Anxious Attachment to God, Spiritual Support, and Obesity: Findings from a Recent Nationwide Survey

NEAL KRAUSE

Department of Health Behavior and Health Education

University of Michigan

R. DAVID HAYWARD

Department of Health Behavior and Health Education

University of Michigan

ABSTRACT

Some researchers report that people who are more deeply involved in religion may be more obese, but other investigators have been unable to replicate these findings. The purpose of the current study was to examine the relationship between religious life and obesity with data from a recent nationwide survey, the Landmark Spirituality and Health Survey (N = 1,497). The core measure of religion is an anxious or insecure attachment to God. It is hypothesized that study participants with a more anxious attachment to God are more likely to be obese. However, it is further proposed that this relationship will only hold for study participants who receive little spiritual or emotional support from fellow church members. Spiritual support is assistance that is provided with the explicit purpose of bolstering the religious beliefs and behaviors of the recipient. The findings reveal that having an anxious attachment to God is associated with a greater risk of being obese, but this relationship becomes progressively weaker as the level of spiritual and emotional support increases.

Correspondence should be addressed to Neal Krause, Department of Health Behavior and Health Education, School of Public Health, University of Michigan, 1420 Washington Heights, Ann Arbor, MI 48109-2029 USA. Email: nkrause@umich.edu.

INTRODUCTION

A small cluster of studies in the religion and health field come to a rather curious conclusion: it seems that greater involvement in religion may be associated with a higher body mass index (BMI) as well as greater odds of being obese (e.g., Cline and Ferraro 2006). Other studies come to a similar conclusion. Kim, Sobal, and Wethington (2003) report that men who affiliate with conservative Protestant denominations tend to have a higher body mass index than men with no religious affiliation. However, some researchers have not been able to replicate these findings (e.g., Reeves et al. 2012).

As in any area of research, these discrepant findings may be traced to a variety of issues. First, a good deal of the research that has been done so far has been conducted with restricted samples of study participants, such college students (Peltzer et al. 2014), Asian Indian immigrants residing in California (Bharmal et al. 2013), and mothers of college students (Ellis and Biglione 2000). This makes it difficult to determine whether study findings can be generalized to a wider population. Second, some investigators have relied on crude measures of religious involvement, such as the frequency of church attendance (Gillum 2006). Church attendance is a complex phenomenon that encompasses factors including religious teachings that are embedded in sermons, prayers, and hymns as well as social interaction with like-minded religious others. Therefore, when church attendance is used as the sole measure of religion, it becomes difficult to determine precisely why religion may be associated with body weight. Third, some researchers have gathered data on body weight through self-report (Ruiz and Acevedo 2015), which raises concerns about the validity of the data (for a review of this problem see Polivy et al. 2014).

The purpose of the current study is to examine the relationship between religion and obesity. In the process, we aim to address the limitations in previous research by working with data from a large nationally representative sample of study participants, more sophisticated measures of religious involvement, and direct measures of height and weight. In addition, we effort to move the

literature forward by addressing an important theoretical issue. Researchers have yet to provide a compelling theoretical explanation for how the effects of religion on obesity might arise. We construct a more fully developed theoretical perspective in the two sections that follow. First, we turn to insights from research on attachment theory and religion (Kirkpatrick 2005) as a point of departure. Following this, we broaden this theoretical base by merging basic insights from research on attachment theory and religion with basic principles from stress process perspective.

ATTACHMENT THEORY, RELIGION, AND BODY WEIGHT

Attachment theory was originally formulated to explain how early childhood relationships form with parents (Bowlby [1969] 1982, 1973). When positive relationships are forged with key attachment figures (typically parents) it is proposed that a child develops a strong sense of self-worth and they come to see the world as a predictable and safe place. However, when interaction with attachment figures is inconsistent or rejecting, the child experiences a lack of self-confidence and feelings of insecurity that tend to culminate in a general state of maladjustment. It is especially important to note that as attachment theory began to evolve researchers found support for the notion that the nature of the relationship with an early attachment figure becomes a prototype for social relationships that are formed in adult life (Mikulincer and Shaver 2010).

Kirkpatrick (2005) provided an extension of attachment theory that is even more important for our purposes. He maintained that the relationship that some people believe they have with God meets the three core criteria of an attachment relationship: individuals strive to maintain a sense of close proximity to God; they tend to believe that God is a safe haven when threats arise; and they tend to use their relationship with God as a secure base when dealing with the wider social environment. Consistent with empirical findings in the general literature on attachment theory, research indicates that having a secure sense of attachment to God provides a range of adaptive benefits including lower levels of psychological distress (Bradshaw, Ellison, and Marcum 2010).

There are two reasons why it is important to approach the study of religion and body weight

from an attachment theory perspective. First, research reveals that childhood obesity is associated with the nature of the attachments that are formed with parents (Mazzeschi et al. 2014). Second, research indicates that the nature of an individual's perceived relationship with God is associated with various weight-related outcomes. For example, research by Homan and her colleague indicates that a secure sense of attachment to God is associated with a lower risk of developing an eating disorder as well as a more positive body image (e.g., Homan and Lemmon 2014). Similar findings emerged from three studies. In the first study, Homan and Boyatzis (2010) report that having a secure relationship with God reduced the impact of four risk factors for eating disorders among young women. These results were extended in a second study by Henderson and Ellison (2015). These investigators found that a range of religious constructs moderate the effects of eating disorders on mental health. Findings from the third study suggest that prayer is inversely associated with mental health problems among people who have a secure attachment to God. In contrast, having an insecure or avoidant attachment to God had the opposite effect (Ellison et al. 2015).

Although linking attachment to God with body weight issues represents an important step forward, it doesn't go far enough. It seems unlikely that every individual who fails to develop a secure relationship with God will subsequently experience problems with their weight. In fact, the empirical studies that have been done so far suggest there is far from a one-to-one correspondence between the two. For example, Homan and Lemmon (2014) report that the bivariate correlation between having an anxious attachment to God and a range of eating disorder indicators does not exceed .34. Something is clearly missing. As we argue in the next section, how people try to cope with an insecure relationship with God may be a critical factor.

VIEWING ANXIOUS ATTACHMENT TO GOD AS A STRESSOR

As the literature began to evolve, researchers developed measures that were designed to capture secure as well as insecure attachments to God. For example, Rowatt and Kirkpatrick (2002) constructed scales that assess avoidance attachment to God and anxious attachment to God.

Focusing on the items that assess anxious attachment to God is instructive. One indicator in their scale asks study participants to agree or disagree with the following statement: "God sometimes seems very warm and other times very cold to me." Believing that God vacillates between being close and being distant is likely to be a stressful experience for people who are religiously inclined. Viewing anxious attachment to God as type of religion-specific stressor is important because it allows us to take advantages of rich insights from the wider literature on stressful life events.

Research reveals that people do not typically respond to stressors in a passive manner. Instead, they often take steps to eradicate or avoid the problems they face (Lazarus and Folkman 1984). Cast within the context of the stress process literature, this means that people often rely on range of coping resources to reduce the effects of the unwanted events in their lives. Although various coping resources have been identified in the literature, social support has received a good deal of attention (Roy 2011). The findings from this research indicate that assistance from social network members tends to offset the negative effects of stress on a range of health-related outcomes.

Stressors often arise within specific domains of life. Support from people who are knowledgeable about the domain in which a stressor arose is likely to be the most efficacious (Martire, Parris Stephens, and Townsend 1998). This makes sense because people who share a common domain in life are more likely to have experienced the same problems and they are more likely to know the specific steps that must be taken to eradicate them. Cast within the context of the current study, this means that when a religiously oriented stressor (e.g., anxious attachment to God) arises, support from like-minded religious others is likely to be the most helpful. It is for this reason that we examine spiritual support from fellow church members in the analysis that follows. Spiritual support is defined as assistance that is provided with the explicit purpose of bolstering the religious beliefs and behaviors of the recipient (Krause 2008). Although it is important examine the relationships among an anxious attachment to God, spiritual support and obesity, these analyses do

not go far enough. As research by Krause (2008) reveals, people exchange different types of social support in religious institutions. For example, fellow church members may also provide emotional support to their coreligionists. This is important because research indicates that emotional support that is received from fellow church members offsets the effects of stress on health (Krause 2006a). These findings raise the possibility that receiving emotional support from fellow church members will also offset the effects of having an anxious attachment to God on obesity.

As the definition that was provided above reveals, spiritual support involves explicit religious instruction. In contrast, emotional support is less overtly religious in nature. If spiritual support moderates the effects of an anxious attachment to God but emotional support does not, then it would seem the stress buffering effects are due to explicit religious factors. But in contrast, if both spiritual and emotional support at church reduce the magnitude of the relationship between an anxious attachment to God and obesity, then it would appear that both might be necessary for a positive outcome. It is for this reason that both spiritual and emotional support that are provided by fellow church members are examined in the analyses provided below.

There are two additional advantages that are associated with merging insights from attachment theory and religion with basic principles from the stress research. First, a vast literature reveals that higher rate of exposure to stress is associated with a greater risk of becoming obese (Kiecolt-Glaser et al. 2015). Second, one of the advantages of having a secure relationship with God is that it provides benefits that are not unlike the benefits that arise from close relationships with human beings. For example, just knowing that significant others stand ready to help should the need arise (i.e., anticipated support) can be a significant source of comfort in human relationships (Krause 2006b). As research reviewed by Krause (2006b) demonstrates, a major source of anticipated support in the future is receiving support in the past. Thus, when significant others at church provide spiritual support they are creating expectations about support in the future that may go a long way toward offsetting the stress that arises from when individuals experience an anxious attachment to

God.

We developed the following core study hypotheses based on the discussion that is provided above:

H1: The effects of having an anxious attachment to God on obesity will be reduced for individuals who receive spiritual support from the people they worship with.

H2: Emotional support that is received from fellow church members will perform a similar stress-buffering function.

DATA AND METHODS

Sample

The data for this study come from the Landmark Spirituality and Health Survey (LSHS), a nationwide face-to-face survey of adults age 18 and older who reside in the coterminous United States (i.e., residents of Alaska and Hawaii were excluded). This survey, which was completed in 2014, were conducted by the National Opinion Research Center (NORC). The NORC 2010 National Sampling Frame served as the basis for the sampling procedures. This sampling frame is based on two sources. First, the bulk of this data base comes from postal address lists that are compiled by the United States Postal Service (USPS). Second, field employees were sent to enumerate all house in areas where USPS address lists were unavailable. Sampling was done in three stages. First, National Frame Areas (NFAs) were constructed. NFAs are formed from pooling counties and metropolitan areas into blocks of designated sizes. A total of 44 NFAs were selected with probabilities proportional to size. Then, in the second stage, NFAs were partitioned into segments consisting of Census tracts and block groups. Segments were selected with probabilities proportional to size. In the third stage housing units were sampled with equal probabilities of selection within each segment and the occupants of these dwellings were recruited for the interviews.

The response rate for the study was 50 percent. The total number of completed interviews was 3,010. The sample was broken down into three age groups: 18-40 (N = 1,000), 41-64 (N = 1,002),

and age 65 and older (N = 1,008).

There are three reasons why the analyses that are presented below are based on a subset of participants in the LSHS interviews. First, when the questionnaire for this study was developed, the members of the research team felt it did not make sense to ask questions about receiving spiritual support from fellow church members if a study participant either never attends worship services or if they go to church only one or two times a year. Consequently, 1,215 low-church attenders were excluded from the analyses presented below. Second, as in any study, some participants declined to have their height and weight measured by the interviewers (N = 350). Third, questions on receiving spiritual support at church were not administered to study participants who self-identified as atheists (N = 78). Consequently, after using listwise deletion to deal with item non-response, complete data were available for 1,484 individuals. The three exclusion criteria are not mutually exclusive (e.g., some people who refused to be weighed also do not go to church). Subtracting the sum of the cases in all three exclusion criteria from the original sample size does not equal 1,484.

Preliminary analyses revealed that the average age of the study participants is 47.5 years (*SD* = 17.5; range 18-94), approximately 39.5 % are men, 48.6% were married at the time of the interview, and the average level of education was 13.5 years (*SD* = 3.1 years; range 0 -22). These descriptive data as well as the findings that are provided below, are based on data that have been weighted.

Measures

Anxious Attachment to God. Anxious attachment to God was assessed with three items that come from the work of Beck and McDonald (2004). For example, study participants are asked how strongly they agree with the following statement: "I often worry about whether God is pleased with me." A high score on the brief composite that was formed by summing the three measures denotes more anxious attachment to God (*M* = 8.5; *SD* = 3.1; range = 3-15). The internal consistency reliability estimate (i.e., Cronbach's alpha) is .805.

Obesity.[1] At the end of the interview, study participants who agreed to provide biomarker data were weighed by the interviewer and their height was measured. This information was used as the basis for computing their body mass index (BMI) and, ultimately, whether they were obese. BMI is weight divided by height squared (kg/m^2). We adapted the widely used definition of obesity, which is a BMI greater than or equal to 30. A binary outcome measure was created from this information (1

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[1] Having an anxious attachment to God can be a significantly stressful experience. This is important because research indicates that stress may be associated with being underweight as well as being overweight (Barry and Petry 2008). We used the four-category scheme recommended by the National Heart, Lung, and Blood Institute (1998) to classify our study participants into four groups: underweight, normal body weight, overweight, and obese. Then, using multinomial logistic regression, we assessed whether spiritual support and emotional support offset the effects of an anxious attachment to God on this four-category scheme. Normal body weight served as the reference category. Spiritual support and emotional support were analyzed separately. The findings indicate that compared to people with normal body weight, spiritual support did not significantly offset the effects of anxious attachment to God on the odds of being underweight (odds ratio = .997; *C. I.* = .923; 1.076). In fact, the only significant interaction in these analyses emerged when obese study participants were compared with respondents who had a normal body weight. Consistent with the findings reported in Table 1, the data suggest compared to individuals with normal body weight, spiritual support appears to offset the effects of an anxious attachment to God on the odds of being obese (odds ratio = .981; *C. I.* = .964; .997). Virtually the same results emerged when emotional support received at church was evaluated. No significant effects emerged among those with low body weight (odds ratio = 1.011; *C. I.* = .944; 1.081) while the only significant effects emerged in the comparison of people who are obese and those who have a normal body weight (odds ratio = .980; *C. I.* = .964; .997).

= obese; 0 = not obese). Preliminary analysis revealed that 39.4% of the study participants were obese. This figure is close to national estimates of obesity (i.e., 35.3%; National Center for Health Statistics 2015).

Spiritual Support. Three indicators were used to assess how often study participants receive informal spiritual support from their fellow church members. These measures were taken from research by Krause (2008). A typical item asks study participants how often the following statement was true for them: "Not counting Bible study groups, prayer groups, or church services, how often does someone in your congregation help you to know God better?" A high score on the three indicators represents more frequent spiritual support (M = 7.9; SD = 2.4; range = 3-12). The reliability estimate is .820.

Emotional Support. Three items were taken from the work of Krause (2008) to assess how often study participants receive informal emotional support from the people in the place where they worship. A typical item asks study participants how often they received the following type of emotional support: "Other than your minister, pastor, or priest, how often does someone in your congregation let you know they love and care for you?" A high score on these indicators represents more frequent emotional support (M = 7.8; SD = 2.5; range = 3-12). The reliability estimate is .840.

Religion Control Variables. Three additional measures of religion were included in the study model to help insure that the observed effects were due to anxious attachment to God and spiritual support rather than some other dimension of religion that is associated with them. These religion control variables include indicators of the frequency of church attendance (M = 6.7; SD = 1.7; range = 4-9) the frequency of private prayer (M = 6.9; SD = 1.6; range = 1-8), as well as an indicator of religious preference. Religious preference was classified with a modified version of the scheme proposed by Steensland and his colleagues (Steensland et al. 2000). These researchers drew a distinction between evangelical Protestants and black Protestants because while these groups are doctrinally similar, their political views differ significantly. However, because the current study is not

concerned with political views, black Protestants and evangelicals were combined in the analyses presented below. This resulted in a binary measure that contrasts evangelicals (scored 1) with all others (scored 0). Approximately 51% indicated they affiliate with an evangelical denomination.

Demographic Control Variables. The relationships among the core study measures were assessed after the effects of age, sex, education, and marital status were controlled statistically. Age and education were scored continuously in years whereas sex (1= men; 0 = women) and marital status (1= married; 0 = otherwise) were coded in a binary format.

Analytic Strategy

Based upon the theoretical rationale developed for this study, the unwanted effects of anxious attachment to God on the risk of being obese should be lower for people who receive more spiritual and emotional support from fellow church members. This specification calls for a statistical interaction effect between anxious attachment to God and spiritual or emotional support on obesity. The proposed interactions were evaluated with a binary logistic regression analysis. The procedures recommended by Hosmer and Lemeshow (2000) were used in these analyses. All the independent variables were centered on their means prior to the substantive analyses. Following this, multiplicative terms were formed by multiplying anxious attachment to God values by the level of spiritual or emotional support that was received at church. A second cross-product term was computed by multiplying anxious attachment to God by the received emotional support measure. After this, tests for the proposed interaction effects were performed in two steps. The additive effects of the independent variables were assessed first. Then the multiplicative terms were added to the equation in step two. Three passes were made through the data. The interaction between anxious attachment and spiritual support was estimated separately. Then the interaction between anxious attachment to God and emotional support was evaluated separately. Finally, tests for both the proposed interactions were estimated in the same equation.

After the main analyses were conducted, a formula provided by Hosmer and Lemeshow

(2000:76) was used to determine if the interaction effect is in the predicated direction. Support for

H1 and H2 would be found if the effects of anxious attachment to God on the risk of being obese

become progressively weaker at successively higher levels of spiritual support. The formula provided

by Hosmer and Lemeshow (2000) produces logistic regression coefficients and odds ratios for the

relationship between anxious attachment to God and obesity at select values of spiritual or

emotional support. We focus on spiritual support to convey a better sense of how this is

accomplished. Any value of spiritual support could be used for this purpose. Spiritual support scores

ranged from 3 to 12 in this study. We chose scores of 3, 6, 9, and 12 to display the interaction effect

across the full range of spiritual support scores. It is important to show that there are enough cases

at each of the selected values of spiritual support because too few cases can result in problems with

data sparseness (see Cohen et al. 2003, for a discussion of data sparseness). The following number of

cases was observed at each of the selected spiritual support values: 3 (N = 72), 6 (N = 266), 9 (N =

191) and 12 (N = 147). Once estimates have been derived for the relationship between anxious

attachment to God and obesity at select levels of spiritual support, a third formula that is provided

by Hosmer and Lemeshow (2000:79) is used to compute confidence intervals for the logistic

regression coefficients that are discussed above. An identical set of procedures were used to

determine the nature of the interaction between anxious attachment to God and emotional support

that is received at church.

RESULTS

The findings from this study are provided in Table 1. Model 1 contains the findings from the

first step in the data analysis strategy that was discussed above and Model 2 contains the tests for

the proposed interaction effects.

[TABLE 1 ABOUT HERE]

The data in provided by Model 1 (see Panel 1) were obtained when the relationships among

anxious attachment to God, spiritual support, and obesity were examined separately. As these data

show, the additive effects of anxious attachment to God (*b* = -.002; odds ratio = .998; *ns.*) and spiritual support (*b* = -.007; odds ratio = .993; *ns.*) are not significantly associated with the risk of being obese. If the analyses were terminated at this point, we would have concluded that neither anxious attachment to God nor spiritual support are associated with obesity. However, as the findings from Model 2 reveal, the proposed interaction between having an anxious attachment to God and spiritual support is statistically significant (*b* = -.023; odds ratio = .977; *p* < .001). This suggests that the data provided by Model 1 are misleading because the relationships between anxious attachment to God and obesity, as well as spiritual support and obesity, have been mis-specified.

Although the interaction between anxious attachment to God and spiritual support is statistically significant it is important to determine whether it is in the hypothesized direction. Findings from the data analysis strategy described above suggest that the results are consistent with H1 and H2. These additional calculations are not shown in Table 1. The findings suggest that the odds of being obese are higher for study participants who receive the least amount of spiritual support from religious others (i.e., a spiritual support score of 3) (odds ratio = 1.129; *b* = .121). The confidence interval for the logistic regression coefficient is: .039; .203. The additional analyses further reveal that the relationship between anxious attachment to God and obesity is diminished for study participants with a spiritual support score of 6 (odds ratio = 1.053; *b* = .052; *C.I.* = .004; .100). The magnitude of the relationship between anxious attachment to God and obesity even lower for study participants with a spiritual support score of 9 (odds ratio = .983; *b* = -.017; *C.I.* = -.088; .020). As the confidence interval reveals, the effects of anxious attachment to God on obesity are no longer significant at this level of spiritual support. A spiritual support value of 9 roughly falls half-way between the mean level of spiritual support (7.865) and one standard deviation above the mean (10.292). Finally, the data indicate that study participants with an anxious attachment to God have the lowest odds of being obese if they receive the highest possible amount of spiritual support

from the people they worship with (i.e., a score of 12) (odds ratio = .918; *b* = -.086; *C.I.* = -.025; -.147). In fact, these coefficients suggest that at the highest observed level of spiritual support, anxious attachment to God is associated with a *lower* risk of being obese.

To make the findings easier to grasp, we also created a graph of the interaction between spiritual support and anxious attachment to God on obesity. This graph appears in Figure 1.

[FIGURE 1 ABOUT HERE]

The data in Panel 2 of Table 1 were obtained when the interaction between emotional support and anxious attachment to God was evaluated separately. As in the analyses with spiritual support, the findings provided by Model 1 in Panel 2 reveal that neither anxious attachment to God (*b* = -.002; odds ratio = .998; *ns.*) nor emotional support received at church (*b* = .007; odds ratio = 1.007; *ns.*) have a statistically significant additive relationship with obesity. However, the findings provided by Model 2 suggest that the proposed interaction between anxious attachment to God and emotional support received at church is statistically significant (*b* = -.023; odds ratio = .977; *p* < .001). It is important to point out that the logistic regression coefficient and the odds ratio that are associated with emotional support are identical to the logistic regression coefficient and the odds ratio that was obtained with spiritual support.

Because the findings for the analyses involving emotional support and spiritual support are identical, it is not surprising to find that the estimates of the relationship between anxious attachment to God and obesity at select levels of emotional support were virtually the same, as well. Both spiritual and emotional support were measured with the same response scale. Consequently, estimates of the effects of anxious attachment to God and obesity were derived at the same values that were used before: 3, 6, 9, and 12. At the lowest observed value of emotional support (i.e., 3), the findings reveal that anxious attachment to God is associated with greater odds of being obese (odds ratio = 1.123; *b* = .117; *C. I.* = .037; .197). The magnitude of the relationship between anxious attachment to God and obesity begins to taper off for study participants with an emotional support

score of 6 (odds ratio = 1.050; *b* = .048; *C. I.* = .001; .096). The additional calculations further reveal that the relationship between anxious attachment to God and obesity is no longer statistically significant for study participants with an emotional support value of 9 (odds ratio = .980; *b* = -.021; *C. I.* = -.059; .018). Once again, the data suggest that anxious attachment is associated with a *lower* risk of being obese for study participants with the highest observed emotional support value (odds ratio = .914; *b* = -.090; *C. I.* = -.154; -.025).

The data that have been provided up to this point suggest that when they are evaluated separately, spiritual support and emotional support both appear to moderate the relationship between anxious attachment to God. However, it is important to see which type of church-based social support is a more effective coping resource. This issue was addressed by assessing the interaction between spiritual support and anxious attachment to God as well as emotional support and anxious attachment to God in the same equation. The findings from this set of analyses (not shown in Table 1) indicate that neither spiritual support (*b* = -.015; odds ratio = .985; *C. I.* = .967; 1.004) nor emotional support that is received at church (*b* = -.013; odds ratio = .987; *C. I.* = .969, 1.006) appear to moderate the relationship between anxious attachment to God and obesity.

Viewed broadly, the findings suggest that when the interaction between spiritual support and anxious attachment to God as well as emotional support and anxious attachment to God are assessed separately, both interaction effects are significant at the .001 level. However, when the two interaction effects are tested in the same model, neither is statistically significant. We suspect that this dramatic change in the findings is due to multicollinearity. The bivariate correlation between emotional and spiritual support that is received at church is .641 (*p* < .001). In addition, even though the independent variables were centered on their means, the correlation between the two multiplicative terms is .685 (*p* < .001) (see Aneshensel 2002 for a discussion of this issue). The multiple correlations among the independent variables is likely to be even higher.

To round out our understanding of the relationship between having an anxious attachment

to God and church-based support it is helpful to empirically examine an additional issue that has not been discussed up to this point. This additional issue involves estimating the bivariate correlation between anxious attachment to God and the two church-based social support measures. These coefficients are important for both statistical and substantive reasons. With respect to statistical issues, a strong correlation between the anxious attachment and church-based support may signal that problems can arise in differentiating the correlation between anxious attachment to God and support at church from the interaction between anxious attachment to God and church-based support on obesity. Substantively, a statistically significant correlation between the anxious attachment and the measures of support at church provides a test of a phenomenon that is known in the social support literature as the resource mobilization perspective (Eckenrode and Wethington 1990). Cast within the context of the current study, this perspective specifies that when a person experiences an anxious attachment to God they actively seek out either spiritual support or emotional support from fellow church members.

The additional analysis indicates that the bivariate correlation between having an anxious attachment to God and spiritual support is not statistically significant (r = -.007; *ns.*). The corresponding estimate for emotional support and anxious attachment to God is statistically significant, but relatively small in magnitude (r = -.071; $p < .01$). This means that confounding is not a problem in our study. But more importantly, this finding suggests that spiritual support is not something that people actively pursue when they have an anxious attachment to God. If anything, the findings involving emotional support suggest that people with an anxious attachment to God receive slightly assistance from social network members at church when this kind of religious problem arises but the relationship between the two variables is not strong.

DISCUSSION AND CONCLUSIONS

Rates of obesity have been rising steadily over the past several decades (National Center for Health Statistics 2015). This is a major public health concern because research consistently indicates

that obesity plays a significant role in the development of several major health problems, including diabetes and hypertension (Siegel, Luengen, and Stock 2013) as well as number of other cardiovascular disorders, such as strokes (Dehlendorff, Andersen, and Olsen 2014). This is clearly an area where applied research can make an impact. A necessary first step involves identifying the full spectrum of factors that contribute to obesity. There are likely to be many. The purpose of the current study was to strike out in a relatively unexplored area by seeing whether obesity is associated with involvement in religion. Casting this issue in a wider stress process perspective was helpful because doing so made it possible to get a firmer grasp on the interface between potentially problematic areas of religion (i.e., anxious attachment to God) and the resources that people may rely on to cope with them (i.e., spiritual and emotional support from fellow church members). Findings provided by a recent nationwide sample of study participants indicate that study participants who experience an anxious attachment to God are more likely to be obese if they receive little spiritual support from their coreligionists. However, the data further reveal that the relationship between anxious attachment to God and obesity gradually weakens as the level of spiritual support increases. Moreover, at the highest observed level of spiritual support, having an anxious attachment to God is associated with a lower risk of being obese. An identical pattern of findings emerged when emotional support from fellow church members served as the key moderating variable.

The fact that both spiritual and emotional support may offset the effects of having an anxious attachment to God suggests explicit religious guidance as well as more general empathic understanding may both be needed to cope with this kind of stressor. Moreover, we suspect that both types of support are likely to be provided at the same time. The very fact that a support provider at church would take the time to share religious experiences with a focal person conveys the sense that the recipient is valued and cared for. The high correlation between the two types of support that was provided above is consistent with this view.

The findings from the current study suggest that anxious attachment is associated with lower odds of being obese among those who receive a good deal of spiritual and emotional support. At first, this may be difficult to understand. Fortunately, insight into this issue can be found by turning once again to the literature on stress. Findings from a growing number of studies indicate that some (but not all) people experience significant personal growth when they are confronted by a stressful life event (Joseph and Linley 2005). This is noteworthy because some investigators maintain that religion may play an especially important role in this respect (O'Rourke, Tallman, and Altmaier 2008). Having a sympathetic and understanding religious other available to work through ambiguous feelings about God may go a long way toward alleviating the psychological distress that arises from having an anxious attachment to God.

Findings from our supplementary analyses indicate that people may not actively seek out spiritual or emotional support from like-minded religious others when they are grappling with an anxious attachment to God. There are three reasons why this may be so. First, when people are confronted by a stressful event, they often try to resolve the problem on their own (Eckenrode and Wethington 1990). This helps them avoid being a burden to others. Second, individuals who have an anxious attachment to God may feel reluctant to discuss their uncertainties with religious others because it may put them in an unfavorable light. More specifically, having doubts about one's relationship with God may violate group norms, making the individual reluctant to reveal their feelings. Third, virtually every major faith tradition in the world extols the virtue of helping those who are in need (Lundberg 2010). If fellow church members take these fundamental religious precepts to heart, then they may be more likely to seek out opportunities to help others even when requests for assistance have not been made explicitly.

Rather than providing definitive answers, the results that are presented above represent a first-step into a largely unchartered domain. As a result, a considerable amount of research remains to be done. For example, we have provided evidence which suggests that anxious attachment to

God may be associated with a higher risk of being obese, but we did not empirically examine the intervening variables that link the two. Focusing on undesirable health behaviors represents an obvious place to start. Perhaps people with an anxious attachment to God are prone to eat more and exercise less. This is consistent with studies which show that people who are exposed to acute stress tend to eat more even when they are not hungry (Rutters et al. 2009).

In the process of examining new issues, researchers should also take steps to address the shortcomings in our work. Four issues are especially in need of attention. First, our data were gathered at a single point in time, so the direction of causality among the core study constructs was based on theoretical considerations alone. A more convincing argument could be made with longitudinal data that assess the effects of anxious attachment to God and spiritual support on changes in obesity over time. Second, attachment to God can be measured along various dimensions that were not evaluated in our study (e.g., having a secure attachment to God). To gauge the full effect of attachment to God, multiple dimensions of attached should be evaluated. Third, people can be attached to other objects, such as an early caregiver. To fully probe an anxious attachment to God, measures of attachment to other objects should be included in the same analyses. Fourth, researchers have been concerned for some time about the influence of social desirability response bias on self-reports of religiousness (Rowatt et al. 2002). Data were not available in the current study to assess the potential effect of social desirability, but ways must be found to identify the extent of the problem and correct it.

Research on religion and health-related outcomes focuses disproportionately on the benefits of involvement in religious life without explicitly recognizing that there may be detrimental aspects, as well. We aimed to strike a balance between the two in this study by showing how the interplay between the negative aspects of religion (i.e., anxious attachment to God) and the positive aspects of religion (i.e., spiritual support) are associated with a key health risk factor (i.e., obesity). We hope this approach motivates other investigators to assume a more balanced approach to the

study of religion.

<div align="center">**REFERENCES**</div>

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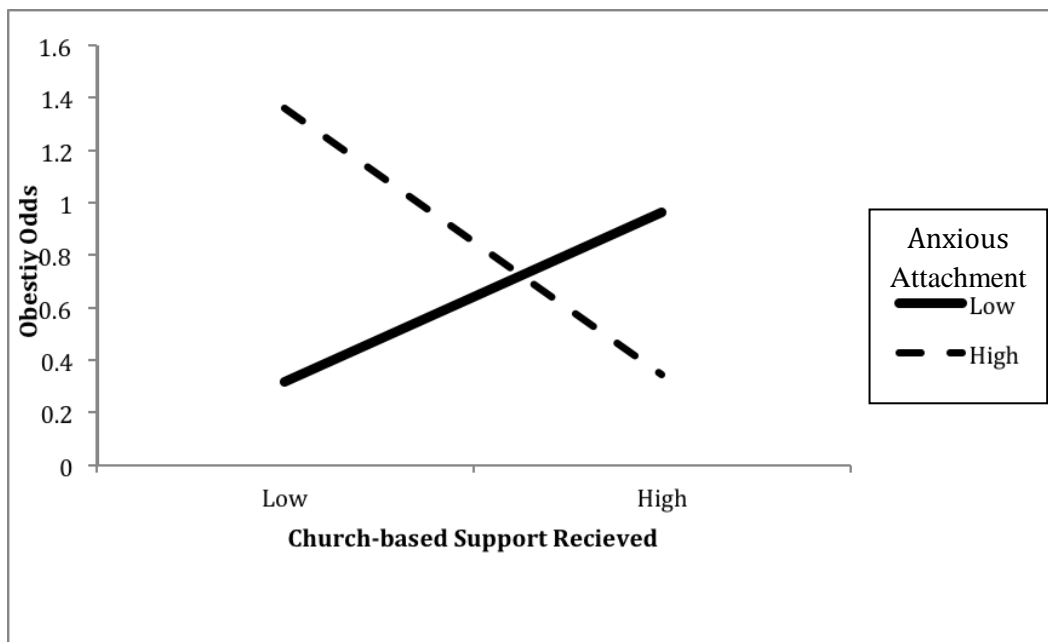The Interaction between Anxious Attachment to God and Spiritual Support on Obesity

Table 1: Assessing the Relationship between Anxious Attachment to God, Church-Based Support, and Obesity

	Logistic regression coefficient	Odds ratio	95% confidence interval

Panel 1L: Spiritual support

Model 1[a]

Age	.007*	1.007	(1.001; 1.013)
Sex	-.182	.833	(.668; 1.040)
Education	-.038*	.963	(.930; .997)
Marital status	-.009	.991	(.799; 1.229)
Evangelical	.376***	1.456	(1.163; 1.823)
Church attendance	.040	1.041	(.972; 1.115)
Private prayer	-.034	.967	(.897; 1.042)
Anxious attachment	-.002	.998	(.962; 1.034)
Spiritual support	-.007	.993	(.945; 1.044)

Model 2[b]

Age	.008*	1.008	(1.001; 1.014)
Sex	-.186	.830	(.664; 1.037)
Education	-.035	.966	(.932; 1.000)
Marital status	.008	1.008	(.812; 1.251)
Evangelical	.359**	1.432	(1.142; 1.795)
Church attendance	.033	1.034	(.965; 1.108)
Private prayer	-.032	.969	(.898; 1.045)
Anxious attachment	.009	1.009	(.972; 1.047)
Spiritual support	-.003	.997	(.948; 1.048)
(Anxious x spiritual)	-.023****	.977	(.964; .991)

Panel 2: Emotional support

Model 1[c]

Age	.007*	1.007	(1.001; 1.014)
Sex	-.183	.833	(.667; 1.040)
Education	-.037*	.964	(.931; .998)
Marital status	-.008	.992	(.800; 1.230)

Evangelical	.363**	1.438	(1.148; 1.802)
Church attendance	.035	1.036	(.967; 1.109)
Private prayer	-.038	.962	(.894; 1.035)
Anxious attachment	-.022	.998	(.963; 1.035)
Emotional support	.007	1.007	(.962; 1.054)
Model 2[d]			
Age	.008*	1.008	(1.001; 1.014)
Sex	-.183	.832	(.666; 1.040)
Education	-.035*	.966	(.932; 1.000)
Marital status	.060	1.013	(.816; 1.258)
Evangelical	.362**	1.436	(1.145; 1.802)
Church attendance	.028	1.029	(.960; 1.102)
Private prayer	-.038	.963	(.894; 1.036)
Anxious attachment	.008	.684	(.971; 1.046)
Emotional support	.013	1.013	(.967; 1.061)
(Emotional x anxious)	-.023***	.977	(.964; .991)

Note: N = 1484; * = *p* < .05; ** = *p* < .01; *** = *p* < .001

[a] -2 Log likelihood = 1963.150

[b] -2 Log likelihood = 1951.999

[c] -2 Log likelihood = 1963.130

[d] -2 Log likelihood = 1952.340