# THE RELATIONSHIP BETWEEN GENDER, RELIGIOSITY, \& SEXUAL BELIEFS TO SEXUAL ACTIVTIY 

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# THE RELATIONSHIP BETWEEN GENDER, 

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## Chapter I

## Introduction

Research indicates that the American population is drastically more accepting of sexual activity versus extramarital or homosexual activity (Cochran \& Beeghley, 1991; Caron \& Moskey, 2002). Many studies have been done concerning the mechanisms by which involvement in religious activities, strength of religious beliefs and sexual beliefs have influenced sexual activity among young adults. However, there is controversy as to which of these variables is associated to sexual activity directly and if so, to what degree. Gender also plays an important role in sexual activity; although the data on its influence are more consistent.

Statistics from the last 50 years illustrate the importance of this area of research. Studies show that sexual beliefs of college and high school students have become significantly more liberal and more accepting of sexual activity (Robinson \& Jedlicka, 1982; Caron \& Moskey, 2002). Along with more accepting sexual attitudes, sexual activity has increased significantly as well as engaging in sexual experiences at younger ages (Robinson \& Jedlicka, 1982; Caron \& Moskey, 2002). Both studies are more thoroughly discussed in the changing trends section of the literature review.

A review of the literature spanning the last 30 years shows that indeed there is a strong association between religiosity and sexual activity. This association is divided
into many different areas. One author actually gives four specific reasons for this relationship, one of which is that "as an agent of social control, religious beliefs provide guidance on and structure for the kinds of behaviors that are acceptable and conform to social norms" (Koenig, 2001). From the religious aspect there are basically two ways that religiosity is related to sexual activity: Involvement in religious activities and religious beliefs. The literature is divided on whether involvement in religious activities is associated to sexual activity directly or if it affects religious beliefs and /or sexual beliefs, which in turn affect sexual activity, giving involvement in religious activities an indirect relation to sexual activity. In any case, the findings are consistent: Research indicates that those participants with strong or high religious values and/or high religious activity involvement were least likely to engage in sexual activity (Clouse, 1973; DuRant \& Sanders, 1989; Jensen, Newell, \& Holman, 1990; Schulz, Bohrnstedt, Borgatta, \& Evans, 1977; Thomas, 1973; Thorton \& Camburn, 1989; Young, 1985; Zaleski \& Schiaffino, 2000).

The next topic that needs to be discussed is the correlation of sexual beliefs to sexual activity to validate how religiosity could be indirectly related to sexual activity via sexual beliefs. In general, research shows that sexual attitudes are related to sexual activity (Godow \& LaFave, 1979; Pluhar, Frongillo, Stycos, \& Dempster-McClain, 1998). Those with conservative sexual beliefs are less sexually active than those with liberal sexual beliefs. Other research results lead to the possibility that sexual beliefs affect sexual activity to the extent to where involvement in religious activities or religious beliefs may not even be a factor (Jensen, Newell, \& Holman, 1990; Martin \& Westbrook, 1973). The literature at times seems to contradict itself. One side states religiosity
directly affects sexual activity and the other denies that fact and attributes sexual beliefs to the differences in sexual activity. Nevertheless, it all generally points in the same direction being that sexual activity is associated somehow to religiosity and sexual beliefs.

In dealing with people, one of the more interesting aspects of research is the differences between genders, and the area of religiosity is no exception. Females were consistently higher than males in both involvement in religious activities and strength of religious beliefs. Studies show that females attend church more consistently and more willingly than males regardless of their ages (Levitt, 1995; Greer, 1990). Females also have higher scores and stronger convictions in the belief of God and Jesus as well as experience closer feelings (Greer, 1990; Low \& Handal, 1995). This phenomena could possibly be taken into a worldly Christian perspective realizing that twice the amount of females are confirmed into the Church of England each year than males (Levitt, 1995). This is an important point when considering the findings of this research could be applied to various cultures.

These differences between genders also extend greatly into the sexual belief area. Females have shown consistently across the literature to have higher standards and stronger convictions against sexual activity (Alston, 1974; Chan \& Cheung, 1998; Clouse, 1973; Cohen \& Shotland 1996; Miller \& Olson, 1988). However, differences in the actual acts of sex are less clear. One study discussed shows that females are indeed less sexually active than their male counterparts (Miller \& Olson, 1988). Yet, other articles will state that even though beliefs differed between males and females, females generally being more conservative, the overall frequency of their sexually activity was
not significantly different (Poulson, Eppler, Satterwhite, Wuensch, Bass, 1998; Thomas, 1973).

The results of these studies, regardless of their specific variables or time period, generally support one another, which brings confidence that this topic of variables dealing with sexual activity will yield interesting and useful results. The aim of this research is not only to support previous findings, but also to explore those areas that are in opposition or ambiguous concerning religiosity, sexual beliefs, and gender in relation to sexual activity.

## Conceptualization of Terms

In the present research, religiosity will be defined as an affiliation to a type of organized religion that believes in a higher power. Furthermore, religiosity will be categorized into two different variables: Religious beliefs and involvement in religious activity. Religious beliefs are simply the strength of beliefs, values, or attitudes the participant has toward their particular religious affiliation. Involvement in religious activities is any attendance of an activity affiliated with an organized religion, however, it does not have to be the participant's claimed religious affiliation. For the purpose of this research study, sexual activity is the act of having vaginal intercourse with the opposite sex before being married. Sexual beliefs are the participant's beliefs, attitudes, or values of sexual activity. "Beliefs," "attitudes," and "values" will all take on the same meaning since they are defined in similar ways in various research studies.

## Importance of Study

This study focused on the possible direct association between religious beliefs, involvement in religious activities and sexual beliefs, in combination with gender, and
amount of sexual activity for college age students. Furthermore, it would be beneficial to see if gender has greater association with sexual activity than religiosity or sexual beliefs. This is important to discover because religiosity and sexual beliefs can be influenced by environmental variables, such as sexual education classes, whereas gender is a genetically predetermined variable. This is an imperative area to clear up so that future research can concentrate its area of study and to show society where to focus their support in the prevention of sexually transmitted disease, unplanned pregnancy, and other potential problems related to sexual activity.

This study expands previous research by joining the variables of gender, religiosity, and sexual beliefs into one study. The intertwined relationship of these variables with each other in conjunction with their relationship to sexual activity needs to be researched together to hopefully give more insight on to which area to focus on for future research.

## Chapter II

## Literature Review

Different variations of religion such as specific denomination and actual religious activity and the ever interesting topic of sex have crossed paths many times. It is also a difficult topic to tackle since there are so many aspects to each area. For this literature review I will focus on four main areas: 1) The relationship between religious activity and sexual activity, 2) The relationship between religious beliefs and sexual activity, 3) The relationship between sexual beliefs and sexual activity, 4) The relationship between gender and sexual activity. Gender differences in religious activity, religious beliefs, and sexual beliefs are also discussed. The review of the literature will illustrate that while there are many similarities in the results for different articles over the years, there are some discrepancies within the same category. These discrepancies and the lack of research comparing all four variables religious activity, religious beliefs, sexual beliefs and gender to sexual activity are explored in this study.

## Theoretical Framework

The theory that best describes the relationship between religiosity and sexual activity is the social cognitive theory. The social cognitive theory basically integrates much of the behaviorists' views of development like how environment influences behavior, but it also integrates how cognition plays a part as well. Perhaps it is best put into words by the father of the social cognitive theory, Albert Bandura, who states
"human functioning is explained in terms of a model of triadic reciprocality in which behavior, cognitive and other personal factors, and environmental events all operate as interacting determinants of each other" (Bandura, 1986). It is the view of these theorists that human reasoning, imagination, and comparison as well as other cognitive abilities allow us to react differently to similar environmental surroundings.

There are five different variables in the present study to look at in view of this theory: Gender, religious activity, religious beliefs, sexual beliefs, and sexual activity. The variables that conform most easily are religious and sexual beliefs, which represent the cognitive part of the social cognitive theory, and sexual activity, which represents the behavior aspect. Gender and religious activity pose interesting concepts. Gender in general is an environmental variable because of the different ways society "raises" boys and girls. Therefore, it is also a cognitive variable because of the possible different personal experiences males and females encounter which affect sexual activity. Religious activity plays a dual role as well. The participants of this study were asked about their involvement in various religious activities to target their behavior. The specific religious activity they attend acts as the environmental aspect.

The reason for part of this research is the confusion as to how religiosity exactly is related to sexual activity. The shortest connection is religious activity, as the environment, directly affecting sexual activity, behavior. If this were the case, there would be no reason to include cognition. However, many studies show that religious and sexual beliefs could also play an important part in the decision making regarding sexual activity. Research in this area is somewhat sporadic and inconclusive simply because none have included all of these areas concerning gender, religiosity, and sexual beliefs.

Gender for this study is considered to be part of the environment, yet since it influences the other variables it is a delicate variable to integrate.

## Changing Trends

A point of interest for this study is the difference in trends concerning sexual attitudes and behavior over time. There has been a significant change of both variables for both genders over the last 50 years. Generally for both genders, sexual attitudes have become more relaxed, furthermore the amount of sexual behavior that both engage in has increased, as the research will show.

A study done by Caron and Moskey (2002) investigated the sexual experiences and attitudes of 242 high school students from the graduating classes of 1950, 1975 and 2000 by way of mailed surveys. Eighty-three were received from the class of 1950, 92 from 1975, and 67 from 2000. Sixty-five percent of the 1950 class agreed with the statement "Having sex as a teenager would go against my beliefs, even if in a serious relationship" compared to the $27 \%$ in 1975 and $20 \%$ in 2000. The most applicable statistic was the one concerning when sex is acceptable in a relationship. In 1950, 73\% of respondents believed that sex was only proper after marriage. Conversely, around the same percentage, $72 \%$ and $76 \%$, of respondents from 1975 and 2000 thought sex was acceptable once the relationship was serious.

Another article by Robinson and Jedlicka (1982) covered a 15 year span from 1965 to 1980. The authors replicated a study done in 1965, 1970 and 1975. The 1965 sample consisted of 129 males and 115 females; the 1970 sample consisted of 137 males and 158 females; the 1975 sample consisted of 138 males and 298 females; the 1980 sample done by the authors consisted of 137 males and 230 females. To ensure reliability
for each year the same questionnaire was used each time, it was administered to similar level social science classes to assure comparability in respondents' ages, and each study was conducted during the spring semester to give each freshman at least eight months of exposure to college atmosphere. In the interest of time, only statistics from 1965 and 1980 are compared. For the males, there was a $12.3 \%$ increase in sexual activity from 1965 to 1980. The females' percentage more than doubled for the same time period, showing a $34.8 \%$ increase in sexual activity. Not only did the sexual activity significantly change but the attitudes did as well. When given the statement "I feel that premarital sexual intercourse is immoral," $33 \%$ of males and $70 \%$ of females in 1965 agreed with this statement compared to $17.4 \%$ of males and $25.3 \%$ of females in 1980 .

Roche and Ramsbey (1993) did a five year follow-up study from 1983 to 1988. There was no information concerning the 1983 sample only that it was quite similar to the 1988 sample and there were 280 participants. The sample from 1988 consisted of 268 students enrolled in a southern New England state college. The specific number of males and females is not given. The authors separated the dating pattern into five different categories: Dating with no particular affection, dating with affection but not love, dating and being in love, dating one person only and being in love, and engaged. For each stage each participant was asked if they had had sexual intercourse. The percentage of males engaging in sex at each stage, except for the last, increased from 1983 to 1988 and are given respectively (1983/1988); $15 \% / 23 \%, 18 \% / 33 \%, 49 \% / 60 \%, 63 \% / 80 \%$, and $74 \% / 69 \%$. In contrast to previous studies, the female sample from 1988 decreased in sexual intercourse in all five dating stages compared to their 1983 counterparts. The percentage of females engaging in sex at all five stages are given respectively
(1983/1988); $4 \% / 2 \%, 11 \% / 7 \%, 32 \% / 16 \%, 68 \% / 59 \%$, and $81 \% / 75 \%$. The study attributed declines in females' sexual activity to an increase in AIDS awareness. Even with some sexual activity decrease, the data produced indicated an increase in permissiveness from 1983 to 1988 as well as an increase in oral-genital stimulation for both genders.

These studies show that there have been drastic changes over time. Seemingly correlated, as the attitudes of sexual activity became more liberal, the amount of sexual activity occurred more frequently and in earlier junctures of dating relationships.

## Religiosity and Sexual Activity

This section covers the basis for the research design. Research going as far back as 30 years ago supports the concept that religiosity has an effect on sexual activity, whether it be directly or by influencing peoples' beliefs. Findings sustain the notion that the higher the amount of religious activity or the stronger the religious beliefs a person has, in general, they will be less sexually active. The next sections will discuss the direct relation of religious activity and religious beliefs to sexual activity as well as some connections with sexual beliefs and the differences between genders for these two areas.

Religious Activity and Sexual Activity. A large division of this type of research is the actual participation in certain religious activities such as church attendance. A study done back in 1973 by Thomas included a sample size of 908 participants. Of these participants 324 were 18 years old or younger and 584 were older but not exceeding the age of 25 . By way of survey questionnaire, she collected data on the rate of religious activity for the participants before the age of 16 and current religious activity during the study. Out of the participants who frequented church once a week prior to the age of 16, $32 \%$ abstained from sexual activity in the twelve months preceding the survey. This
compares to the total of $12 \%$ for the rest of the participants who attended church at least once a month or never to rarely (Thomas, 1973). Present religious activity comparisons, even though church attendance among the participants had dropped dramatically, still yielded results that higher church attendance by the student indicated less sexual activity involvement (Thomas, 1973).

Martin and Westbrook (1973), detailed in the next section, found a significant relation to church attendance and the claim of being a virgin currently or before marriage. However, frequency of sexual intercourse for non-virgins was unrelated to church attendance. Even though the participants of this next study (Hong, 1983) ranged from 17 to 54 years of age, the information supports other research discussed. The sample consisted of 560 participants who were undergraduate students who were asked their frequency of religious activity and sexual beliefs. This study by Hong (1983) found that as the frequency of religious activity increased, permissive attitudes concerning sexual behavior significantly declined.

In 1988, Miller and Olson collected data on a number of background and contextual variables from 2,423 adolescents, $95 \%$ of the participants falling between the ages of 15 and 18. They found several factors that influenced the likelihood of sexual activity. Participants who rarely attended church were more likely to have permissive attitudes about sex and have already experienced intercourse (Miller \& Olson, 1988). Thorton and Camburn (1989) wrote an article about their longitudinal study with a probability sample of children selected from the Detroit area in 1961. The mothers of the children were interviewed first in 1962 with subsequent interviews following in the years after. The children were interviewed in 1980 once they were 18 years old. Their data also
focused on religious participation and supported previous research studies showing that those young people who valued religion and attended church frequently have less permissive attitudes about sexual behavior and are less experienced sexually (Thorton \& Camburn, 1989).

DuRant and Sanders (1989) conducted a study with only female participants aged 15 to 20 years who were sexually active but unmarried. They also found a negative association between the frequency of intercourse and the number of attended religious services. An interesting side note about this research is that the inverse relationship between sexual intercourse and religious attendance was much stronger for Whites than Blacks. Petersen and Donnenwerth (1997) did a cross-sectional study with the NORC General Social Surveys cumulative file for 1972 through 1993. They hypothesized that the belief that sex before marriage is wrong would erode slower among conservative Protestants who attended church frequently than among any other group of Christians. Their data supported this hypothesis and additionally showed that frequent religious activity alone slowed the erosion of this belief, with the exception being the Catholic belief in which case frequency of religious activity had no relation (Petersen \& Donnenwerth, 1997). The study done by Beck, Cole, and Hammond (1991), discussed more thoroughly in the gender differences section concerning sex, also found that religious activity had the largest net effect predicting a negative outcome on sex for the White male group. In other words higher religious activity decreased the likelihood of sexual activity for the subject (Beck, Cole, \& Hammond, 1991).

A study done with 423 single participants who fell into the age ranges of 17 and 25 revealed that religious activity was related to the sexually permissiveness of the
subject (Jensen, Newell, \& Holman, 1990). Those participants who rarely attended church (a few times a year) yielded the highest frequency of sexual intercourse among all the participants. However, those participants who did attend church weekly yet believed affectionate sex was not immoral also had one of the highest frequencies. Due to their findings, as well as other research, the authors proposed that a probable sequence for precursors of sexual behavior was that religious activity influences sexual beliefs, which in turn influences sexual behavior.

Religious Beliefs and Sexual Activity. Articles as early as 1973 have been written concerning the correlation between the different aspects of religion and sexual activity (Martin \& Westbrook, 1973). In this particular research article Martin and Westbrook collected information about the responses of 177 undergraduates on their views of sexual behavior and attitudes in relation to religious belief and religious activity. Even though they incorporated both unmarried and married participants their findings are applicable to this study. A slight majority of the sample claimed they were virgins or had been prior to marriage and this claim was significantly related to belief in God. However, Martin and Westbrook also found a number of participants who were high believers but not virgins. As mentioned earlier, among these participants frequency of intercourse was not related to church attendance but interestingly was related to belief in God.

A 1977 (Schultz, Bohrnstedt, Borgatta, \& Evans) longitudinal study gathered information via questionnaire from 2,112 freshmen attending the University of Wisconsin to help explain the reasoning behind why college students engage in sexual intercourse. Among many different findings was one that dealt with religious values in relation to the engagement of sexual intercourse. Those participants who were more conventionally
religious upon entering college were least likely to engage in acts of sexual activity. There are some more recent studies completed on this topic, such as the study done by Young in 1985. The participants for the study were 245 never-married male college students falling between the ages of 16 and 19 years. Young measured a variety of religious dimensions to help determine what aspects of religion attribute to the differences of sexual behavior. He found that participants who had not engaged in sexual activity as of yet indicated a greater degree of religious commitment than the other two groups of males, those having one partner and those having many partners (Young, 1985).

More recent studies show similar findings stating that among 231 participants, ranging from 16 to 20 years old, those who had higher rates of intrinsic and extrinsic religiosity were associated with less sexual activity (Zaleski \& Schiaffino, 2000). Another study by Pluhar, Frongillo, Stycos, and Dempster-McClain (1998), discussed thoroughly in the sexual beliefs section, found that participants were 2.3 times less likely to have had sexual intercourse if they agreed that religious beliefs molded and guided their sexual behavior as opposed to those who did not agree with that statement.

The next few articles are not directly related to sexual activity but discuss the inconclusive relationship between religious beliefs and sexual beliefs. Martin and Westbrook (1973) once again post some conflicting findings. They found that among their participants the prevailing attitude toward sex was approval regardless of the participants' strength of religious beliefs or church attendance. Another study in 1973 by Clouse, mentioned later in the gender/sexual beliefs section, supported the hypothesis that participants who were considered more liberal in their religious beliefs would also be
more liberal in their attitudes on other topics such as sex than those participants rated as conservative. Jon Alston (1974) pulled data from the National Opinion Research Center to determine to what extent White American Protestants and Catholics approved of sexual intercourse in different situations such as premarital and extramarital sex. He discovered that White Protestants and Catholics, both males and females alike, condemned premarital sex. However, it was viewed less negatively if the man or woman engaging in premarital sexual activity with each other had the intention of marrying.

An interesting study done by Cochran and Beeghley (1991) actually broke down the study of religion into different affiliations such as Jewish, Catholic, Lutheran, and other Protestant churches. The participants studied were pulled from the 13 NORC General Social Surveys conducted between 1972 and 1989, 18 years of age or older, and living in the United States. Their sample size was 14,979 participants after cutting those cases with missing data. Their findings showed that religious affiliation played a significant role in determining how tolerant the participant was regarding the view of premarital sexuality. Those participants affiliated with religions that have a more tolerant view concerning premarital sexual activity, such as the Jewish faith, had more tolerant views themselves. This was contrasted against those participants who did not approve of premarital sex who were more likely to be affiliated with Catholicism or other religious sects, which have more intolerant views (Cochran \& Beeghley, 1991).

## Gender and Religiosity

In general, the research shows that females are more religious and have stronger religious beliefs than males. In 1995, Low and Handal received questionnaires back from 500 freshmen from various colleges after distributing around 800. Thirty-three percent of
the sample population was female. The ages ranged from 16 to 47 with $80 \%$ of the participants' ages ranging from 17 to 19 years; $13 \%$ of the participants failed to indicate their age. The questionnaire measured certain demographic variables such as race, family income and religion. The Lipsmeyer's Personal Religious Inventory was used to assess various religious aspects of the participants such as belief in God and religious activity. They found that there were sex differences in the aspects of actual belief in God and the subjective experience of feeling close to God in which case females scored higher than males (Low \& Handal, 1995). Poulson and associates (1998) ran a study with a sample of 210 students from a large university in the southeastern United States. Sixty-one percent of the participants were female. The participants' ages ranged from 18 to 36 years with a mean age of 21 years. Their method of data collection was a collaboration of 88 questions compiled into one questionnaire and developed by the authors along with graduate and undergraduate students enrolled in psychological research courses. They found, along with other comparisons, that women had stronger religious beliefs than men (Poulson, et. al, 1998).

Greer (1990) began a longitudinal study in 1968 administering it again in 1978 and once more in 1988. In each year the questionnaire was issued to sixth-grade students among various Protestant or grammar schools. In 1968 there were 640 girls and 991 boys; in 1978 there were 781 girls and 1,090 boys; in 1988 there were 1,213 girls and 1,190 boys. A Chi-squared test was used to compare the results across the three different administration times. For every year the girls had a higher confidence in the belief that God exists than did their male counterparts; $47 \%, 48 \%$ and $58 \%$ for girls for each of the three years data was collected as compared to $33 \%, 37 \%$ and $43 \%$ for the boys (Greer,
1990). The girls were also higher in their belief that Jesus is the Son of God for both 1968 and 1988: $47 \%$ and $62 \%$ for girls compared to $33 \%$ and $44 \%$ for boys respectively (Greer, 1990). So, not only do females have a stronger connection to their religion than males, more females believe in God and feel closer to Him than males as well.

Another interesting difference between the genders is the more observable fact of religious activity. Once again, to correlate with the earlier findings, females surpassed their male counterparts. Going back to Greer's (1990) study, he did find a decline in religious activity for both genders from 1968 to 1988. However, the important information is that girls were higher in religious activity, $71 \%$ dropped to $60 \%$, than boys, $58 \%$ dropped to $43 \%$. More girls than boys engaged in daily Bible reading as well as felt they had experienced God, his presence or help (Greer, 1990).

An article published in 1995 was the result of a longitudinal study done by Levitt. She followed 38 children and their families from the child's age of 10 or 11 years up to the end of their compulsory schooling. Her study focused on the religious socialization of these children and their religious tendencies within their families. Levitt found that girls were more willing to attend a children's church group than boys. She discovered that between the ages of 12 to 13 years, $47 \%$ of girls attended church services most weeks compared to about five percent of the boys the in that age range. One other interesting fact is that out of all 38 families neither the father compared to the mother nor the sons compared to their sisters attended church more regularly (Levitt, 1995). To sum up, females attend church and church-related activities more than males, a practice that appears to carry on into adulthood. Females also have stronger religious tendencies which will become a very important aspect later on in this review.

This section will illustrate how sexual beliefs are related to sexual activity as well as the differences between genders concerning sexual beliefs. As mentioned in the introduction sexual beliefs include attitudes and values associated with sexual activity and sexual activity in general.

In 1979, Godow and LaFave discussed their findings concerning students' attitude and behavior change after taking college courses in human sexuality and social psychology. There were 60 females and 37 males in the experimental sexuality course and 75 females and 31 males in the control social psychology course. Participants in each course were given a questionnaire at both the beginning and the end of the spring semester. Their data showed that there was a significant change of sexual attitudes between the two classes. The students taking the human sexuality course did indeed have a greater acceptance of sexuality after taking the course. The real interesting finding was there was no significant difference in sexual behavior between either class at the end of the study although there were changes in knowledge and attitudes. This was an interesting find at the time because parents were worried that increased sexual knowledge of their children would lead to an increase of sexual behavior. So where sexual knowledge and attitude changed significantly, sexual behavior did not.

Pluhar and associates (1998) surveyed, via questionnaire, 606 students at Cornell University. Although the specific number of males or females or their ages were not given, it was stated that more women and freshmen returned the questionnaire than men and upper-class students. The study was designed to measure the relationship between religion, sexual attitudes and behaviors of college students. The authors used a five-point

Likert-type scale to measure attitudes toward sexual activity for three different types of relationships and then the three answers were rated into a scale ranging from 1, most liberal, to 5 , most conservative. The authors found that more conservative views were negatively associated with the probability of experiencing sexual intercourse. Mathematically speaking, as participants shifted from conservative to liberal, with each unit of decrease there was a 2.17 times increased likelihood that a student would have engaged in sexual intercourse. Now as mentioned before, the authors also found females to have more conservative attitudes and to be less likely to have experienced sexual intercourse than males; 1.3 times less likely to be exact. They attributed this difference in sexual activity to the difference in attitudes.

## Gender and Sexual Beliefs

Studies that focus more closely on only the attitudes of sexual behavior are consonant with the research findings discussed in the sexual activity section including the change in attitudes over the years. An early study by Clouse (1973) measured the responses from 218 male and 225 female undergraduate participants. The data collected revealed that females were less liberal than males regarding idea of sex, meaning they disagreed with the statement "premarital sex is not wrong as long as both people are willing" (Clouse, 1973). Alston (1974), mentioned earlier, found in every situation the females of both religions, White American Protestants and Catholics, disapproved of the scenario more so than their religious male counterparts. Miller and Olson's study (1988), mentioned earlier, showed that females had less permissive attitudes about premarital sexual relations than males.

Cohen and Shotland (1996) did an interesting study involving sexual expectations and the dating experience among college students. They administered a 17-page questionnaire entitled, "Dating Behaviors and Expectations of Penn State Students" to 104 males and 138 females. Their results supported their hypothesis in that males expected to have sexual intercourse considerably sooner than females. Not only that, but further responses conveyed that the participants themselves believed that the average man would expect to have sex with his dating partner sooner than the average women. In general, men expect sex to occur within nine to eleven dates whereas women will expect sexual intercourse after the fifteenth or eighteenth date (Cohen \& Shotland, 1996). Further support was found in the study by Chan and Cheung (1998) they found that females had more negative attitudes about sex than the males.

A discrepancy in all of this data is a study by Godow and LaFave (1979). The intricacies of their study are further explained in the sexual beliefs and sexual activity section. The important information from their study for this section is that they found no significant sexual attitude differences across seven categories between college-aged females or males before and after the course of their experimental study.

It is important to note the span of years the research in both this section and the two previous sections cover; important because the views of society become a variable to take into account over the course of 30 years. It is not plausible to go into depth about the ever changing conceptions society has had on sexual activity and beliefs because that is not the focus of this project. An interesting point, however, is that the findings are very consistent during the span of these research articles. So, even though the actual number of sexually active adolescents may vary from time to time and even decline, the main
ideas that females have stronger religious beliefs and are less sexually active than males are upheld across the studies.

## Gender and Sexual Activity

Most of the research finds that females are less sexually active than males. However, some research does show that females do not significantly differ in the frequency of sexual activity than males (Poulson, et. al, 1998). Even though their findings suggested that men had higher rates of risky sexual activity, overall, there were no differences in frequency for men and women's sexual activity. Thomas (1973), discussed earlier in the religion and sexual activity section, reported findings dealing with unmarried undergraduate students ranging from 25 years or younger (no cut-off age was given) on the issue of premarital sexual activity. Her findings showed that within the 12 months preceding her initial survey, $56 \%$ of the total sample had had sexual intercourse. Of those students who were sexually active within this period, the percentages between the females and males did not differ significantly, $42 \%$ and $46 \%$ respectively. However, compared to the total population sample size, $50 \%$ of the females had had sexual intercourse within the 12 month period compared to $65 \%$ of the males who had engaged in sexual intercourse. When included in the total sample population, it seems that females were significantly less sexually active than males and other research support these findings as well (Thomas, 1973).

An article published in 1977 by Schulz and associates revealed that within their sample population $56 \%$ of the women compared to $65 \%$ of the men reported having engaged in premarital sexual intercourse (Schulz, Bohrnstedt, Borgatta, \& Evans, 1977). The data was collected by means of a mailed survey. It was issued to the 1964
matriculating class of the University of Wisconsin and then again during the students’ sophomore and senior years. The authors excluded all married respondents and some with missing data, which yielded a total of 2,112 participants. The percentage of male to female participants was not given.

A more recent study, using old data, by Beck, Cole and Hammond (1991) used the National Longitudinal Surveys of Youth (NLSY) data interviews from 1979 and 1983 to determine the effects of religious affiliation on premarital sexual activity. Their research findings concerning the religious influences on sexual activity will be discussed in a later section, however, the important comparisons of female and male sexual activity will be shown here. The only information about the participants obtained from the article was that the individuals polled were between the ages of 14 and 22 years of age in 1979 . The sample population was comprised of African-Americans and economically disadvantaged Whites. The article broke the results down by these groups so they will be reported in the same way. For the White group, $70 \%$ of the females and a little over $82 \%$ of the males reported in engaging in sex. In the case of having sex before the age of 18 the percentages were 55 and 75 , respectively. For the African-American group, $84 \%$ of the females and $93 \%$ of the males reported in engaging in sexual intercourse with $73 \%$ of the females and $91 \%$ of the males engaging in sex by the age of 18 (Beck, Cole, \& Hammond, 1991).

In another study, data was collected from 20 different high schools with a survey for respondents as young as 14 years of age or as old as 19 years, with about $95 \%$ of the students falling between 15 and 18 years old (Miller \& Olson, 1988). Sixty-three percent of the sample population was female. The survey measured the respondent's attitudes
about adolescents having full sexual relations before marriage as well as discovering their sexual experience, being virgin or non-virgin. The survey was issued in both 1983 and 1984. The results showed that females were less likely to have experienced sexual intercourse than males. These results were consistent with Chan and Cheung's (1998) research who found very similar findings among Hong Kong Chinese college students. The 238 students, 121 male and 117 female, completed a questionnaire specifically designed to measure the applicability of the Theory of Reasoned Action in predicting the participants' intentions on engaging in premarital sex. Results revealed that females are less willing than males to engage in premarital sex (Chan \& Cheung, 1998). Robinson and Jedlicka (1982) mentioned earlier, found that although the percentage of increase in sexual activity for females was greater than males from 1965 to 1980, the males percentage was higher than the females for each year: $1965-65.1 / 28.7 \%, 1970-$ 65/37.3\%, $1975-73.9 / 57.1 \%, 1980-77.4 / 63.5 \%$.

A point of interest from some of this research is the difference in sexual activity among the different ethnicities. This is yet another variable associated with sexual activity, unfortunately not able to be included in this research study. However, most research done in this area points to the same verdict: Females generally have fewer sexual partners and have engaged in less sexual activity than males.

The research findings in this area are very consistent with each other, with few exceptions. Each shows how either religious beliefs or religious attendance is negatively related to sexual activity or sexual beliefs. Also one cannot ignore the impact of gender. Females consistently are less sexually active than males, the question is how much influence can gender have on sexual activity when integrated with both religiosity and
sexual beliefs. Once again the importance of consistency for all of the research articles in this area should be noted, even though some are decades apart. This is incredibly significant not only for this research to have a meaningful impact in the future, but it also demonstrates that the findings and concepts discussed can be generalized over a long period of time if not indefinitely.

## Chapter III <br> Methodology

## Hypotheses

The following hypotheses are proposed: 1) Involvement in religious activities will have a stronger relation with sexual activity than sexual beliefs or gender (model 1, see Appendix A for models), 2) Religious beliefs will have a stronger relation with sexual activity than sexual beliefs or gender (model 2), 3a) The relation between religious activity and sexual activity will be statistically significant for persons with conservative sexual beliefs with gender included in the model (model 3a), 3b) The relation between religious activity and sexual activity will not be statistically significant for persons with liberal sexual beliefs with gender included in the model (model 3b), 4a) The relation between religious beliefs and sexual activity will be statistically significant for persons with conservative sexual beliefs with gender included in the model (model 4a), 4b)The relation between religious beliefs and sexual activity will not be statistically significant for persons with liberal sexual beliefs with gender included in the model (model 4b). There is evidence from previous research to indicate these hypotheses will be supported. In this study, the independent variables include gender, involvement in religious activities, religious beliefs, and sexual beliefs of the participant, and the dependent variable is sexual activity of the participant.

## Research Design

The type of research design for this study is correlational. The purpose of this research is descriptive.

## Sampling

The participants were approximately 120 students from Oklahoma State University currently enrolled in the summer sessions of 2004. The specific classes used were Non-normative Development (HDFS 3113), Human Heredity (ZOOL 3123), World Regional Geology (GEOG 2253), Computer Concepts and Applications (MSIS 2103), Lifespan and Human Development (HDFS 2113), and Relationship Development and Marriage (HDFS 3433). Criteria for inclusion in the study were that the students were to have never been married and were between the ages of 18 and 25. All students read a verbal consent form which explained the nature of the study, completely voluntary, and completely anonymous (Appendix B). There have been various studies that focused on specific religions, however, for this study all religions will be accepted to make possible for future investigations by this author or others to compare different religious sects and to see if the findings can be generalized for different cultures.

## Research Method

The research method was survey administration. Specifically, three questionnaires compiled from previous studies and a demographic questionnaire designed by the researcher was used to gather information on the relevant study variables.

## Instrumentation and Measurement

Several different instruments were used to collect data for this research (See

## Appendix C).

Demographics. Along with all other data, gender was obtained by a questionnaire designed by the author to gather demographic information such as age of participant, marital history, ethnicity, sexual preference, religious affiliation, and size of hometown.

Some questions include "Are you or have you ever been married?" with responses being $1=$ yes or $2=$ no and "What is your religious preference or denomination be as specific as possible?" Ethnicity and religious affiliation were not pertinent to this study. However they are interesting variables that have been associated with sexual activity in previous research studies and are being assessed for the sole purpose of future research by the author or other researchers.

Religious Beliefs. Religious beliefs were assessed by the Religiosity Scale which is derived from a compilation of measures (Johnson \& Stanley, 2001; Schramm, Marshall, Harris, \& George, 2003). The participants were asked four questions regarding the strength of their religious beliefs and how religious they perceive themselves. Questions are by item number: 1) My outlook on life is based on my religion, 2) Although I believe in my religious, many other things are more important in my life (reverse coded), 3) My faith helps me know right from wrong, and 5) All things considered, how religious would you say that you are? (reverse coded). Their responses were added to get a total with scores ranging from 4 to 19. Participants with scores between 14 and 19 have weak religious beliefs, those with scores between 7 and13 have moderately strong religious beliefs, and those with scores between 4 and 6 were viewed as having strong religious beliefs. A Cronbach's alpha of $.84(\mathrm{M}=14.14, \mathrm{SD}=3.39)$ for the females and $.83(\mathrm{M}=13.4, \mathrm{SD}=3.39)$ for the males substantiate the internal consistency of religious belief scale for the present study.

Religious Activity. Religious activity was also established by the Religious Scale from one question (Johnson, \& Stanley, 2001). The question was slightly modified to include a broader band of religious activity. The original question focused on church
attendance, whereas this study includes church attendance as well as all other varieties of religious activities such as Bible study, Mass, praise and worship, etc. The question is "How often do you attend religious activities that may or may not be affiliated with your specific religion (Ex. Church, Mass, Bible study, praise and worship)? Would you say..." and responses are $1=$ never, or almost never, $2=$ occasionally, but less than once per month, $3=$ one to three times per month, and $4=$ one or more times per week. The answers were scored on a scale from one to four; with scores of 1 or 2 being low religious activity involvement, 3 being moderate religious activity involvement, and 4 being high religious activity involvement. Reliability was not available for this area since it consists of one question. Females had a mean of $2.67(\mathrm{SD}=1.07)$ and males had a mean of 2.48 $(\mathrm{SD}=.92)$.

Sexual Activity. Sexual activity was measured using a five item scale comprised by Woodroof (1985) from various other scales. The scales were comprised from research articles by DeLamater and MacCorquodale (1979), Jessor and Jessor (1977), and Mirande (1968). The questions assess frequency of sexual activity and number of partners each participant has had overall and during the last year. Participants were asked questions like "How often have you engaged in sexual intercourse?" and given choices such as $1=$ Never, $2=$ Rarely, $3=$ Occasionally, $4=$ Fairly Frequently, and $5=$ Frequently. The only question to be reversed coded was item number 4 . The lowest score a participant could have was 4 and the highest is 20 . A score of 4 represented those participants who had never had sexual intercourse; scores of 5-9 represented low sexual activity; scores of 10-15 represented moderate sexual activity; scores of 16-20 represented those participants who engage in sexual intercourse quite frequently and with
multiple partners. Previous reported reliability statistics for these questions was not available however, for the current study Cronbach's alphas of $.89(M=10.54, S D=5.04)$ for the females and $.85(\mathrm{M}=12.44, \mathrm{SD}=4.83)$ for the males substantiates the strength of the sexual activity scale.

Sexual Beliefs. Sexual beliefs were measured using 15 Likert scale statements from Kirby (1984). The participants rated each statement as whether they 1-strongly disagree, 2 -somewhat disagree, 3 -feel neutral, 4-somewhat agree, or 5-strongly agree. Statements will include "Unmarried people should not have sex," "I'm confused about my personal sexual values and beliefs," and "Birth control is not very important." Items $13,16,17,20,22,23$, and 25 were reverse coded. Therefore the lowest score possible is 15 and represents participants with the most liberal sexual beliefs, agreeing that sexual activity is acceptable. The highest score possible is 75 and represents participants with the most conservative sexual beliefs, stating that sexual activity is not acceptable. The scores will be grouped into four different categories based on the frequencies of responses from the participants. The lower quartile will represent participants with liberal sexual beliefs and the upper quartile will represent participants with conservative sexual beliefs. The two middle quartiles will represent participants with moderately liberal or conservative sexual beliefs. The overall reliability for Kirby's whole instrument is established with test-retest reliability coefficients between .70 's and .80 's. A Cronbach's alpha of $.68(\mathrm{M}=60.01, \mathrm{SD}=6.82)$ for the females and $.65(\mathrm{M}=57.04$, $\mathrm{SD}=7.20$ ) for the males validate the internal reliability of religious belief scale for the present study.

## Statistical Procedures

Descriptive analyses (e.g., frequencies) were first done to portray the participants in my study in regards to the different demographic categories of gender, specific religion, age, ethnicity, and hometown size. To test the study hypotheses the main statistical procedure used was a hierarchical regression.

## Evaluation of Design

One of the strengths of this research was to have about 100 participants for this research study. The data was gathered from a variety of courses to help keep the sample population diverse. There was a variety of religious backgrounds among the participants so the findings could be utilized over many religious sects. The hope was to also have a similar number of females and males to make it more representative. A weakness to the sample was that the student population at Oklahoma State University is mostly White, limiting the diversity of the racial ethnicity of the research sample. However, this author tried to obtain as diverse a population as possible. A strength in this research design was that other researchers may replicate this study easily because the sample population was not limited and there were few variables for the data collection. Another strength was that the questions were specific so the survey was quickly administered. Potential threats of internal and external validity came with this research being somewhat new and different in the field as far as this specific combination of variables because there is no precedence of how they will affect each other in regards to their relations to sexual activity. The main threat to external validity was being able to generalize my sample to all 18-25 year olds. The results apply to those who have never been married. Hopefully, by including all races and religious backgrounds, this research was applicable to other
areas of the country and possibly internationally. The main threat to internal validity was that this study is correlational by design in which cause and effect cannot be discussed. Some extraneous variables could cause spurious effects in the results such as ethnicity, family background, and religious affiliation.

## Ethical Considerations

There were some ethical concerns that arise from this study. Many of the questions were very personal which could easily make some participants uncomfortable. Asking participants about their religion and sexual behavior and preference is very personal and could be considered offensive if not handled delicately. Anonymity was of top priority for this research and there were no names or numbers of any kind on the survey to identify which survey belonged to which participant.

## Chapter IV

## Results

## Analyses

Descriptive statistics from the study are presented first, followed by the regression analysis that tested statistical significance of the relation between predictors and the outcome variable of sexual activity among college-aged students (see tables in Appendix D). Based on the previous literature review the following predictors were chosen: participant's gender, participant's religious activity, participant's religious beliefs, and participant's sexual beliefs. The sample population was narrowed from 124 to 116 due to incomplete questionnaires and participants who were over the age of 25 .

## Descriptive Analyses

The descriptive statistics were computed by running frequencies for the demographic variables and a mean calculation for the age of participants (Table 1). The mean and standard deviation scores for each instrument are also provided for females and males (Table 2).

Gender. The females made up $78.4 \%(\mathrm{n}=91)$ of the sample population with a total sample size of 116 .

Age. The age range for the female participants was 18-25 years old. The mean age for the female participants was 20.85 years old. Out of the 91 females sampled $1.1 \%$ were $18(\mathrm{n}=1), 11.0 \%$ were $19(\mathrm{n}=10), 29.7 \%$ were $20(\mathrm{n}=27), 33.0 \%$ were $21(\mathrm{n}=30)$, $15.4 \%$ were $22(n=14), 6.6 \%$ were $23(n=6), 2.2 \%$ were $24(n=2)$, and $1.1 \%$ were 25 $(\mathrm{n}=1)$. The age range for the male participants was 18-25 years old. The mean age for the male participants was 21.60 years old. Out of the 25 males sampled $4 \%$ were $18(\mathrm{n}=$
1), $4 \%$ were $19(\mathrm{n}=1), 20 \%$ were $20(\mathrm{n}=5), 28 \%$ were $21(\mathrm{n}=7), 16 \%$ were $22(\mathrm{n}=4)$, $4 \%$ were $23(n=1), 20 \%$ were $24(n=5)$, and $4 \%$ were $25(n=1)$.

Ethnicity. The total number of participants by ethnicity is broken down into female and male. For females the numbers are as follows: $8.8 \%$ African American ( $\mathrm{n}=$ 8), $5.5 \%$ Asian $(\mathrm{n}=5)$, $73.6 \%$ Caucasian $(\mathrm{n}=67), 1.1 \%$ Hispanic $(\mathrm{n}=1)$, and $11.0 \%$ was made up of other such as African and American Indian ( $\mathrm{n}=10$ ). For males the numbers are as follows: $8 \%$ African American $(\mathrm{n}=2), 8 \%$ Asian ( $\mathrm{n}=2$ ), $72 \%$ Caucasian ( $\mathrm{n}=18$ ), $4 \%$ Hispanic ( $n=1$ ), and $8 \%$ was made up of other such as African and American Indian ( $\mathrm{n}=2$ ).

Hometown size. Hometown size was a subjective question that was based on the participants' perceptions of their affiliated hometown. The participants could have answered urban ( 50,000 or more residents), micropolitan (less than 50,000 but at least 10,000 residents), or rural (less than 10,000 residents). Of the 116 participants $37.9 \%$ viewed their hometown as urban $(\mathrm{n}=44), 31.9 \%$ viewed their hometown as micropolitan $(\mathrm{n}=37)$, and $30.2 \%$ viewed their hometown as rural $(\mathrm{n}=35)$.

Religion. After extensive review of the literature, it was determined that most studies categorize various religious sects differently based on a variety of factors. These factors are usually unique to their specific research and the categorization techniques could not be generalized to this specific study. In most cases, additional questions were asked to help ascertain what "group" the religion would fall into. Since the participant's specific religious denomination and/or preference are not relevant to this study, and there is no basis for categorization, there is no descriptive statistic for this area. However, included is a grouping of all 116 individual answers to the question "What is your
religious preference or denomination be as specific as possible?" (Appendix E) to give the reader a general idea of the different religions represented. Categories were based on the participants' answers, meaning that if one participant's answer was "Christian" and another participant's answer was "Christian/Baptist" they were each considered their own category. Several responses were grouped under the classification of Christian based on the participant's answer and the understanding of the religion's beliefs.

## Regression Analyses

Hypothesis 1. Involvement in religious activities will have a stronger relation with sexual activity than sexual beliefs or gender. The first regression analysis examined gender, sexual beliefs, and religious activity on sexual activity ( $\mathrm{n}=116$; Table 4 ). The full regression model was significant ( $\mathrm{F}=9.937, \mathrm{p}<.001$ ), accounting for $18.9 \%$ of the variance in sexual activity scores $\left(\mathrm{R}^{2}=.21\right.$; adjusted $\left.\mathrm{R}^{2}=.189\right)$. Gender was the first step entered as a predictor and the results were not significant. In the second step, Religious Activity was entered and accounted for an additional 13\% of the variance. Religious Activity was also statistically significant at this stage $(\beta=-.371 ; \mathrm{t}=-4.294 ; \mathrm{p}<.001)$. The third and final step added Sexual Beliefs while it accounted for an additional 4.3\% of the variance. Religious Activity remained significant while Sexual Beliefs also showed a significant relation to Sexual Activity (Religious Activity $\beta=-.299, \mathrm{t}=-3.380, \mathrm{p}<.001$; Sexual Beliefs $\beta=-.236, \mathrm{t}=-2.637, \mathrm{p}<.01)$.

Hypothesis 2. Religious beliefs will have a stronger relation with sexual activity than sexual beliefs or gender. The second regression analysis examined gender, religious beliefs and sexual beliefs on sexual activity $(\mathrm{n}=116$; Table 5). The full regression model was significant ( $\mathrm{F}=7.417, \mathrm{p}<.001$ ), accounting for $14.3 \%$ of the variance in sexual activity scores $\left(\mathrm{R}^{2}=.166\right.$; adjusted $\left.\mathrm{R}^{2}=.143\right)$. Gender was entered in the first step as a
predictor and the results were not significant. Religious Beliefs was entered in the second step and accounted for an additional $10 \%$ of the variance. Religious Beliefs was statistically significant at this stage $(\beta=-.316 ; \mathrm{t}=-3.574 ; \mathrm{p}<.001)$. The third variable added, Sexual Beliefs, accounted for an additional $4.6 \%$ of the variance. Religious Beliefs and Sexual Beliefs showed a significant relation to sexual activity (Religious Beliefs $\beta=-.231, \mathrm{t}=-2.201, \mathrm{p}<.01$; Sexual Beliefs $\beta=.234, \mathrm{t}=-2.385, \mathrm{p}<.01$ ).

Hypothesis $3 a$. The relation between religious activity and sexual activity will be statistically significant for persons with conservative sexual beliefs with gender in the model. An analysis was run for the third regression analyses to compute data for conservatives ( $\mathrm{n}=27$ ) examining gender and religious activity on sexual activity while controlling for sexual beliefs (Table 6). The full regression model for conservatives was significant $(\mathrm{F}=6.071, \mathrm{p}<.01)$, accounted for $28.1 \%$ of the variance in Sexual Activity scores $\left(\mathrm{R}^{2}=.336\right.$; adjusted $\left.\mathrm{R}^{2}=.281\right)$. Gender was the first step entered as a predictor and the results were not significant. Religious Activity was entered in the second step and accounted for an additional $31 \%$ of the variance. Religious Activity was also statistically significant $(\beta=-.567 ; \mathrm{t}=-3.346 ; \mathrm{p}<.01)$.

Hypothesis $3 b$. The relation between religious activity and sexual activity will not be statistically significant for persons with liberal sexual beliefs with gender in the model. An analysis was run for the fourth regression analyses to compute data for liberals ( $\mathrm{n}=30$ ) examining gender and religious activity on sexual activity while controlling for sexual beliefs (Table 7). The full regression model for liberals was not significant $(\mathrm{F}=.485 ; \mathrm{p}=$ .621), and did not account for much of the variance in Sexual Activity scores $\left(\mathrm{R}^{2}=.336\right.$; adjusted $\mathrm{R}^{2}=-.037$ ). Neither Gender nor Religious Activity was significantly related to

Sexual Activity in either step. Religious Activity was entered in the second step and accounted for an additional $9 \%$ of the variance.

Hypothesis 4a. The relation between religious beliefs and sexual activity will be statistically significant for persons with conservative sexual beliefs with gender in the model. An analysis was run for the fifth regression analyses to compute data for conservatives ( $\mathrm{n}=27$ ) examining gender and religious activity on sexual activity while controlling for sexual beliefs (Table 8). The full regression model for conservatives was not significant $(\mathrm{F}=.903, \mathrm{p}=.418)$, and did not account for much of the variance in Sexual Activity scores $\left(\mathrm{R}^{2}=.07\right.$; adjusted $\left.\mathrm{R}^{2}=-.007\right)$. Gender was entered in the first step as a predictor and the results were not significant. Religious Belief was entered in the second step and accounted for an additional $5 \%$ of the variance, but was not statistically significant either.

Hypothesis $4 b$. The relation between religious beliefs and sexual activity will not be statistically significant for persons with liberal sexual beliefs with gender in the model. An analyses was run for the fifth regression analyses to compute data for liberals ( $\mathrm{n}=30$ ) examining gender and religious activity on sexual activity while controlling for sexual beliefs (Table 9). The full regression model for liberals was not significant as well, and accounted for only $6.9 \%$ of the variance in Sexual Activity scores $\left(R^{2}=.134\right.$; adjusted $R^{2}$ $=.069$ ). Once again, neither Gender nor Religious Beliefs were significantly related to Sexual Activity in either step. Religious Beliefs was entered in the second step and accounted for an additional $11 \%$ of the variance.

## Chapter V

## Discussion

This study focused on taking religious and sexual variables related to sexual activity and attempting to clarify and expand on previous studies done in this area. There were several studies done concerning gender, religiosity, and sexual beliefs but none combining all three to determine their relations to sexual activity and each other. These relations were examined by a hierarchical linear regression analysis.

The first hypothesis proposed that involvement in religious activities would have a stronger relation with sexual activity than both gender and sexual beliefs. Several of the studies mentioned previously in the literature review supported the notion that religious activity impacted sexual activity and separately others supported that sexual beliefs affected sexual activity, but none had combined to see which one had a stronger relation with sexual activity or whether or not one was affecting the other. Beck, Cole, and Hammond (1991) found that higher religious activity decreased the likelihood of sexual activity for the subject and Pluhar and associates (1998) found that more conservative sexual beliefs were negatively associated with probability of experiencing sexual intercourse. The results of this study supported that involvement in religious activities appeared to have a stronger relation with sexual activity than either gender or sexual beliefs since it had a higher significance level. However, it should be noted that sexual beliefs had a significantly stronger relation with sexual activity than gender, whereas, gender had no significant relation at all.

Hypothesis 2 proposed that religious beliefs would have a stronger relation with sexual activity than sexual beliefs or gender. Once again, studies have analyzed the relations separately but not together. Schultz and associates (1977) found that participants were least likely to engage in acts of sexual activity upon entering college if they were more conventionally religious and Godow and LaFave (1979) found there was no significant difference in sexual behavior even after sexual attitudes of participants had changed. The results of this study did not support hypothesis 2 ; however, it did show that both religious beliefs and sexual beliefs had a significant relation with sexual activity. Gender did not have a significant relationship with sexual activity.

Hypothesis 3a stated that the relation between religious activity and sexual activity would be statistically significant for persons with conservative sexual beliefs and hypothesis 3 b stated that the relation between religious activity and sexual activity would not be statistically significant for persons with liberal sexual beliefs. These viewpoints were proposed based on the research by Jensen, Newell, and Holman (1990) and their findings showing that participants who attended a frequent religious activity but had liberal sexual beliefs, still yielded a high rate of sexual activity. Research done in these areas separately show that participants with frequent religious activity were less experienced sexually (Thorton \& Camburn, 1989) and as participants shifted their sexual beliefs from conservative to liberal there was in increased likelihood of sexual activity (Pluhar, et. al, 1998). The results of this study did support hypotheses 3 a and 3 b in that participants with conservative sexual beliefs had a significant relation with sexual activity and participants with liberal sexual beliefs did not have a significant relation.

Hypothesis 4 a projected that the relation between religious beliefs and sexual activity would be statistically significant for participants with conservative sexual beliefs and hypothesis 4 b stated that the relation between religious beliefs and sexual activity would not be statistically significant for those with liberal sexual beliefs. These hypotheses were run to determine if the combination of variables yielded similar results as in hypotheses 3a and 3b with religious activity. It had the same support as hypotheses 3a and 3b from Thorton and Camburn (1989) and Pluhar and associates (1988) but branched off from the Jensen, Newell, and Holman's (1990) research focusing on religious beliefs. The results did not support either hypothesis. In fact, the results supported the opposite. Participants with liberal sexual beliefs showed to have the significant relation with sexual activity whereas those with conservative sexual beliefs did not.

Overall the results of this study were very interesting. Even though each data set did not particularly support its hypothesis, the resulting data was just as intriguing bringing about new questions and possibly answers to old ones. The next few sections will discuss possible explanations of the data output and an overview of the promising implications this study along with others that can be made about the relations of gender, religiosity, and sexual beliefs to sexual activity and each other.

## Limitations of Present Study

The lack of males ( $21 \%$ ) in the study could possibly contribute to the conflicting results that gender has no significant relation with sexual activity. However, the study by Miller and Olson (1988) where only $37 \%$ of the population was male, supported that females were less sexually active than males. Also, this study's results are not alone in
that research done by Poulson and associates (1998) showed that females did not significantly differ in the frequency of sexual activity than males.

Another area of interest is ethnicity. The majority of the sample (73\%) was Caucasian. However, this number could represent both a limitation and a strength. The limitation is that since the population was not very diverse it would be hard to justify applying these findings to other ethnicities. On the strength side, it has been found that frequency of sexual activity varies across different ethnicities (Beck, Cole \& Hammond, 1991), so it's possible that these findings were not affected as much by this extraneous variable.

## Further Considerations

The results of this study obviously pose some interesting findings. In this study, gender did not have a significant relation to sexual activity in any of the regression computations. This contradicts all but one (Poulson, et. al, 1998) research study reviewed in the literature. It could be that along with the changing trends of religious and sexual beliefs, the frequency gap of sexual activity between males and females may be closing. Reflecting on the study by Robinson and Jedlicka (1982), sexual activity increased for males $12.3 \%$ over a 15 -year span, but the females' sexual activity more than doubled for the same time period, showing a $34.8 \%$ increase. Now being over 20 years later since the publishing of that article, it is quite plausible the frequency between genders has all but diminished.

Another idea that has been challenged/supported is the sequence of variables to the direct relation of sexual activity. From the results of this study, implications could start leaning toward the idea that religious activity affects sexual beliefs directly and bypasses religious beliefs. A proposed method of relation now could be religious activity
directly affects sexual beliefs which directly affects sexual activity. This would explain research by Jensen, Newell, and Holman (1990) and Petersen and Donnenwerth (1997) which, when previously reviewed, had conflicting data with other research in the area. However, now it would seem their research was headed in the right direction.

Which brings us to the question: Do religious beliefs really have an affect on sexual activity? Results of this study would say yes, but how and how much? Religious beliefs were found to have a significant relation with sexual activity but not more than sexual beliefs. It had a significant relation with sexual activity but only in conjunction with liberal sexual beliefs. With previous research not stable in this area, it would seem apparent that further studies need to be done concerning religious beliefs and sexual activity, while controlling for as many outside variables as possible.

The real interesting ideas come from analyzing the different results across each model. Where data supported religious activity having a significant relation with sexual activity in model 1 , models 3 a and 3 b show it was only significant when paired with conservative sexual beliefs. Sexual beliefs were also significant across all models, but their support was reversed from conservatives to liberals from models 3 a and 3 b to models 4 a and 4 b . It would seem that the variables have a significant relation with sexual activity. It is in the combination of these variables where the mystery lies as to how they impact each other to the effect of creating a significant relationship to sexual activity. This brings up a valid consideration when dealing with the variable of sexual activity. Gender, religiosity, and sexual beliefs are only three of many variables that are researched to have a relation with sexual activity. If the small combination of these
variables produces such a drastic difference in significance, what is the implication of extraneous variables combining with these to influence the data?

## Implications for Future Research

This study focused on several variables relating to sexual activity that should be researched further. Based on this research and others, gender may no longer be a factor concerning sexual activity and should be studied alone to determine its current relation with sexual activity. After completing this study, it is apparent that there are a multitude variables and/or combinations of variables that influence sexual activity. It would be best to not only implement research with a few variables at a time to prevent contamination, but studying their possible relations to each other has become an apparent variable itself.

From a review of the literature, it is apparent that there are numerous factors that affect sexual activity. Those such as ethnicity, home environment, peers, siblings, specific religious denominations, and parental figures are just to name a few. With this in mind, in order to restrict extraneous variables from affecting the data, it is important to maintain consistency among the variables concerning areas that could have a direct effect on sexual activity. For example, if one wanted to study the different sexual frequencies between ethnicities, they would want to control for religious activity since that has been shown to have an affect on sexual activity. Therefore they should try to have participants with similar frequency in religious activity to help eliminate that extraneous variable.

It is apparent even from this study with a relatively small sample, the participants not only had a wide range of religious ties, but also some interesting combinations of different religious backgrounds such as "Christian/Buddhist" and "Lutheran/Atheist." For future studies concerning religion and sexual activity to have an impact, studies
should focus more on actual religious beliefs or limit the participants to a specific religious background/belief. This would be the best route to actually ascertain how religion is related to and ultimately affects sexual activity. Once again, this would aid in containing and controlling outside variables that could interfere with significant data and keep researchers from over generalizing their findings.

There are many variables that make the topic of sexual activity difficult to ascertain the exact relation between gender, religiosity, and sexual beliefs. It seems that data concerning sexual activity can change with each given variable introduced, which makes it challenging to generalize across different areas. However, its complexity only reinforces the notion that more research is needed to determine precise relations between the different variables and sexual activity or between the multiple variables themselves.

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## APPENDICES

Appendix A
Models



## Conservative Sexual Beliefs Model 3a




Conservative Sexual Beliefs


Liberal Sexual Beliefs


Appendix B
Verbal Consent Form

## Verbal Consent Form

This research study is designed to assess whether gender, religiosity, or sexual beliefs have a stronger relationship with premarital sexual activity. You will be asked to complete several questionnaires which should only take 10 minutes of your time. If you choose to participate you will be asked personal questions dealing with your religious affiliation and beliefs, sexual beliefs, sexual preference, and sexual activity. Participation in this research study is completely voluntary*. In no way will your answers be traced back to you, so do not write your name or anything that may identify you on the questionnaire except for the answers required. Please make sure you have answered all questions before turning it in. Thank you for your time.

* For those classes in which the professor is offering extra credit for taking the questionnaires, the following statement will be read: Your professor is offering extra credit for taking these surveys, you may write your name on a separate piece of paper which I have, after you have turned in the questionnaires to me.

Appendix C
Instruments

## Demographic Survey

Please check a box for your answer or write it on the line provided. Only check ONE BOX.

1) Are you or have you ever been married?

$$
1-\text { Yes } \quad \square 2-\text { No }
$$

2) What is your gender?

$$
1-\text { Male } \quad \square 2-\text { Female }
$$

3) How old were you on your last birthday?
4) What is your ethnicity? (if other please specify)
1 - African American
[ 2-Asian
[3-Caucasian
4 - Hispanic
[ 5 - Other $\qquad$
5) What is your religious preference or denomination be as specific as possible?
6) List a city or town that you most associate with being your hometown.
7) Would you consider your hometown a

1 - Urban Area (50,000 or more residents. Adjacent counties that have a minimum of $25 \%$ commuting to the central county are also included.)

2 - Micropolitan Area (Less than 50,000 residents but at least 10,000 residents)
3 - Rural Area (Less than 10,000 residents)

## Religious Involvement and Beliefs

Now, you are going to read some statements about religion. Please indicate your answer by checking a box. Only check ONE BOX.

1) My outlook on life is based on my religion.

1-strongly agree
[ 2-agree
[ 3 - neither agree nor disagree
[4-disagree
[ 5-strongly disagree
2) Although I believe in my religion, many other things are more important in my life.

1-strongly agree
[ 2 -agree
] 3 - neither agree nor disagree
[ 4-disagree
[ 5-strongly disagree
3) My faith helps me know right from wrong.

1 - strongly agree
[ 2-agree
[ 3-neither agree nor disagree
[4-disagree
[ 5-strongly disagree
4) How often do you attend religious activities that may or may not be affiliated with your specific religion (Ex. Church, Mass, Bible study, praise and worship)? Would you say...

1 - never, or almost never
[ 2-occasionally, but less than once per month
[ 3-one to three times per month
[ 4 - one or more times per week
5) All things considered, how religious would you say that you are?

1 - not at all religious
[ 2 - slightly religious
] 3-moderately religious
[4-very religious

## Sexual Behavior

Now you will read questions designed to measure your sexual activity. Please indicate your answer by checking a box. Only check ONE BOX.

1) How often have you engaged in sexual intercourse?
[1-Never
[ 2 - Rarely
[ 3-Occasionally
[4-Fairly Frequently
[5-Frequently
2) With how many different partners have you had sexual intercourse?

1 - None . . . . . I have never had sexual intercourse
2 - One
3 - Two
4 - Three
5 - Four or more
3) During the past year, approximately how often have you had sexual intercourse?

1 - None
2 - Less than once a month
3 - About once a month
4 - Two or three times a month
5 - Once a week or more
4) During the past year, with how many people did you have sexual intercourse?

1 - Four or more
2 - Three
3 - Two
4 - One
5 - None

## Sexual Beliefs

This part is NOT a knowledge test. We are interested in what you believe about some important issues. Please rate each statement according to how much you agree or disagree with it. Everyone will have different answers. Your answer is correct if it describes you very well. Use the following scale to make your ratings.

1 = Strongly Disagree
2 = Somewhat Disagree
3 = Feel Neutral
4 = Somewhat Agree
5 = Strongly Agree
$\qquad$ 11. Unmarried people should not have sex.
12. I have my own set of rules to guide my sexual behavior (sex life).
13. Birth control is not very important.
14. People should not have sex before marriage.
15. I know for sure what is right and wrong sexually for me.
16. Birth control is not as important as some people say.
17. I have trouble knowing what my values are about my personal sexual behavior.
$\qquad$ 18. More people should be aware of the importance of birth control.
19. People should have sex only if they are married.
20. I'm confused about my personal sexual values and beliefs.
21. Two people having sex should use some form of birth control if they aren't ready for a child.
$\qquad$ 22. It is all right for two people to have sex before marriage if they are in love.
23. I'm confused about what I should and should not do sexually.
24. If two people have sex and aren't ready to have a baby, it is very important that they use birth control.
25. It is all right for two people to have sex before marriage.

Appendix D
Tables

Table 1
Frequencies and Percentages for demographic measures for total sample

| Measures | Frequency $\%$ |
| :--- | ---: |
| Gender |  |
| Female | $78.4 \%$ |
| Male | $21.6 \%$ |

Age

| 18 | $1.7 \%$ |
| :--- | ---: |
| 19 | $9.5 \%$ |
| 20 | $27.6 \%$ |
| 21 | $31.9 \%$ |
| 22 | $15.5 \%$ |
| 23 | $6.0 \%$ |
| 24 | $6.0 \%$ |
| 25 | $1.7 \%$ |

Ethnicity
African 8.6\%
American 6.0\%
Asian $\quad 73.3 \%$
Caucasian
1.7\%

Hispanic
10.3\%

Other

| Hometown Size |  |
| ---: | ---: |
| Urban |  |
| Micropolitan | $37.9 \%$ |
| Rural | $31.9 \%$ |

Table 2
Means and standard deviation scores by gender for instruments

|  | Females <br> Mean (SD) | Males <br> Mean (SD) | Theoretical <br> Range |
| :--- | :---: | :---: | :---: |
| Measures |  |  |  |
| Religious Activity | $2.67(1.07)$ | $2.48(.92)$ | 1 to 4 |
| Religious Belief | $14.14(3.39)$ | $13.4(3.39)$ | 4 to 19 |
| Sexual Belief | $60.01(6.82)$ | $57.04(7.2)$ | 15 to 75 |
| Sexual Activity | $10.54(5.04)$ | $12.44(4.83)$ | 4 to 20 |

Table 3
Means and standard deviation scores for Sexual Beliefs by conservatives and liberals

| Measures | Conservatives <br> Mean (SD) | Liberals <br> Mean (SD) |
| :--- | :---: | :---: |
| Sexual Beliefs | $68.96(3.55)$ | $51.20(3.95)$ |
| Range | 64 to 75 | 38 to 55 |

Table 4
Model 1: Religious Activity Regression Analysis with Sexual Activity

| Step for Predictors | Coefficients |  |  |  | $\text { Adjusted } \mathrm{R}^{2}$ | $\Delta \mathrm{R}^{2}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Entry Steps |  | Final step |  |  |  |
|  | Standard $\beta$ | t | Standard $\boldsymbol{\beta}$ | t |  |  |
| Gender | -. 156 | -1.685 | -. 092 | -1.073 | . 016 | . 024 |
| Religious Activity | -. 371 | -4.294*** | -. 299 | $-3.380 * * *$ | .146*** | .161*** |
| Sexual Beliefs | -. 236 | -3.380*** | -. 236 | -2.637** | .189*** | .210*** |
| Overall $\mathrm{F}_{(3,112)}=9.937 * * *$ | Total $\mathrm{R}^{2}$ adj. $=\mathbf{. 1 8 9}$ *** |  |  |  |  |  |

Table 5
Model 2: Religious Beliefs Regression Analysis with Sexual Activity

| Coefficients |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Step for Predictors | Entry Steps |  | Final step |  | Adjusted R ${ }^{2}$ | $\Delta \mathrm{R}^{2}$ |
|  | Standard $\beta$ | $t$ | Standard $\boldsymbol{\beta}$ | t |  |  |
| Gender | -. 156 | -1.685 | -. 095 | -1.089 | . 016 | . 024 |
| Religious Belief | -. 316 | -3.574*** | -. 231 | -2.201* | .108*** | . 090 |
| Sexual Belief | -. 234 | -2.385* | -. 234 | -2.385* | .143*** | . 043 |
| Overall $\mathrm{F}_{(3,112)}=\mathbf{7 . 4 1 7 * * *}$ | Total $\mathrm{R}^{2}$ adj | . $=.143 * * *$ |  |  |  |  |

Table 6
Model 3a: Religious Activity Regression Analysis with Sexual Activity for Conservatives

| Step for Predictors | Coefficients |  |  |  | Adjusted R ${ }^{2}$ | $\Delta \mathrm{R}^{2}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Entry Steps |  | Final step |  |  |  |
|  | Standard $\beta$ | $t$ | Standard $\beta$ | t |  |  |
| Gender | -. 162 | -. 819 | -. 051 | -. 302 | -. 013 | . 026 |
| Religious Activity | -. 567 | -3.346** | -. 567 | -3.346** | .336** | . 31 |
| Overall $\mathrm{F}_{(2,24)}=6.071 * *$ | Total $\mathrm{R}^{2}$ adj. | $=.281 * *$ |  |  |  |  |

[^0]Table 7
Model 3b: Religious Activity Regression Analysis with Sexual Activity for Liberals

| Coefficients |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Step for Predictors | Entry Steps |  | Final step |  | $\text { Adjusted } \mathrm{R}^{2}$ | $\Delta \mathrm{R}^{2}$ |
|  | Standard $\beta$ | t | Standard $\beta$ | t |  |  |
| Gender | -. 155 | -. 830 | -. 175 | -. 907 | -. 011 | . 024 |
| Religious Activity | -. 105 | -. 546 | . 879 | -. 546 | -. 037 | . 011 |
| Overall $\mathrm{F}_{(2,27)}=.485$ | Total $\mathrm{R}^{2}$ adj | 037 |  |  |  |  |

${ }^{*} \mathrm{p}<.05,{ }^{* *} \mathrm{p}<.01,{ }^{* * *} \mathrm{p}<.001$.

Table 8
Model 4a: Religious Beliefs Regression Analysis with Sexual Activity for Conservatives

| Step for Predictors | Coefficients |  |  |  | Adjusted R ${ }^{2}$ | $\Delta \mathrm{R}^{2}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Entry Steps |  | Final step |  |  |  |
|  | Standard $\beta$ | t | Standard $\beta$ | t |  |  |
| Gender | -. 162 | -. 819 | -. 094 | -. 452 | -. 013 | . 026 |
| Religious Belief | -. 220 | -1.064 | -. 220 | -1.064 | -. 007 | . 044 |
| Overall $\mathrm{F}_{(2,24)}=.903$ | Total $\mathrm{R}^{2}$ adj. | $=-.007$ |  |  |  |  |

[^1]Table 9
Model 4b: Religious Activity Regression Analysis with Sexual Activity for Liberals

| Step for Predictors | Coefficients |  |  |  | Adjusted R ${ }^{2}$ | $\Delta \mathrm{R}^{2}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Entry Steps |  | Final step |  |  |  |
|  | Standard $\beta$ | t | Standard $\boldsymbol{\beta}$ | t |  |  |
| Gender | -. 155 | -. 830 | -. 197 | -1.091 | -. 011 | . 024 |
| Religious Belief | -. 334 | -1.849 | -. 334 | -1.849 | . 069 | . 110 |
| Overall $\mathrm{F}_{(2,27)}=2.083$ | Total $\mathrm{R}^{2}$ adj. | . 069 |  |  |  |  |

[^2]Appendix E
Religious Affiliations

| Religious categories | N |
| :--- | :--- |
| Christian |  |
| Assembly of God | 1 |
| Baptist | 1 |
| Baptist Free Will | 1 |
| Baptist/Non-denominational | 1 |
| Baptist/Protestant | 10 |
| Catholic | 15 |
| Christian | 1 |
| Christian Anglican | 6 |
| Christian/Baptist | 1 |
| Christian/Childhood Ideology | 1 |
| Christian/Church of Christ | 5 |
| Christian/Non-denominational | 1 |
| Christian/Lutheran | 1 |
| Christianity/Church of the Firstborn | 1 |
| First Baptist | 2 |
| First Christian Disciples of Christ | 1 |
| Lutheran | 14 |
| Methodist | 1 |
| Nazarene | 1 |
| Pentecostal | 2 |
| Presbyterian | 2 |
| Protestant | 2 |
| Roman Catholic | 8 |
| Southern Baptist |  |
| Atheist | 2 |
| Buddhist | 4 |
| Christian/Buddhist | 1 |
| Christian/Messianic Judaism | 1 |
| Christian/Toltec Wisdom | 1 |
| Church of Christ | 3 |
| Lutheran/Atheist | 1 |
| Mormon/Latter Day Saint | 1 |
| Non-denominational | 1 |
| Non-denominational/Charismatic |  |
| Salvation Army Church | 1 |
| Tao | 1 |
| Not Answered | 1 |
|  |  |
|  |  |

Appendix F
IRB Approval

# Oklahoma State University Institutional Review Board 

Protocol Expires: 5/31/2005

Date: Tuesday, June 01, 2004
IRB Applicetion No HE0467
Proposai Tife: Tha Ralationship Betwean Gender, Peligiousity, and Sexual Beliets With Premarital
Principal
Irmostigator(a):

| Chad Haaly | Stacy Thompson |
| :--- | :--- |
| 1400 N, Perkins E3s | 338 HES |
| Stilwnter, OK 74075 | SElwater, OK 74078 |

Raviswod and
Processed as: Expedied
Approval Status Recommandad by Reviawar(s): Approwed

## Dear PI:

Your IRB application referenced above has been approved for one calendar year. Please make note of the expiration date indicated above. It is the judgment of the reviewers that the rights and wolfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calondar year. This continuation must recelve IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Actverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IR8 procedures or need any assistance from the Board, please contact me in 415 Whitehurst (phone: 405-744-5700, colson@ okstate,edu).

Sincerely,

## VITA

Chad Michael Healy

Candidate for the Degree of
Masters of Science

Thesis: THE RELATIONSHIP BETWEEN GENDER, RELIGIOUSITY, \& SEXUAL BELIEFS TO SEXUAL ACTIVTIY

Major Field: Human Development and Family Science
Biographical:
Personal Data: Born in Enid, Oklahoma on March 30, 1977, the son of Mike and Gayle Healy.

Education: Graduated from Enid High School, Enid, Oklahoma, May 1995; Received Bachelor of Science degree in Psychology and a minor in Family Relations and Child Development from Oklahoma State University, Stillwater, Oklahoma May, 2000. Completed the requirements for the Masters of Science degree with a major in Child Development at Oklahoma State University, December, 2005.

Experience: Previously employed at the Child Development Lab on the campus of Oklahoma State University; Substitute teacher for the Stillwater Public School system; Graduate assistant in FRCD at Oklahoma State University, Manager for Macy's Kid's Playaway.


[^0]:    ${ }^{*} \mathrm{p}<.05,{ }^{* *} \mathrm{p}<.01,{ }^{* * *} \mathrm{p}<.001$.

[^1]:    ${ }^{*} \mathrm{p}<.05,{ }^{* *} \mathrm{p}<.01,{ }^{* * *} \mathrm{p}<.001$.

[^2]:    ${ }^{*} \mathrm{p}<.05,{ }^{* *} \mathrm{p}<.01,{ }^{* * *} \mathrm{p}<.001$.

