

Forgiveness by God, Religious Commitment,  
and Waist/Hip Ratios

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This is the author manuscript accepted for publication and has undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the [Version of Record](#). Please cite this article as [doi: 10.1111/jabr.12104](https://doi.org/10.1111/jabr.12104)

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Article type : Original Article

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**Abstract**

**Objective:** The purpose of this study is to see if a person's level of commitment to religion moderates the relationship between forgiveness by God and waist/hip ratios.

**Methods:** The data come from a nationwide probability survey of adults of all ages (N = 2,453). Interviewers measured respondents' waist and hip circumference. Questions were administered to assess how often people feel they have been forgiven by God and how deeply they are committed to their faith. Controls were established for several different aspects of religion (i.e., church attendance, private prayer, and religious affiliation) as well as select demographic characteristics (i.e., age, sex, education, race, residential location, and marital status).

**Results:** Forgiveness by God is associated with less favorable waist/hip ratios, but only among study participants who are less committed to their faith. A set of supplementary analyses were performed using the frequency of moderate exercise as an outcome. The findings suggest that forgiveness by God is associated with less frequent exercise, but only among study participants who are less committed to their faith.

**Conclusions:** The findings add greater credence to the literature on the relationship between religion and health because they are based on biological measures.

Key words: forgiveness by God, religious commitment, waist/hip ratios

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An impressive number of studies suggest that feeling forgiven and forgiving others is associated with better physical health (Rey & Extremera, 2016) and better mental health (Toussaint, Shields, & Slavich, 2016). As the literature on forgiveness began to evolve, researchers identified different types of forgiveness including forgiveness of others, self-forgiveness, and forgiveness by God (Toussaint, Worthington, & Williams, 2015). So far, most researchers have focused on forgiveness of others while fewer studies have been concerned with forgiveness by God. Even so, research on feeling forgiven by God reveals that it is associated with enhanced feelings of psychological well-being (Krause & Ellison, 2003), decreased odds of being depressed (Toussaint, Williams, Musick, & Everson-Rose, 2008), and lower levels of death anxiety (Krause, 2015). However, fewer studies have examined the relationship between forgiveness by God and physical health (for a notable exception see Bassett et al., 2016).

The purpose of the current study is to evaluate the relationship between feeling forgiven by God and physical health. We aim to contribute to the literature in three potentially important ways. First, rather than rely on self-reports, we focus on an important biomarker of health: measured waist to hip ratios (WHR). This biomarker is important for the following reasons. Research reveals that a considerable number of people in the United States are either obese (34.9%) (Kit, Ogden, Flegal, & Carroll, 2014) or overweight (33%) (National Center for Health Statistics, 2015). These data are a major public health concern because a substantial number of studies indicate that obesity is a significant risk factor for diabetes (DuBose, 2015) as well as cardiovascular disease (Rocchini, 2011). As researchers delved more deeply into the problems associated with excess body weight, they learned that how fat is distributed in the body may play an important role in determining a person's risk for developing health problems. Body fat is typically measured in three ways: body mass index (BMI), waist circumference, and waist to hip ratios. Although all three ways of assessing body fat are considered to be important (Vazquez, Duval, Jacobs, & Silventoinen, 2007), there is some evidence that WHR may be a more sensitive predictor of an individual's risk of developing major health problems (Mousavi et al., 2015).

We suspect that there is not a one-to-one correspondence between feeling forgiven by God and WHR. Instead, a number of factors are likely to moderate this relationship. The second potentially important contribution of the current study arises from the fact that we assess whether the relationship between forgiveness by God and WHR is stronger for people who feel more

deeply committed to their faith. Although we develop the theoretical rationale for this relationship more fully below, this hypothesis is based, in part, on the straightforward notion that feeling forgiven by God is more likely to matter if religion is important to a focal person in the first place. We have been able to find only one study that addresses this issue. Huber, Allemand, and Huber (2011) report that the centrality of religion in the life of the individual (a construct that is closely akin to religious commitment) moderates the relationship between forgiveness by God and forgiving others. However, these researchers did not examine any health-related outcomes.

The third way we aim to contribute to the literature is more methodological in nature. So far, many of the studies on forgiveness by God have been conducted with special populations, such as college students (Bassett et al., 2008), older Mexican Americans (Krause, 2015), and individuals who are HIV positive (Ironson et al., 2011). Consequently, it is difficult to know if the findings from these samples can be generalized to the general population. We resolve this problem by working with data that have been provided by a recent nationally representative sample of adults of all ages.

The theoretical underpinnings of this study are developed below in two sections. First, we explain why feeling forgiven by God may be associated with WHR. Second, we discuss why the relationship between feeling forgiven by God and WHR may depend upon the extent to which people are committed to their faith.

### **Forgiveness by God and WHR**

We were not able to find any studies that empirically evaluate the relationship between forgiveness by God and WHR. As a result, there does not appear to be a sound theoretical framework to guide this study. Even so, there are three reasons why forgiveness by God might be associated with WHR. First, research by Krause and Ellison (2003) suggests that people are more likely to forgive themselves if they feel they have been forgiven by God (see also McConnell & Dixon, 2012). This is important because research further reveals that people who forgive themselves are more likely to adopt better health behaviors including more nutritious eating and engaging in physical activity more frequently (Webb, Hirsch, Visser, & Brewer, 2013). Perhaps the person who forgives themselves is more likely to believe they have valued qualities and attributes and as a result, they are more highly motivated to preserve their lives through healthy living. These positive health behaviors are, in turn, more likely to promote more favorable WHR.

Second, research reveals that people who are exposed to stress tend to have greater abdominal obesity (Bjorntorp, 2001). A person obviously seeks forgiveness from God because they have committed a transgression. Recognizing that one has committed a transgression may be construed as a potential stressor. Moreover, as the work of Pargament (1997) suggests, believing that one has been forgiven by God represents a specific type of religious coping response. Viewed in a more general way, this literature suggests that people are more likely to have favorable WHR if they have access to coping responses (i.e., forgiveness by God) to overcome the stressors that arise in their lives (i.e., transgressions).

Third, when an individual commits a transgression, he or she may experience a flood of negative emotions including guilt, shame, self-recrimination (Katchadourian, 2010), and remorse (Bassett et al., 2011). If steps are not taken to alleviate these problems by obtaining forgiveness, the transgressor may ruminate over the transgression (Fatfouta, 2015; vanOyen, Hinman, Exline, & Brandt, 2011) and as a result, he or she may ultimately develop mood disorders, like depression (Ingersoll-Dayton, Torges, & Krause, 2010; Toussaint et al., 2008). The negative psychological emotions that are triggered by unforgiven transgressions are noteworthy because research indicates they are associated with weight problems. For example, a recent study by van Strien et al. (2016) indicates that people who are depressed are more likely to engage in emotional eating and emotional eating is, in turn, associated with weight gain. Similarly, Castrogiovanni, Soneca, Troiani, and Mauri (2009) report that people who suffer from bipolar disorder are more likely to engage in binge eating, which increases the risk of becoming obese. These findings are further supported by a six year prospective study which suggests that depressive disorders are associated with major weight gain (Heiskanen et al., 2013).

### **Exploring the Moderating Role of Religious Commitment**

As we argued earlier, whether forgiveness by God is associated with WHR depends, in part, upon the extent to which people are committed to their religious beliefs. There are four reasons why we expect this relationship to emerge from our data.

First, victims often tell transgressors when they have been forgiven. However, the same is not necessarily true when a person seeks forgiveness from God. Since God cannot typically be seen or heard, a transgressor must turn to his or her faith for assurance they have been forgiven. Since every major faith tradition in the world extols the virtue of forgiveness (Lundberg, 2010),

it follows that people with higher levels of religious commitment are more likely to believe they have been forgiven by God.

The second reason for expecting that religious commitment will moderate the relationship between feeling forgiven by God and WHR may be found in recent extensions of social identity theory (Ysseldyk, Matheson, & Anisman, 2010). According to this perspective, a person is more likely to be embraced by in-group members if they adhere to the norms and values of the group (i.e., if they adopt group prototypes). This is important because individuals who are readily accepted by in-group members are more likely to find they can draw upon coreligionists for support when they are wrestling with a transgression (Krause, 2008). Cast within the context of the current study, this means that when a transgressor seeks forgiveness from God, they can turn to like-minded religious others for assurance that they have been forgiven by God. This is consistent with the notion that one of the primary function of religious group members is to reduce uncertainty (Hogg, Adelman, & Blagg, 2010). However, a person will be more inclined to seek support from coreligionists if they are more committed to their faith.

Third, the wide majority of participants in the current study are self-identified Christians (i.e., 95%). Two of the basic teachings in the Christian Bible are especially relevant for the current study. First, the faithful are taught that all people are sinners (i.e., transgressors). Second, the Christian Bible indicates that God is willing to forgive transgressors if they work hard by truly repenting and doing what they can to make the situation right (e.g., by making amends whenever possible). Doing so should foster a sense of hope that things will ultimately work out for the best. Having a strong sense of hope is important because research reveals that people who are hopeful are more likely to adopt behavioral strategies that include better diets and exercising more often (e.g., Northwehr, Clark, & Perkins, 2013). Once again, adopting good health behaviors is an important way to minimize WHR.

The fourth reason why religious commitment may moderate the relationship between forgiveness by God and WHR is found by considering what may happen if a person does not believe they have been forgiven by God. When an individual has committed a transgression and they have not done anything to rectify the situation, they run the perceived risk of damaging their relationship with God. As result, they may be more likely to experience the negative emotions

and engage in the poor health behaviors that are discussed above. However, having a damaged relationship with God will only be consequential if maintaining a good relationship with God is important in the first place. Being more deeply committed to one's faith is a marker of the importance a person places on their relationship with God.

Taken as a whole, the discussion that has been provided up to this point explains why we are evaluating the following hypotheses:

H<sub>1</sub>: People who feel they have been forgiven by God will be less likely to have unfavorable waist to hip ratios.

H<sub>2</sub>: The relationship between forgiveness by God and WHR will be stronger among individuals who are more deeply committed to their faith.

## **Methods**

### **Sample**

The data for this study come from a nationwide, face-to-face, random probability survey of people age 18 and older who live in the coterminous United States. The interviews, which were completed in 2014, were conducted by the National Opinion Research Center (NORC). The response rate for this study was 50 percent. A total of 3,010 interviews were completed successfully. The sample was stratified into the following age groups: age 18-40 (N = 1,000), age 41-64 (N = 1,002), and age 65 and older (N = 1,008).

The appropriate ethical guidelines on research with humans were followed in this study. This research was reviewed and approved by an Institutional Review Board (IRB) according to National Institutes of Health regulations relating to research with humans. Written informed consent was obtained from all study participants and was approved by the IRB.

At the end of the interview, study participants were asked if they wanted to provide data on a number of physical measures including waist and hip measures. A total of 390 individuals declined to have their waist and hips measured. After using listwise deletion to deal with item non-response, complete data were available for 2, 425 study participants.

A set of preliminary analyses were conducted in order to obtain a demographic profile of the participants with complete data. These analyses suggest that the average age of the study participants is 46.2 years (SD = 17.6 years), 43.8 % are men, 44.6% were married at the time of the survey, 16.7% self-identified as Black, 42.2% reside in the South, and the study participants

completed an average of 13.4 years ( $SD = 3.1$  years) of schooling. This descriptive profile, as well as the findings that presented below, are based on data that have been weighted.

## Measures

**Waist/Hip Ratio.** As discussed above, interviewers obtained measures of the study participants' waist and hip circumference at the end of the survey. A high score on the ratio that was computed from this information designates a larger (i.e., less favorable) waist hip ratio. The mean WHR was .90 ( $SD = .09$ ; range = .63 to 1.17).

**Forgiveness by God.** A single item was taken from the work of the Fetzer Institute/National Institute on Aging Working Group (1999) to assess how often study participants believe they have been forgiven by God ("I know that God forgives me"). Responses to this indicator were scored in a four-point format ranging from "never" to "always or almost always." A high score stands for respondents who believe that God has forgiven them more often ( $M = 3.6$ ;  $SD = .84$ ; range = 1 - 4).

**Religious Commitment.** Three items were included in the survey to assess the extent to which study participants were committed to their faith. These items were also taken from the work of the Fetzer Institute/National Institute on Aging Working Group (1999). The following is a typical item in this brief composite: "My faith shapes how I think and act each and every day." Responses to the religious commitment indicators was scored on a five-point Likert scale ranging from "strongly disagree" to "strongly agree." A high score on these measures denotes greater religious commitment ( $M = 11.4$ ;  $SD = 3.2$ ; range = 3 - 15;  $\alpha = .895$ ).

**Religion Control Variables.** Three additional measures of religion were included in the analyses to help insure that the observed effects were due to forgiveness by God per se and not other dimensions of religion that might be associated with it: the frequency of church attendance, the frequency of private prayer, as well as an indicator of religious preference. A high score on the church attendance measure ( $M = 4.9$ ;  $SD = 2.7$ ; range = 1 - 9) represents more frequent attendance at worship services. Similarly, a high score on the measure of prayer stands for more frequent private prayer ( $M = 6.1$ ;  $SD = 2.4$ ; range = 1 - 8). Both of these indicators were devised by the Fetzer Institute/National Institute on Aging Working Group (1999).

The religious preference measure was derived from a modified version of the classification scheme that was proposed by Steensland and his colleagues (Steensland et al.,



2000). These researchers drew a distinction between Evangelical Protestants and Black Protestants on the grounds that even though these groups are similar with respect of religious doctrine, their political views differ significantly. However, because we were not concerned with political matters, 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 43.2% of our study participants say they affiliate with an Evangelical denomination.

**Demographic Control Variables.** The relationships among the measures that are discussed above were assessed after the effects of age, sex, education, race, geographical residence, and marital status were controlled statistically. Age and education were scored continuously in years whereas sex (1= men; 0 = women), race (1=Black; 0 = otherwise), geographical residence (1 = lives in the South; 0 = otherwise), and marital status (1= married; 0 = otherwise) were coded in a binary format.

### **Data Analysis Strategy**

According to the theoretical rationale that was developed above, the relationship between forgiveness by God and WHR will depend upon how committed a study participant is to his or her faith. Stated in a more technical way, this specification calls for a statistical interaction effect between forgiveness by God and religious commitment on WHR. Tests for this interaction effect were conducted with ordinary least squares multiple regression analyses. The procedures recommended by Aiken and West (1991) were followed in these analyses. First, all independent variables were centered on their means. Then, a multiplicative term was computed by multiplying the centered values of forgiveness by God by the centered values of the religious commitment measure. Following this, tests for the interaction effects were performed in two steps. The additive effects of the independent variables were entered into the equation first (Model 1). Then the multiplicative term was added to the equation in step two (Model 2).

If the multiplicative term in Model 2 is statistically significant, additional steps must be taken to insure that the interaction is in the hypothesized direction. Support for the theoretical perspective that was developed earlier would be found if the effects of forgiveness by God become progressively stronger at successively higher levels of religious commitment. A formula provided by Aiken and West (1991; see p. 12) can be used to determine if this is so. This formula

provides estimates of the relationship between forgiveness by God and WHR at any religious commitment value that we choose. Recall that religious commitment scores range from 3 to 15. In order to provide a complete picture of the proposed interaction effect, the formula provided by Aiken and West (1991) was used to calculate the relationship between forgiveness by God and WHR at five equally spaced religious commitment scores: 3, 6, 9, 12, and 15. Once these estimates have been derived, tests can also be conducted to determine whether they are statistically significant (see the formula provided by Aiken & West, 1991, on page 16).

## Results

The findings from this study are presented below in two sections. Results that were derived from the tests of the proposed interaction between forgiveness by God and religious commitment on WHR are presented first. Following this, findings are provided from a set of supplementary analyses that have not been discussed up to this point.

### **Forgiveness by God, Religious Commitment, and WHR**

Table 1 contains the findings that were derived from the analyses of the proposed statistical interaction between forgiveness by God and religious commitment on WHR. Model 1 contains the results from the first step in the test for the hypothesized interaction whereas Model 2 contains the findings from step two, when the multiplicative term was added to the equation.

<Insert Table 1 about here>

The data in the left-hand column of Table 1 (see Model 1) indicate that neither forgiveness by God ( $\beta = .043$ ; ns.) nor religious commitment ( $\beta = .014$ ; ns.) are significantly associated with waist/hip ratios. Support was therefore not found for the first study hypothesis.

The data provided by Model 2 provides some insight into why the first study hypothesis was not confirmed. The results in the right-hand column of Table 1 indicate that a statistically significant interaction effect is present in the data between forgiveness by God and religious commitment on WHR ( $b = -.003$ ;  $p < .001$ ; unstandardized regression coefficients are presented when discussing interaction effects because standardized estimates are not meaningful in this situation). The fact that the a significant interaction was present in the data between forgiveness by God and religious commitment means that the additive effects of these variables in Model 1 do not correctly specify the relationship between these measures.

The additional calculations that were discussed above were performed in order to see if

the interaction between forgiveness by God and religious commitment is in the hypothesized direction. The findings from these additional analyses are provided in Table 2.

<Insert Table 2 about here>

The findings in Table 2 suggest that feeling forgiven by God is associated with larger (i.e., less favorable) WHR scores for study participants with the lowest religious commitment score (i.e., 3) ( $\beta = .201$ ;  $p < .001$ ). The same is true for respondents with a religious commitment score of 6 ( $\beta = .116$ ;  $p < .001$ ). However, the magnitude of the relationship between forgiveness by God and WHR is about 42% smaller ( $(.201 - .116)/.200 = .422$ ). The data in Table 2 further reveal that the relationship between forgiveness by God and WHR is no longer statistically significant for study participants with a religious commitment score of 9 ( $\beta = .031$ ; ns.). The relationship between forgiveness by God and WHR is more favorable for study participants with a religious commitment score of 12 ( $\beta = -.054$ ;  $p < .05$ ). Finally, forgiveness by God is associated with even more favorable WHR for study participants with the highest religious commitment score (i.e., 15) ( $\beta = -.139$ ;  $p < .001$ ). Taken as a whole, the data in Table 2 provide support for the second study hypothesis: the relationship between forgiveness by God and WHR is moderated by religious commitment.

Looking across the full range of values in Table 2 raises a point we will return to later. More specifically, the relationship between feeling forgiven by God and WHR appears to be stronger when commitment is at its lowest point ( $\beta = .201$ ;  $p < .001$ ) than when religious commitment is at its highest point ( $\beta = -.136$ ;  $p < .001$ ).<sup>1</sup>

The findings that are discussed above are also presented in a graph in an effort to more clearly depict the nature of the statistical interaction between forgiveness by God and religious commitment. This graph is shown in Figure 1.

<Insert Figure 1 about here>

### **Supplementary Analyses**

Earlier, issues involving the adoption of healthy lifestyles were evoked to explain the relationship between forgiveness by God and WHR. However, the relationship between these constructs was not evaluated directly. In order to more tightly bind forgiveness by God with the WHR outcome, we conducted an additional set of analyses that were designed to address this issue. Although a number of health behaviors are likely to be involved, we conducted an

additional set of analyses that were designed to see if religious commitment moderates the relationship between forgiveness by God and participating in moderate levels of physical exercise.

We expect forgiveness by God, religious commitment, and exercise to be related for the following reasons. Research by Lyons, Deane, Caputi, and Kelly (2011) suggests that people who feel forgiven by God are more likely to have a stronger sense of meaning in life. This is important because research further reveals that people who have found a sense of meaning in life are more likely to feel they have a reason to stay alive and remain healthy and as a result, they engage in physical exercise more frequently (Brassai, Piko, & Steger, 2015). We further suspect that religious commitment will amplify the magnitude of this relationship because people who are more committed to their faith should place a higher value on the benefits that their faith provides, including the sense of meaning that arises from it. To the extent this is true, religiously committed people should have an especially strong desire to remain healthy through exercising.

The participants in this study were asked to report the number of days in the average week in which they engage in at least 15 minutes of moderate exercise ( $M = 3.7$  days;  $SD = 2.5$ ; range = 0 - 7). Then, using the procedures that were followed above, tests were conducted to see if religious commitment moderates the relationship between forgiveness by God and the frequency of moderate exercise. All of the independent variables that are listed in Table 1 were included in the exercise analyses. A total of 2,420 cases were available for these analyses. The data suggest that a statistically significant interaction effect between forgiveness by God and religious commitment on moderate exercise was present in the data ( $b = .048$ ;  $p < .005$ ; not shown here).

The additional computations recommended by Aiken and West (1991) provided estimates of the relationship between forgiveness by God and moderate exercise at the following values of religious commitment: 3 ( $\beta = -.166$ ;  $p < .001$ ), 6 ( $\beta = -.118$ ;  $p < .001$ ), 9 ( $\beta = -.069$ ;  $p < .01$ ), 12 ( $\beta = -.021$ ; ns.), 15 ( $\beta = .028$ ; ns.). As these estimates reveal, feeling forgiven by God is associated with less frequent moderate exercise, but only among study participants who are less committed to their faith. As religious commitment increases, the relationship between forgiveness by God and moderate exercise eventually fails to be statistically significant.

## Discussion

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Two hypotheses were evaluated in this study. The first hypothesis states that people who feel they have been forgiven by God are more likely to have favorable waist/hip ratios. No support was found for this hypothesis in the current study. The second hypothesis specifies that the relationship between feeling forgiven by God and WHR will be stronger for individuals who are more deeply committed to their faith. Findings from a nationwide survey of adults of all ages provides support for the second hypothesis. As the subsequent computations reveal, the relationship between forgiveness by God and WHR is fully moderated by the data. More specifically, feeling forgiven by God is associated with less desirable WHR scores for respondents with the lowest level of religious commitment. In contrast, feeling forgiven by God is associated with more favorable WHR scores among study participants with the highest level of religious commitment. Viewed in a more general way, this pattern of findings suggests that religious commitment is a potentially potent moderator because the relationship between forgiveness by God and WHR fully depends upon how committed an individual is to his or her faith.

A set of supplementary analyses were conducted in an effort to further solidify the relationships among forgiveness by God, religious commitment, and WHR. We argued that if forgiveness by God is associated with WHR, then ultimately people who are more committed to their faith must be engaging in health behaviors that result in more favorable WHR. The supplementary analyses suggest that people who feel they have been forgiven by God are less likely to engage in moderate exercise if they are less committed to their faith.

The findings we report are noteworthy for three reasons. First, this appears to be the first time that feeling forgiven by God and religious commitment have been associated with waist/hip ratios. Examining “hard” biological outcomes will hopefully add greater credence to our findings. Second, this appears to be the first time that feeling forgiven by God and religious commitment have been linked with moderate exercise. Third, the results were based on data from a recent nationwide probability sample of adults age 18 and older.

A pattern emerged from the analyses that may not be readily apparent, but which nevertheless requires further reflection. The findings from the first set of analyses suggest that the relationship between forgiveness by God and WHR is stronger among individuals who are not highly committed to their faith. The results from the supplementary analyses suggest that the

relationship between forgiveness by God and moderate exercise only emerges among study participants who are less committed to their faith. Taken together, both sets of analyses suggest that the combination of being forgiven by God and low religious commitment is more consequential than the combination of feeling forgiven by God and high religious commitment. It may benefit future research in this field if we offer some thoughts on why this may be so. Viewing these results from the perspective of social exchange theory provides a reasonable point of departure (Homans, 1950).

A central tenet in social exchange theory is that people strive to maintain balanced relationships with others (Homans, 1950). If relationships are not balanced, and one party in a dyad receives more than they give, then tension (and perhaps even health problems) may arise. Casting this perspective in the context of the current study suggests two scenarios.

First, if study participants are not committed to their faith then, by definition, they have taken little action to either nurture or maintain their faith. If this is true, and yet they nevertheless feel they have been forgiven by God, then these individuals are likely to have an unbalanced relationship with God. And if these individuals receive something they feel they do not deserve, or have not earned, then it may be more difficult to accept the fact they have been forgiven and, as a result, the benefits of being forgiven may be diminished.

Second, as we argued earlier, God is typically not seen or heard. To the extent this is true, it may be more difficult for the individual to know whether he or she has been forgiven. Living a deeply committed religious life creates a religious quid pro quo whereby doing what God bids leads to the expectation that forgiveness has been earned and therefore should be forthcoming. In contrast, if an individual is only weakly committed to their faith then they may feel as though they have not earned God's forgiveness and as a result, their perceived status in the eyes of God is more tenuous. This uncertainty and uneasiness may, in turn, result behaviors that are not conducive to good WHR.

Both of the scenarios that are discussed above are supported by research by Krause and his colleagues. When forgiveness is being assessed between human beings, then performing acts of contrition appear to have a negative effect on well-being (Krause & Ellison, 2003). Presumably, performing acts of contrition creates resentment and opens the door to further acts of recrimination and revenge should an act of contrition not be performed in the anticipated

manner. But when forgiveness by God is the focal point of the analyses, then performing acts of contrition appear to have more beneficial effects (Krause & Hayward, 2015). Given the fact that most people tend to view God in a benevolent manner (Krause & Ironson, 2016), the problems that are encountered when seeking forgiveness from another person.

Clearly, the insights we provide above are speculative and need to be verified empirically. Nevertheless, they provide the basis for developing a more finely nuanced theory than is presently in the literature on feeling forgiven by God.

The fact that religious commitment influences the nature of the relationship between forgiveness by God and WHR is important because it sets the stage for a much wider research agenda. Forgiveness by God is obviously only one of a myriad of religious beliefs. This raises the possibility that religious commitment may moderate the relationship between other religious beliefs and health outcomes, as well. For example, some people believe that they can work together with God to overcome problems that arise in life as well as reach desired goals (i.e., they have a high level of God-mediated control; see Krause, 2005). Perhaps the relationship between God-mediated control beliefs and health is also moderated by religious commitment.

In the process of pursuing new insights in research on forgiveness by God researchers should also take steps to address the limitations in the work we have presented. One shortcoming is especially in need of attention. The data in this study are cross-sectional and as a result, the direction of causality was based on theoretical considerations alone. Rigorous empirical analyses with data that have been gathered at more than one point in time are needed to address this limitation.

There is growing interest in integrating religious and spiritual issues into psychotherapy. In fact, the American Psychological Association recently began publishing a journal that is devoted solely to this issue (*Spirituality in Clinical Practice*). Clinicians who work in this type of setting may find the results from our study useful. For example, screening for religious commitment and feeling committed by God may help identify potential high risk individuals. Moreover, identifying this type of person may provide some insight into how to proceed with a treatment plan.

In many ways, research of the health-related implications of feeling forgiven by God is in its infancy. As our data, and our interpretations of the study findings suggest, exactly how feeling

forgiven by God translates into more favorable health outcomes may be a rather complex issue. Even so, we hope the work we have presented highlights the gratification that may come from pushing the envelope in this emerging field

### Notes

1. As the data that were provided earlier reveal, the measures of forgiveness by God and religious commitment are highly skewed. Moreover, the strongest moderating effects in Table 2 occur at the point where the data may be the sparsest. This raises the possibility that perceived forgiveness by God might have the weakest relationship with WHR when religious commitment is very low and the potential moderating effects of religious commitment may only begin to emerge at moderate levels of commitment. This suggests that there might be a nonlinear interaction between forgiveness by God and religious commitment. An additional set of analyses were performed to examine this issues. A quadratic form of religious commitment scores was created by squaring religious commitment scores. Following this, a higher-order multiplicative term was created by multiplying quadratic religion scores by forgiveness by God. This higher-order term was added to an equation that contained all the independent variables that are shown in Table 1 as well as the first-order interaction between religious commitment and forgiveness by God. Subsequent analyses suggest that a statistically significant higher-order interaction between squared religious commitment scores and forgiveness by God failed to emerge from the data ( $b = .0001$ ; ns.).

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Table 1. Assessing the Relationships among Forgiveness by God, Religious Commitment, and Waist/Hip Ratios (N = 2,425)

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	<u>Model 1</u>	<u>Model 2</u>
<u>Independent Variables</u>		
Age	.199*** <sup>a</sup> (.001) <sup>b</sup>	.199*** (.001)
Sex	.385*** (.069)	.385*** (.069)
Education	-.126*** (-.004)	-.117*** (-.003)
Marital Status	.011 (.002)	.012 (.002)
Black	-.038 (-.009)	-.035 (-.008)
South	-.001 (-.001)	-.001 (-.001)
Evangelical	-.026 (-.003)	-.014 (-.002)
Church Attendance	-.022 (-.001)	-.012 (-.001)
Private Prayer	.024 (.001)	.020 (.001)

Forgiveness by God	.043 (.005)	-.033 (-.004)
Religious Commitment	.014 (.001)	-.007 (-.001)
(Forgiveness by God X Religious Commitment)	----- -----	----- (-.003)***
Multiple R <sup>2</sup>	.206	.214

<sup>a</sup> Standardized regression coefficient

<sup>b</sup> Metric (unstandardized) regression coefficient

\*\*\* =  $p < .001$

Table 2. Assessing the Relationship between Forgiveness by God and Waist/Hip Ratios at Select Levels of Religious Commitment (N = 2,452)

<u>Forgiveness by God and Waist/Hip Ratios</u>	
<u>Level of Religious Commitment</u>	
3	.201*** <sup>a</sup> (.021) <sup>b</sup>
6	.116*** (.012)
9	.031 (.003)
12	-.054* (-.005)
15	-.139*** (-.015)

<sup>a</sup> Standardized regression coefficient

<sup>b</sup> Metric (unstandardized) regression coefficient

\* =  $p < .05$ ; \*\*\* =  $p < .001$

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