



## Research Consortium Scholar Lecture 2010

# Religiosity and Health Behavior— What Does Research Tell Us?

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*This article is based on the AAHPERD Research Consortium Scholar Lecture delivered at the 2010 AAHPERD National Convention in Indianapolis, Indiana. Dr. Young's various projects are five-time winners of the U.S. Department of Health & Human Services Award for Outstanding Work in Community Health Promotion. His drug education program, Keep A Clear Mind, authored with Chudley Werch, is a winner of the Center for Substance Abuse Prevention's (CSAP) Exemplary Program Award. It has also been promoted as a Model Program by CSAP, the Substance Abuse and Mental Health Services Administration, and the Office of Juvenile Justice and Delinquency Prevention, and is on the National Registry of Effective Programs. He has received a number of other awards from professional organizations and institutions.*

*Young M. Religiosity and health behavior—what does research tell us? Am J Health Educ. 2011;42(1):4-11. This paper was submitted to the Journal on July 31, 2010, revised and accepted for publication on September 16, 2010.*

One of the nice things about giving a scholar lecture is you are able to talk about whatever you want. That is also what makes it difficult, because it requires a choice. You can talk about anything you choose, but because of time limitations you can't talk about everything you might want to choose.

My first instinct was to go with my favorite topic. Like several other people you probably know, my favorite topic is "me." I decided that while this topic would be quite fun for me, it might not be quite as enjoyable for you.

In other forums, I've had the opportunity to talk about research related to abstinence education,<sup>1</sup> to encourage increased research productivity<sup>2</sup> and to address the challenges in developing public school-university research partnerships.<sup>3</sup> For this talk, I did not want to simply recycle an earlier presentation, but rather to talk about another aspect of my work.

I thought about a conversation many years ago with a couple of faculty members regarding external funding. They said it was easy for me to get grant money because there

was lots of funding available in my interest areas – drug education and abstinence/sexuality education. There was little money available in their areas of interest. I told them that those were not my primary interest areas, but they were areas where I thought I could get funding and do some good work. When they asked what my real interest was, I told them that if I could study anything I wanted, and money was not an issue, I would be doing research in religiosity and health behavior – probably dealing more with sexual behavior than anything else.

At that time, no one seemed to be funding this type of research, but I still managed to make it a part, if not the focus, of a number of different studies. Today, funding agencies have a much greater interest in religiosity and health behavior. For example, NIH has a program announcement titled "The influence of religiosity and spirituality on health risk behaviors in children and adolescents."<sup>4</sup> One of the John Templeton Foundation's current priorities is funding projects that attempt to answer the question "How does spirituality promote health?" As

a part of this overall question, the Foundation is interested in projects that address the role of religion and religious involvement, if any, in impacting health or impacting the aging process.<sup>5</sup>

The role of religion in health behavior has been an area of interest for me for some time. I have a number of publications that address some of the issues, and decided this lecture would be the perfect opportunity to talk about the area. Thus, the topic for this Scholar Lecture is "Religiosity and health behavior – what does the research tell us?" First, we will talk about some of the challenges involved in conducting research in this area. Next, we will take a look at what generally seems to be the case regarding the relationship between religiosity and health behavior. Finally, we'll get to the

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really good part, that is, we will talk about some of my work.

### CHALLENGES IN CONDUCTING RESEARCH RELATIVE TO RELIGIOSITY AND HEALTH BEHAVIOR

First, let's examine some of the challenges. One of the challenges is how to measure religiosity (i.e., strength of one's religious beliefs/commitment/convictions). Scores of instruments exist that attempt to measure some aspect of religiosity, yet researchers who have studied religiosity and health behavior have often used only a single measurement item, most often, religious affiliation or frequency of attendance at worship services.<sup>6</sup>

When I was developing my first study dealing with religiosity and health behavior, it was the late 1970s, and I was at Auburn University. Like some other researchers, I reasoned that mere affiliation with a religious group probably had little to do with actual commitment. If we compare Catholics to Protestants to Jews, or Baptists to Methodists to Episcopalians, all we really have is a label, or a nominal level measure. Nevertheless, many social scientists have placed religious denominations on a fundamentalist/conservative – liberal continuum, and then ascribed an ordinal level religiosity score to individuals indicating affiliation with a particular denomination<sup>7</sup>

While denominations may differ in their official position on different issues, it seems inappropriate to assume, for example, that all persons indicating affiliation with a particular religious denomination, support that denomination's official position on a given issue, and that the strength of that support is the same across all persons who claim that denominational affiliation. Thus, while religious or denominational affiliation may be of interest, and has been widely used by social scientists as a measure of religiosity, its use as the only measure of religiosity in a study of religion and health behavior leaves a bit lacking.

The second measure, again frequently used as a single item measure of religiosity, is frequency of attendance at religious or

worship services.<sup>6</sup> Frequency of religious attendance is a legitimate measure of religiosity and is correlated with a number of health behaviors. If, however, we choose to measure strength of religious commitment solely by the frequency with which people attend worship services, aren't we still missing something?

I remember sharing my frustration about trying to find the best way to measure religiosity with one of my colleagues. He was one of our health educators, and Auburn's golf coach. He always dealt with issues in a very direct way, and in this instance he said "Hell, I don't understand why you have to come up with some fancy way to measure this. Just ask them how religious they are."

As I delved more into the literature I found that coach's suggestion actually fit with what Glock and Stark<sup>8</sup> called the "experiential" or feeling aspect of religious commitment – do you feel or believe you are religious? These researchers, however, also indicated there were four other dimensions to religiosity – the ritualistic dimension (which included religious activities such as frequency of worship attendance, but also other activities such as prayer and reading sacred scriptures or other religiously oriented material); the ideological dimension (a measure of one's adherence to the principal beliefs of the religion); the intellectual dimension (which involved religious knowledge); and consequential (which attempted to measure the impact of the other dimensions on the decisions one makes in everyday life) – which seems to be the issue with which we are really concerned – i.e., what effect does religiosity have on health behavior?

Faulkner and deJong<sup>9</sup> developed a scale that attempted to measure these different dimensions. Their article, published in 1966 was titled "Religiosity in 5-D: An Empirical Analysis." There were, however, concerns about the scale. For example, Weigert and Thomas<sup>10</sup> were concerned that of the four items comprising the intellectual or knowledge dimension, three of them didn't test knowledge at all, but asked about the view, opinion, or belief of the respondents. In fact, there were actually two knowledge items.

The first item (for those from Jewish backgrounds) asked participants to name the first five books of the Old Testament. The second item (for those with Christian backgrounds) asked participants to list the names of the four Gospels. Weigert and Thomas<sup>10</sup> also noted that the ritualistic scale – designed apparently to measure frequency of religious practice – included one item worded "Do you feel..." and a second item worded "Do you believe..." Thus, these items did not seem to reflect religious practice. There were also concerns with some of the items that comprised the experiential scale.

In spite of the criticisms, I liked the scale and used it, or variations of it, in several of our studies. In some studies we treated the five dimensions as five separate variables. In others, we treated it as a single measure of religiosity. We've also conducted analyses using individual items, representing the different dimensions. We tended to use both the Old Testament and the New Testament knowledge items.

In 2007, more than 40 years after publication of the scale, Bishop and his co-workers<sup>11</sup> published an evaluation of Faulkner and DeJong's scale. They had used the scale with an older adult population, and found that the scale maintained a single factor construct of religiosity (i.e., the scale items loaded heavily on one factor – not five), with different dimensions. They concluded that the scale was an appropriate measure for use in religiosity and aging research.

Other scales have also seen frequent use as a means to measure religiosity. For example, Allport's<sup>12</sup> intrinsic-extrinsic model of religious motivation provided another framework for the study of religion that goes beyond religious affiliation and worship attendance. In this model, intrinsic faith is faith that is lived, whereas extrinsic faith is used as a means to an end. In their classic study, Allport and Ross<sup>12</sup> found that persons scoring high on extrinsic faith were more likely to be prejudiced than those scoring high on intrinsic faith. The intrinsic-extrinsic model has also been used by a number of other researchers.<sup>13-15</sup>

These measures, and the majority of the



other scales that have been developed to measure some aspect of religiosity, seem to be oriented toward either a Christian or a Judeo-Christian perspective. A number of items are specific to the Bible or other aspects of Christianity or Judaism. Thus, these scales will probably show that a devout Jew or Christian has a greater degree of religious commitment than an equally devout Muslim or Buddhist.

One solution to this problem is to use a generic measure of religiosity – and there are several. For example, Worthington and co-workers<sup>16</sup> developed a 10-item scale, the Religious Commitment Inventory (RCI-10). Religious commitment is defined as “the degree to which a person adheres to his religious values, beliefs, and practices, and uses them in daily living.”<sup>16(p.85)</sup> Thus, the definition seems to focus on Glock and Stark’s “consequential” dimension of religiosity.

Scale items seem to be reflective of the four other dimensions. For example: “Religious beliefs influence all my dealings in life” (consequential), “I enjoy working in the activities of my religious organization” (ritualistic), “Religion is especially important to me because it answers many questions about the meaning of life” (ideological), and “I spend time trying to grow in an understanding of my faith” (intellectual/knowledge). It is a generic scale, (not associated with a specific religion or faith tradition) and can be used as a general measure of religious commitment.

We’ve seen that there are different ways to measure religiosity. A major challenge in research related to the influence of religiosity on health behavior is selecting a measure of religiosity that is appropriate for the study. My recommendation is, whenever possible; use more than a single item measure. Depending on the study, researchers may want to select a generic measure of religiosity, but also include additional measures. There may also be cases in which the researcher may need to think about developing a new measure of religiosity. For the most part, however, the challenge is simply selecting from the many existing measures those that address the aspect of religiosity that is of

interest to the researcher.

Of course, selecting or developing appropriate measures of health behavior can also be a challenge. That, however, is a topic for an entirely different presentation.

Another challenge is subject recruitment. How do researchers recruit subjects—especially school age children—when religion is a major focus of the study? When we have had school-based studies that have examined some aspect of health behavior, we have generally included some measure of religiosity. In recent years, more so than in the past, even if we have included only a few religiosity items on an evaluation questionnaire, it is pretty much a given that someone is going to ask us why we are asking kids questions about religion. We say something like, “Research seems to indicate a link between measures of religion and health behavior. We want to see if that is the case in our study population.” That seems to be a generally satisfactory response. We are currently working on a project, one that I’ll talk about later, that has a major focus on religion and health behavior. From the preliminary discussions I’ve had with a few schools, it appears that it will be much easier to secure college students as subjects than junior high or high school subjects.

I’ve talked a bit about two of the challenges in conducting research in this area – measurement and subject recruitment. Now let me highlight a bit of what we know about the relationship between religion and health behavior.

## RELATIONSHIP OF RELIGIOSITY TO HEALTH BEHAVIOR

Previous research indicates that there does seem to be a relationship between religious beliefs/behavior, health status and certain risky health behaviors. This appears to be the case for adults<sup>17</sup> and for young people.<sup>18</sup> In most cases, where there is a significant effect of religiosity on health, the effect is protective. In some instances, however, there seems to be a negative relationship between measures of religion and at least some measures of health, BMI,<sup>19</sup> and increased weight and obesity among women

– depending on the measure of religiosity examined.<sup>20</sup>

In another study, Hill and his co-workers<sup>21</sup> examined 12 health behavior outcomes and their relationship to religious attendance among a sample of Texas adults. In their household survey, these researchers found that weekly attendance, as compared to sporadic or non-attendance, was a strong predictor of having had a physical exam, having had a dental exam, regular vitamin use, infrequent bar attendance, regular seat belt use, walking on five or more days per week, taking part in strenuous exercise three or more days per week, never having been a smoker, and abstaining/moderate drinking. This study is important, because rather than focus only on negative health behaviors and/or behaviors that tend to be proscribed by certain religious groups, the researchers also examined positive health behaviors that apparently had not been examined previously. The researchers used religious attendance as a single measure of religiosity, rather than a more comprehensive measure. Additionally, the study was a cross-sectional survey, rather than a longitudinal study.

In an additional study, this one by Wallace and Forman,<sup>22</sup> the researchers used a national sample to study the relationship between religiosity and health behavior among adolescents. They found both frequency of religious attendance and importance of faith to be related to dietary habits, participation in exercise, seat belt use, and sufficient sleep. Other studies have also found frequency of religious attendance to be associated with more positive health behavior, including less smoking, less heavy drinking and more frequent participation in exercise.<sup>23,24</sup> Several studies have also dealt with religiosity and adolescent sexual behavior.<sup>25-27</sup> They have generally found an association between greater religiosity and a decreased likelihood of having had sexual intercourse.

The majority of studies that have examined the relationship between religiosity and health have used measures of religiosity such as religious affiliation or worship attendance, rather than more comprehensive measures. Additionally, the vast majority of studies that



have examined the relationship between religiosity and health have been cross-sectional, identifying correlates of behavior, rather than longitudinal, identifying antecedents of behavior.

It seems important to examine, in a longitudinal manner, the relationship between religiosity and health behavior, to determine the degree to which measures of religiosity serve as antecedents to various aspects of health behavior. Perhaps we can even seek to understand not just whether religiosity makes a difference in health behavior—but if, as seems to be the case, it does make a difference—then to adequately answer the question - why does it make a difference?

We have talked briefly about some of the research related to religiosity and health behavior. Now, I want to talk about some of the research in which I have been involved which has been published; one additional study that has been presented, but not yet published; and an additional study that is currently in progress.

The first study I want to mention, is a study of born again status and death anxiety which Seldon Daniels and I conducted.<sup>28</sup> We found, among other things, that born again Christians had a lower death anxiety than Christians who were not born again, and non-Christians. Apparently the perceived assurance of a life after death, among the born-again Christians, accounted for this difference.

One controversial finding, not related to the religious aspect of the study, was the higher death anxiety scores found for blacks, as compared to whites. Previous investigators Pandey and Templer<sup>29</sup> found no differences in death anxiety between blacks and whites. These investigators stated that it was possible to hold a view that, as a group, blacks have greater superstition than whites, and thus would supposedly exhibit greater anxiety concerning an area such as death. They indicated, however, that this and other stereotyped views should be regarded as simply racist folklore.

In attempting to account for the differences between Pandey and Templer's findings and our study, we noted there were

important differences in the groups studied. For example, the blacks in Pandey and Templer's study were urban college students; the blacks in our study were high school students in the rural south, in the 1970s. In our study, the speculation of a greater superstition among blacks (racist folklore notwithstanding) offered one possible explanation of the findings.

In a second publication related to death anxiety, Daniels and I reported that a set of six variables (sex, gender, religiosity-intellectual dimension, religiosity-ideological dimension, religious affiliation and born-again status) accounted for a significant amount of the variation in death anxiety.<sup>30</sup> The ideological and intellectual dimensions were from Faulkner and DeJong's scale.<sup>9</sup> The other scale dimensions (ritualistic, experiential and consequential) did not contribute to explaining an additional amount of the variation in death anxiety scores.

These two articles are my only contributions to the literature in the area of religiosity and death anxiety; however, the second article did appear again in another journal. It seems that someone liked the article so well he published it under his name – but forgot to include my name or the name of my co-author. A short time after this additional publication was brought to my attention, I brought it to the attention of the new author's Dean. He (the "author") doesn't work there any more. I mention this incident, not because it directly relates to the lecture topic, but because I still find it difficult to believe that someone would actually steal our article and publish it as his own work.

While religion and death anxiety was an area of interest for me, I began to realize that if I tried to examine everything in which I had an interest I might go a mile wide in my research, but would rarely go more than an inch deep. Thus, while I have from time to time examined other health behaviors, the focus of my work over the last 30 years has been sexuality issues, with some work in drug education. When people ask me what I do, I often say "sex and drugs." As yet, I have not published any studies dealing with rock and roll.

While some of my work related to religiosity and health behavior has examined the relationship of religiosity to alcohol and other drug use, most of my work has involved religiosity and sexual behavior and that's where we will concentrate. In the interests of time, several of those projects have not been included. The individual projects that are included will be presented in rough chronological order.

My first post-dissertation study examined sexual behavior at a church-related college, but we did not think to include measures of religion.<sup>31</sup> My first publication dealing with religion and sexual behavior appeared in 1981.<sup>32</sup> In this study of religiosity and sexual behavior among college females, I found that five religiosity items significantly distinguished among three sexual behavior groups. The items were from the Faulkner and DeJong scale.<sup>9</sup> The behavioral groups were: (1) had never had sexual intercourse, (2) had experienced sexual intercourse, but not in the last year, and (3) had experienced sexual intercourse within the last year.

In a second study,<sup>33</sup> I examined religion and sexual behavior and contraceptive use among college women and found that items from three dimensions of religiosity (consequential, ritualistic and ideological) distinguished among women who had not had sexual intercourse in the past year, women who had experienced intercourse with only one partner in the last year, and women who had experienced intercourse with more than one partner in the last year. Three different items, two representing the experiential scale and one representing the ritualistic scale, were found to distinguish among three contraceptive use groups – intercourse independent, intercourse dependent and relatively ineffective.

That was followed up with an additional publication,<sup>34</sup> in which I used the same sexual behavior groupings for college males and found 12 items, representing all five dimensions of religiosity (ideological, intellectual, ritualistic, experiential and consequential) distinguished among the three sexual behavior groups. Additionally, a set of 10 items representing all five dimensions of religiosity



distinguished among four contraceptive use frequency groups. Why some measures of religiosity seemed to make a difference among the college males, while different measures of religiosity made a difference among college females was (and is) unclear.

Next, Betty Hubbard, Emogene Fox and I studied the relationship of religious literalism and other religiosity variables to sex guilt and sexual behavior.<sup>35</sup> In this study we found that religiosity variables accounted for a substantial portion of the variation in sex guilt for males, but were of less importance for females. Women were more likely to feel guilty, independent of their religiosity score. Scores for three dimensions of religiosity (ritualistic, experiential and consequential), but not religious literalism, differed by sexual behavior status (virgin, experienced intercourse but not in last year, experienced intercourse within the last year). Virgins scored highest on each of the three religiosity dimensions.

One of the more interesting studies in which I have been involved was a study of sexual satisfaction among married people, which I conducted with Georg Denny and Raffy Luquis, which resulted in three published articles.<sup>36-38</sup> In this study, an abbreviated version of the Faulkner and DeJong scale<sup>9</sup> was used as a single measure of religiosity (rather than scoring different dimensions). We thought that religiosity would be related to sexual satisfaction in marriage, but reasoned that the relationship might differ depending on how the respondent believed God viewed sex. For example, we expected that a highly religious person, who thought that God had a positive view of sex, perhaps viewing it as the best thing since sliced bread, would have a high level of sexual satisfaction. On the other hand, we expected that a highly religious person, who thought God had a negative view of sex, perhaps viewing it as the means by which sin itself was transmitted from one generation to the next, would have a low level of sexual satisfaction.

Thus we developed a new measure to address "one's perception of God's view of sex." It included six items, three worded

positively, for example "Within marriage, any sexual activity that is agreeable and pleasurable to both partners is approved of by God" and three worded negatively, for example "Within marriage participation in sexual activities other than penile vaginal intercourse, such as oral sex, would not be approved of by God."

We used this perception of God's view of sex variable, the religiosity variable, and the interaction of religiosity and perception of God's view of sex as a third variable. In the first publication,<sup>36</sup> these three variables did not make a significant contribution toward explaining the variation in sexual satisfaction among married men and women. In the second publication,<sup>37</sup> these three variables when included, as a block, in the regression model, did make a significant ( $P=0.038$ ), though not substantial (change in  $R^2 = .006$ ) contribution toward explaining the variation in sexual satisfaction among married women. In the third publication,<sup>38</sup> dealing with sexual satisfaction among women age 50 and older, the three variables accounted for a larger change in  $R^2$  (.11), but this was not statistically significant. We have since used the scale with college students, modifying the items by deleting the phrase "Within marriage."<sup>39</sup>

One of the reasons we believe that the interaction variable did not account for more of the variation in sexual satisfaction in this initial study was we did not have any participants who were highly religious and also thought God had a negative view of sex. I'm convinced that they were in our sample. They were among the more than 4,000 people who did not complete our questionnaire, and were well represented by the many people who sent us hate mail, gospel tracks, made not-so-friendly phone calls, and the woman who was responsible for a postal restraining order against us. You heard right. The U.S. Postal Service sent me a letter stating that this woman had determined that the materials we were trying to sell her were pornographic, and that if I contacted her again in this regard I would be subject to a fine of up to \$50,000 and imprisonment in a federal penitentiary.

This was interesting, because when we sent people a questionnaire they opened the envelope and found a cover letter and a second sealed envelope. The second envelope was stamped with the message "Please do not open until after reading the cover letter." The cover letter explained the study and indicated that if a person did not want to participate, then he/she could simply discard the envelope containing the questionnaire without opening it. Did people do that? Of course they didn't. They opened the letter, read explicit questions regarding their sexual behavior and became outraged (and did not return a completed questionnaire). I'm not sure how many calls the university president received on that one.

A second point was we had wanted to make sure people knew that this was an anonymous survey, so we made clear that the only record of their contact information we had was on the mailing label stuck to the envelope we sent them. We had no way to contact any of them a second time, even if we wanted to so - well, all except the woman who filed the postal restraining order. The postal service gave us her name and address. I was tempted to make use of that information, but did not.

Moving away from the study of sexual satisfaction and more into the realm of public policy, Mary Ramey and I conducted a study that involved the Arkansas state legislature and resulted in two publications.<sup>40,41</sup> As some of you know, for a few years the then-governor of Arkansas, Mike Huckabee, and I butted heads, or were in some type of contest (starts with the letter "p"), over abstinence education. This study was conducted in that context. We addressed support among Arkansas legislators for comprehensive school health programming, as well as abstinence education and sexuality education.

We surveyed the 135 members of the Arkansas state legislature and managed to get 73 of them (54%) to respond. Our sample (i.e., the 73 who returned completed questionnaires) was comprised of 14% female respondents, and 22% Republications. This compared favorably to the total legislature



that had a 15% female and a 22% Republican composition. Respondents completed a 42-item questionnaire. This included a six-item scale we used as a measure of support for sex education, a 16-item factor we called support for comprehensive health education, two abstinence education items, and two religiosity items – frequency of worship attendance, and self-rated religiosity.

In regard to support for sex education, the only factor we found that made a difference was Party affiliation. Democrats were supportive. Republicans were not. Neither of the two religiosity items came close to statistical significance. There were similar findings in regard to support for comprehensive health education. Party affiliation made a difference. Religiosity did not. Democrats were supportive. Republicans were not.<sup>40</sup>

When it came to our abstinence education items, however, religiosity made a difference, but Party affiliation did not. In response to the item “I am supportive of legislation that would increase the proportion of schools that require instruction on abstinence” 62.8% disagreed with the statement. There was a difference in support by level of church attendance ( $P=0.01$ ), with those attending worship services more frequently, more likely to be supportive. Self-rated religiosity did not make a difference ( $P=0.97$ ). The second item read, “Do you think that education related to sexuality should be limited to abstinence until marriage?” More than half (52%) agreed with the statement. Those who attended church more frequently ( $P=0.04$ ), and those who rated themselves higher on religiosity ( $P=0.05$ ) were more likely to be supportive.<sup>40</sup>

More recently, George Denny, Tina Penhollow and I published an article on the impact of religiosity on sexual behavior.<sup>39</sup> In 2007, Tina, Bill Bailey and I published a study that examined the relationship between religiosity and hooking-up behavior.<sup>42</sup>

In the 2005 religiosity paper<sup>39</sup> we examined eight outcome variables: sexual intercourse – ever, in the last year, and in the last month, both giving and receiving oral sex – ever and in the last month, and ever participation in anal sex. The four reli-

giosity predictor variables included worship attendance, religious feeling, and perception of God’s view of sex (the scale from our previous sexual satisfaction study) with the three positive items and the three negative items treated as separate variables.

Among male respondents, at least one religiosity variable made a unique contribution to distinguishing between participants and non-participants for all eight outcome variables, with 12 instances of a religiosity variable making a unique contribution. By saying that an outcome variable makes a unique contribution, we mean that when the value of all other predictor variables is held constant, this variable significantly distinguishes between participants and non-participants. The religiosity variable that most often made a unique contribution was religious attendance, which was the case for four of the eight behaviors. In three of the four instances the outcome variable was “have you ever...” It did not add a unique contribution for any of the three “have you in the last month” variables.

Among female respondents, at least one religiosity variable made a unique contribution to distinguishing between participants and non-participants for seven of the eight outcome variables, with 12 instances of a religiosity variable making a unique contribution. The variable that most often made a unique contribution was again religious attendance, which was the case for six of the eight behaviors, and three of the four “have you ever” variables.

Thus, religiosity played a predictive role in sexual behavior variables for both males and females. The single most important religiosity factor, of the ones we examined, was religious attendance, which seemed to perhaps play a more important role for females than for males and was more important in “ever” than in “recent” participation.

In the hooking-up paper,<sup>42</sup> we examined religiosity, hooking-up and participation in four different behaviors in the context of hooking-up. We defined hooking-up for the participants as “A sexual encounter between people who are strangers or brief acquaintances. This encounter may

involve sexual intercourse, or be limited to behaviors other than intercourse. There is no expectation of any relationship with the other person beyond this sexual encounter.” For both males and females religiosity made a difference in whether or not they had hooked-up and whether they had engaged in sexual intercourse during a hook-up, but it was religious attendance that made the difference for the females and religious feeling that made the difference for the males. Religiosity did not make a difference in the frequency of hook-ups (among those who had hooked-up at least once), nor did it make a difference in having given or received oral sex during a hook-up.

Although participants for these two studies were, in both cases, students from the same Southeastern university, there were some differences in the way participants were qualified for inclusion in the data analysis. In the first study,<sup>39</sup> data from all students who were single and under 25 were included in the analysis. In the second study,<sup>42</sup> we also wanted data from students who were single and under 25, but excluded from the analysis students who did not report at least some sexual experience. We counted a person as having sexual experience if they indicated they had ever participated in sexual intercourse, giving or receiving oral sex, anal intercourse, manual stimulation of a partner’s genitals, or having a partner manually stimulate their genitals. Participants who indicated “No” to all of these behaviors were not included in the data analysis. Participants who responded “Yes” to the question “Have any of your sexual experiences been within the context of hooking-up, as we have defined it?” were included in all further analyses. Participants who did have some sexual experience, but not within the context of hooking-up, were only included in comparisons of those who had hooked-up with those who had not hooked-up.

There are two other studies I want to mention before I close. Some results from the first study<sup>43</sup> have been presented, but a manuscript has not yet been submitted for publication. The second study is in prog-



ress.<sup>44</sup> The first study again involved George Denny and Tina Penhollow. We examined what we called the impact of personal and organizational religiosity on health behaviors. The paper that was presented did involve sexual behavior. The idea was to go beyond individual religiosity behaviors and place them within the context of how the individual related to organizational religion. For example, is the person a member of a religious organization? To what degree does the person believe the organization influences his/her behavior (not defined as health or sexual behavior)? What message, if any, does the person believe the organization gives its members about different health behaviors?

We found that the interaction between a single religiosity score—that included frequency of worship attendance as a component—and organizational influence, did make a unique contribution to distinguishing between those who had and had not, participated in sexual intercourse – both ever and in the last month. So the idea of examining both individual and organizational influence seems promising and something we will want to continue to pursue in future work.

Finally, I want to briefly share with you a little of what we are doing with a study that is in progress. George Denny and I are the two main investigators. We call it, *Hiding the Word*. It's based on an Old Testament passage, Psalms 119:11 – “Thy word have I hid in my heart that I might not sin against thee.” Clearly the writer believed that by memorizing scripture he would be less likely to commit sin. Many of the behaviors some people might call sin, other people might call risky health behaviors, or poor health choices. The idea then is to develop a knowledge test of biblical scriptures and to determine the relationship between scores on this test to health behavior.

The project involves several parts: (1) Identification of verses we believe might have something to do with health behavior; (2) Conversion of the verses into multiple choice questions, by leaving out a key word or words and adding a, b, c, and d choices; (3) Review by a panel of experts who rate the

verses as to their relevance to health behavior, identify any distracters they think are too close to the correct response or are unlikely to be selected, and suggest any verses we have left out, they think should be included; (4) Based on feedback from the expert panel, the questionnaire will be revised, deleting verses, replacing distracters, and perhaps adding new verses; (5) Pilot-test of instrument and protocol; (6) Field-test by administering to a large group of participants, establish item discrimination, eliminating items that do not discriminate well between those who score high and those who score low; (7) In a cross-sectional survey, determine whether the *Hiding the Word* score is significantly related to health behavior, and accounts for variation in health behavior above and beyond that for which other measures of religiosity (including a generic measure of religiosity) that cuts across the lines of denominations and world religions; and (8) In a longitudinal study determine whether the *Hiding the Word* score is a significant antecedent of health behavior change.

I recently tried the idea out with a project officer at NIH. I thought that perhaps she would think the idea was a bit silly, but she was interested and encouraged us to apply for funding. Our task is to continue to move the project along, and where possible, secure funding, like an NIH grant, that will allow us to do those parts of the project, especially the longitudinal study; that simply won't happen without funding.

With that, let me close. We have talked about some of the challenges in conducting research related to religiosity and health behavior; one of the major ones being finding the best ways to measure religiosity, or the way that is most appropriate for a given project. I've also talked about research findings related to health behavior and noted that, in general, even though there are study limitations, there does seem to be a relationship between religiosity and health behavior. Finally, I've looked at some of my research—most of it actually dealing with religiosity and sexual behavior— including work that has been completed and some in still in progress.

What does all of this mean? I'm not exactly sure. As I was growing up and seeking an explanation for one thing or another I would often go to my Dad. He would generally be able to provide some response, but many times would also add, “You also need to keep in mind that I don't really understand everything I know about that.” As a teenager, I thought that was about the dumbest thing I had ever heard anyone say. The older I get, however, the more sense it makes. I think Dad's disclaimer applies well here.

What I do know is that the vast majority of the people in this world identify with one religion or another and for many people their religious faith is an extremely important part of their lives. I know that many people who may not be particularly devout still express some level of religious affiliation or feeling. Others may say “I'm not religious, but I'm spiritual” – which really opens up a can of worms for researchers trying to sort all of this out. I know that AAHPERD members are interested in helping people adopt healthy lifestyles, and I know there is some relationship between religiosity and health behavior. Thus, all of this makes it an important area of concern, even if I can't figure out exactly what our research into this area actually means.

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