnant, L., Brett, E., & Zegans, L. (1975). Implicit messages concerning menstruation in commercial educational materials prepared for young adolescent girls. *American Journal of Psychiatry*, *132*, 815-820.
- Whisnant, L., & Zegans, L. (1975). A study of attitudes toward menarche in white middle-class American adolescent girls. *American Journal of Psychiatry*, *132*, 809-814.
- Williams, L. R. (1983). Beliefs and attitudes of young girls regarding menstruation. In S. Golub (Ed.), *Menarche: The transition from girl to woman* (pp.139-147). Lexington, MA: Lexington Books.
- Winter, M. (1997) Teenage girls in jeopardy. *Human Ecology Forum*, *35*(3), 12-16.
- Woods, N. F., Dery, G. K., & Most, A. (1982). Recollections of menarche, current menstrual attitudes, and perimenstrual symptoms. *Psychosomatic Medicine*, *44*, 285-293.
- Yeung, D. Y. L., Tang, C. S. K., & Lee, A. M. (2005). Psychosocial and cultural factors influencing expectations of menarche: A study on Chinese premenarcheal teenage girls. *Journal of Adolescent Research*, *20*, 118-135.