

Two Dimensions of Attachment to God and Their Relation to Affect, Religiosity, and Personality Constructs

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In this study we sought to address several limitations of previous research on attachment theory and religion by (1) developing a dimensional attachment to God scale, and (2) demonstrating that dimensions of attachment to God are predictive of measures of affect and personality after controlling for social desirability and other related dimensions of religiosity. Questionnaire measures of these constructs were completed by a sample of university students and community adults (total n = 374). Consistent with prior research on adult romantic attachment, two dimensions of attachment to God were identified: avoidance and anxiety. After statistically controlling for social desirability, intrinsic religiousness, doctrinal orthodoxy, and loving God image, anxious attachment to God remained a significant predictor of neuroticism, negative affect, and (inversely) positive affect; avoidant attachment to God remained a significant inverse predictor of religious symbolic immortality and agreeableness. These findings are evidence that correlations between attachment to God and measures of personality and affect are not merely byproducts of confounding effects of socially desirable responding or other dimensions of religiosity.

Since the publication of Bowlby's (1969/1982) first volume more than three decades ago, attachment theory has been enormously influential in the study of social development in children as well as adults (Shaver and Cassidy 1999). More recently, Kirkpatrick (1992, 1999) proposed that the theory provides a powerful framework for understanding many aspects of religious belief, particularly with respect to perceived relationships with God. In support of this idea, numerous studies have shown that religious beliefs and behaviors are related cross-sectionally to individual differences in adult attachment experience (Kirkpatrick 1998; Kirkpatrick and Shaver 1992), and that religious change is empirically predicted longitudinally from retrospective reports of childhood attachment experience (Granqvist and Hagekull 1999; Kirkpatrick and Shaver 1990) and previous adult attachment experience (Kirkpatrick 1997, 1999).

A central focus of the attachment-theoretical approach to religion concerns perceived attachments to God. Research has shown that such individual differences correlate inversely with loneliness, depression, and similar constructs (Kirkpatrick and Shaver 1990; Kirkpatrick, Shillito, and Kellas 1999). However, these findings suffer from several important limitations. First, individual differences in attachment to God have heretofore been measured using a crude categorical self-report measure with unknown reliability. Second, these findings are open to alternative interpretations in terms of potentially confounding factors, particularly (1) social desirability response sets and (2) other dimensions of religiosity that might be correlated with the attachment to God measure. The present research was designed to address these issues by developing a multidimensional measure of attachment to God, and demonstrating that these dimensions are predictive of measures of personality and affect after controlling for social desirability as well as other dimensions of religiosity related to attachment to God.

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ATTACHMENT THEORY AND RELIGION

According to Bowlby (1969/1982, 1973, 1980), the human attachment behavioral system evolved because it facilitated survival of offspring by keeping them in proximity with caregivers and protecting them from danger. When an attachment figure is sufficiently near and responsive, an infant usually feels more secure and displays behaviors that are playful and explorative (Hazan and Shaver 1994). When an attachment figure is not near or responsive, infants usually experience some fear or anxiety that can activate behaviors aimed at restoring proximity with an attachment figure (e.g., visual checking, calling to reestablish contact). These universal attachment dynamics interact with different care-giving environments to produce considerable variation in personality and behavior (Hazan and Shaver 1994). Most infants, for example, display a secure, avoidant, or anxious-ambivalent attachment style when placed in a situation with unfamiliar toys, a stranger, and temporary separation from mother (Ainsworth et al. 1978).

Since the publication of a seminal paper by Hazan and Shaver (1987), attachment theory has emerged as a leading explanatory framework for research on adult relationships as well (e.g., Bartholomew and Horowitz 1991; Simpson and Rholes 1998). An enormous body of research now exists demonstrating that individual differences in adult attachment styles—conceptualized and measured in ways parallel to individual differences in childhood—are empirically related to a wide variety of theoretically relevant aspects of relationship functioning, personality, and other psychological variables (see Feeney 1999 for a review). In particular, people who have secure attachments function better physically, socially, and emotionally than people with insecure attachment relationships. People with stronger social ties with others, for example, live longer and experience fewer physical and mental health problems (Stroebe and Stroebe 1996).

In addition to accounting for individual differences in the formation and maintenance of close relationships (Simpson and Rholes 1998), attachment theory also provides a robust framework for integrating research on religious development and perceptions of God (Kirkpatrick 1992). As mentioned, research now shows that individual differences in adult attachment styles are related cross-sectionally, in theoretically meaningful ways, to individual differences in religious belief (Kirkpatrick and Shaver 1992; Kirkpatrick 1998). Perceived attachment to a primary caregiver appears to influence religious stability and change over time as well (Granqvist 1998; Kirkpatrick and Shaver 1990). Securely attached adults exhibit more stable socialization-based religiosity marked by gradual religious change and adoption of religious beliefs that correspond to those of an attachment figure's (Granqvist 2002; Granqvist and Hagekull 1999; Granqvist and Hagekull 2000). Further evidence for the correspondence between adult attachment and religious behavior was provided in a study on prayer in college students. As adult attachment anxiety increases, the frequency of petitionary prayer by college students increases, and as adult attachment avoidance increases, the use of colloquial and meditative prayer by college students decreases (Byrd and Boe 2001). People with attachment anxiety or avoidance sometimes compensate for insecure adult relationships by becoming more religious. People with insecure adult attachment, for example, tend to display emotion-based religiosity marked by relatively sudden religious change (Granqvist and Hagekull 1999) or finding a new relationship with God (Kirkpatrick 1997, 1998). Individuals who do not have a current love relationship partner, compared with individuals who do, were found to be more religiously active, to perceive a more personal relationship with God, and to experience a religiosity that is based on affect regulation (Granqvist and Hagekull 2000).

Central to the application of attachment theory to religion is the idea that for many people God may function psychologically as an attachment figure (Kirkpatrick 1992, 1999). People perceive God to be a safe haven in times of crisis (cf. Collins and Feeney 2000; Kirkpatrick 1999) and a secure base from which to explore when out of harm's way (cf. Ainsworth et al. 1978; Bowlby 1988; Kirkpatrick 1999). Consequently, it should be possible to conceptualize and measure individual differences in attachment to God in a manner similar to individual differences

in childhood or adult attachment. Kirkpatrick and Shaver (1992) constructed a categorical self-report measure for this purpose, modeled after the parallel measure of adult romantic attachment originally developed by Hazan and Shaver (1987). In their community sample, Kirkpatrick and Shaver found that people who reported a secure attachment to God reported much greater life satisfaction and much less anxiety, depression, and physical illness than did people with an anxious attachment to God; these results paralleled precisely those found for the measure of individual differences in romantic attachment. In a subsequent study using this same measure, security of attachment to God was found to correlate inversely with loneliness among women (Kirkpatrick, Shillito, and Kellas 1999). Unfortunately, this self-report measure of attachment to God suffers from several important shortcomings, and these empirical findings are open to several alternative interpretations, as discussed in the next section.

MEASURING INDIVIDUAL DIFFERENCES IN ATTACHMENT TO GOD

There are several methods and measures for assessing an individual's attachment in interpersonal relationships. The original (and still standard) measure of individual differences in childhood attachment is based on behavioral observation of parent-child interactions in a standardized laboratory paradigm known as the *strange situation* (Ainsworth et al. 1978). Hazan and Shaver (1987) introduced a categorical self-report measure for use in adult romantic relationships that describes each of the three originally hypothesized adult attachment styles and asks participants to choose the one that best describes them. The measure of attachment to God constructed by Kirkpatrick and Shaver (1992) was patterned after the Hazan-Shaver (1987) instrument, with respondents being asked to select from one of three following descriptions the one that best characterizes his or her beliefs about and relationship with God.

Secure: God is generally warm and responsive to me; He always seems to know when to be supportive and protective of me, and when to let me make my own mistakes. My relationship with God is always comfortable, and I am very happy and satisfied with it.

Avoidant: God is generally impersonal, distant, and often seems to have little or no interest in my personal affairs and problems. I frequently have the feeling that He doesn't care very much about me, or that he might not like me.

Anxious-Ambivalent: God seems to be inconsistent in His reactions to me; He sometimes seems very warm and responsive to my needs, but sometimes not. I'm sure that He loves me and cares about me, but sometimes He seems to show it in ways I don't really understand.

As noted above, the categorical Attachment to God Scale has led to some important findings (Kirkpatrick and Shaver 1992; Kirkpatrick, Shillito, and Kellas 1999). However, categorical measures of attachment have some psychometric limitations (cf. Collins and Read 1990; Fraley and Waller 1998; Simpson, Rholes, and Nelligan 1992). For example, because a person could agree with some statements in a paragraph and disagree with other statements in the same paragraph the paragraph selected might not be the most accurate indicator of an individual's attachment to God. In addition, it is difficult to assess the reliability of measurement of such measures. For these and other reasons, Collins and Read (1990) and Simpson, Rholes, and Nelligan (1992) disassembled each Hazan-Shaver (1987) paragraph into multiple questions to which participants responded with Likert-style scales. Subsequent researchers have continued to refine and develop these multi-item measures (Brennan, Clark, and Shaver 1998). The emerging consensus among attachment researchers is that self-report measures of adult attachment tap two continuous and relatively orthogonal dimensions: *avoidance* and *anxiety* (Brennan, Clark, and Shaver 1998; Fraley, Waller, and Brennan 2000; Sanford 1997). Consequently, we sought to develop a multi-item attachment to God scale that would parallel the current state of measurement of attachment in other relationship domains, and to examine some of its empirical correlates with respect to some well-known measures of affect and personality.

SOME PROBLEMS OF MEASUREMENT AND INTERPRETATION

As is the case in measuring any psychological construct, existing and conceivable new measures of attachment to God are potentially confounded by other constructs that open the door to alternative explanations of empirical findings. One such threat to validity is *socially desirable responding*, in which participants' answers to questions are biased by their perceptions of what responses are socially appropriate or positively valued and thus cast them in a positive light. With respect to the categorical attachment to God measure reproduced above, it seems clear that the *secure* response describes the kind of relationship with God most people would deem desirable and socially appropriate. Because other psychological measures with which attachment to God is empirically correlated—such as anxiety, depression, and life satisfaction (Kirkpatrick and Shaver 1992)—are also likely to be contaminated by socially desirable responding, observed correlations might be attributable entirely to this shared social-desirability factor rather than to any relationships between attachment and psychological outcomes per se. It is important to demonstrate, therefore, that such correlations continue to exist when social desirability is statistically controlled via partial correlation or multiple regression techniques.

Second, and perhaps more important, any measure of attachment to God is likely to be highly correlated with other existing dimensions of religious belief. Empirical correlations between attachment to God and other variables might therefore be attributable to these other dimensions, rather than to attachment per se. Several such variables seem particularly relevant here. *Doctrinal orthodoxy* (Batson, Schoenrade, and Ventis 1993) is important to control because the belief that God is always available and loving is an "orthodox" belief in most Christian churches. An individual might endorse a secure attachment to God item simply because it is consistent with the tenets of the religion with which he or she most closely identifies. *Intrinsic religious orientation* (Allport and Ross 1967) is important to control because it is widely recognized as one of the best measures of genuine religious commitment; as such, it controls for general religiosity. *Loving God images* (Benson and Spilka 1973), though inherent in the conceptualization of a secure attachment to God, are also important to control to determine whether it is simply beliefs about what God is like that are important, or whether the security of one's perceived *relationship* with God per se is important for predicting variation in affect, personality, and behavior.

In sum, to demonstrate the theoretical importance of attachment to God dimensions beyond existing constructs, it is crucial to measure and statistically control for other religiosity dimensions and to show that attachment to God dimensions account for unique variation in external variables of interest. Toward this end, we sought in this study to (1) construct a brief multi-item measure of attachment to God; (2) identify dimensions of attachment to God; (3) examine how the dimensions of attachment to God correlate with existing measures of affect, religiosity, and personality; and (4) examine the empirical relationships between the attachment to God dimensions and several widely known measures of personality and affect, while statistically controlling for social desirability and these other dimensions of religiosity.

METHOD

Participants

The participants in this study were 120 community persons (76 women, 44 men, $M_{\text{age}} = 42$) and 254 undergraduate university students (176 women, 76 men, $M_{\text{age}} = 19$) from the United States. Community participants were recruited through an ad placed in the *Waco Tribune-Herald* ($n = 28$) and at the Dallas-Fort Worth airport ($n = 92$). The community sample was ethnically and denominationally diverse (ethnicity: 81 percent Caucasian, 7 percent Hispanic, 6 percent African American, 3 percent Asian American, 3 percent specified another ethnicity; denominational affiliation reported: 24 percent Southern Baptist, 12.5 percent Catholic, 11 percent Methodist,

8.5 percent Christian, 8.5 percent nondenominational, 6 percent Church of Christ, 5.5 percent Pentecostal, 5 percent American Baptist, 3.5 percent Church of God, 3.5 percent Lutheran, 2.5 percent Presbyterian, 2 percent Protestant, 1 percent Greek Orthodox, 1 percent Episcopal, 1 percent Unitarian, 4.5 percent none). Community participants reported completing 15 years of education, on average, and earning about \$54,000 in 1999. Most community respondents were married (64.5 percent; 27 percent single, 9.5 percent divorced/widowed). Of the university participants, most were from Texas (78 percent), Baptist (47 percent) or Catholic (23 percent), members of a church (80 percent), and white (75 percent; 7 percent Hispanic, 7 percent Asian/Pacific Islander, 8 percent African American/black).

Materials and Procedure

Each conceptually distinct phrase from Kirkpatrick and Shaver's (1992) three attachment to God paragraphs was converted to a scale item.¹ This process resulted in a pool of 22 potential attachment to God scale items. Participants in both samples rated each of the 22 items using a seven-point scale (1 = not at all characteristic of me; 7 = very characteristic of me). Participants in the university sample also completed the 10 measures described below.

1. The *Relationship Questionnaire* (Bartholomew and Horowitz 1991) is a four-paragraph measure of secure, dismissing, preoccupied, and fearful adult attachment. Participants rated each paragraph (1 = not at all characteristic of me; 7 = very characteristic of me). Using a computational method developed by Griffin and Bartholomew (1994:29), the four paragraph ratings were converted to two dimensions of adult attachment (i.e., *anxiety* and *avoidance*).
2. A 40-item measure of five personality traits (i.e., extraversion, agreeableness, conscientiousness, neuroticism, and openness) was used to assess global personality (Saucier 1994; 1 = extremely inaccurate; 9 = extremely accurate).
3. The *Balanced Inventory of Desirable Responding* (Paulhus and Reid 1991) is a 40-item measure of socially desirable responding with two subscales: Impression Management and Self-Deception (1 = not true; 7 = very true).
4. The *Loving God and Controlling God Scales* (Benson and Spilka 1973) include items like forgiving, loving, caring and restricting, controlling, unavailable (1 = extremely inaccurate image of God; 9 = extremely accurate image of God).
5. The *Intrinsic, Extrinsic, and Quest Scales* (Allport and Ross 1967; Batson and Schoenrade 1991) measure the degree to which religion-spirituality is an end, means to some personal or social end, or existential quest in which doubts and openness to change are affirmed (1 = strongly disagree; 9 = strongly agree).
6. The *Doctrinal Orthodoxy Scale* (Batson, Schoenrade, and Ventis 1993) is a scale that taps agreement with specific Christian doctrines (1 = strongly disagree; 9 = strongly agree).
7. The *Symbolic Immortality Scale* (Mathews and Mister 1988) measures a sense of becoming immortal through progeny, earthly creations or endowments, unity with nature, religious commitment, and peak experiences (1 = strongly disagree; 5 = strongly agree). Example items include, "It is important to me to have children to carry on my family line. After I die, I will be with God or in harmony with some higher principle of the universe."
8. The *Death Anxiety Scale* (Templer 1970) is a 15-item measure of thoughts and fears about death (e.g., I am very much afraid to die. The thought of death seldom enters my mind. 1 = true; 2 = false).
9. The *Manifest Anxiety Scale* (Bendig 1956) is a 20-item measure of general anxiousness (e.g., I am a high-strung person. I sometimes feel that I am about to go to pieces. 1 = true; 2 = false).
10. The *Positive Affect Negative Affect Scale* (Watson, Clark, and Tellegen 1988) is a 20-item affect-adjective rating scale (1 = not at all; 9 = extremely). Ratings reflect participants' affective states at the time of the study.

After completing these measures participants answered some written demographic questions. Participants were then debriefed and thanked. University students received extra credit for participating.

RESULTS

Data Reduction and Psychometric Analyses

A series of exploratory principal component, reliability, and linear structural relation (LISREL) analyses were conducted to identify the most valid and reliable attachment to God items, after appropriate items were reverse-keyed. Items were omitted from the preliminary pool that did not load on a principal component (one item), had an item-total correlation less than 0.45 (two items), led to a higher Cronbach's alpha coefficient for the scale when excluded (two items), or contributed to preliminary models with poor fit indexes (eight items). Further principal component, reliability, and LISREL analyses were conducted using the remaining nine items.

A principal component analysis of the nine attachment to God items using oblique rotation revealed two components with eigenvalues greater than one (Eigenvalues: Factor I = 5.30; Factor II = 1.26; see Table 1). Six items, including three items reflecting avoidant attachment and three items (loading inversely) reflecting secure attachment, loaded on the first principal component and accounted for 59 percent of the variance. The remaining three items, accounting for 14 percent of the variance, loaded on the second component interpreted as anxious attachment to God.

LISREL 8 was used to examine the goodness of fit of structural models of attachment to God. The first LISREL analysis tested the goodness of fit of a unidimensional measurement model in which the nine attachment to God scale items were indicators of a single latent variable. When error variances between indicators were not allowed to correlate, the unidimensional model did not fit the data well as evidenced by an adjusted goodness of fit index (AGFI) of 0.68, a nonnormed fit index (NNFI) of 0.84, a root-mean square error of approximation (RMSEA) of 0.19, and a large, significant chi-square value [$\chi^2(27) = 386.83, p < 0.0001$].² When the error variances between indicators grouped together in Table 1 were allowed to correlate, the unidimensional model fit better (AGFI = 0.91, NNFI = 0.97, RMSEA = 0.08, $\chi^2(18) = 57.78, p < 0.0001$).

A second two-dimensional model of attachment to God specified six items, all of which had been derived from the *secure* and *avoidant* Kirkpatrick-Shaver (1992) paragraphs, to be

TABLE 1
OBLIQUE-ROTATED COMPONENT LOADINGS OF THE MULTI-ITEM ATTACHMENT TO GOD SCALE

	I	II
<i>Avoidance Dimension</i> ($\alpha = 0.92$)		
God seems impersonal to me.	0.83	0.11
God seems to have little or no interest in my personal problems.	0.82	0.13
God seems to have little or no interest in my personal affairs.	0.81	0.12
I have a warm relationship with God.*	-0.87	-0.04
God knows when I need support.*	-0.86	-0.14
I feel that God is generally responsive to me*	-0.83	0.01
<i>Anxiety Dimension</i> ($\alpha = 0.80$)		
God sometimes seems responsive to my needs, but sometimes not.	-0.14	0.94
God's reactions to me seem to be inconsistent.	0.18	0.74
God sometimes seems very warm and other times very cold to me.	0.16	0.74

Note: *Reverse-keyed item.

indicators of one latent variable and three items (derived from the anxious-ambivalent paragraph) to be indicators of a second latent variable. The two latent variables in this model were allowed to correlate, like the oblique rotation in the exploratory factor analysis. Error variances were allowed to correlate between pairs of items only if both items were indicators of the same latent variable and the correlation was significant. This model provided satisfactory fit for the data (AGFI = 0.94, NNFI = 0.98, RMSEA = 0.06, $\chi^2(18) = 38.37$, $p < 0.003$).³ In the remainder of this article we focus primarily on this two-dimensional model of attachment to God, consisting of *avoidance* (vs. security) and *anxious* dimensions because (1) the factor analysis revealed two interpretable oblique components with satisfactory internal consistency, (2) the structural-equation modeling analysis indicated the two-dimensional model had satisfactory fit, and (3) the two-dimensional model is highly consistent with the prevailing two-dimensional model of adult romantic attachment (e.g., Brennan, Clark, and Shaver 1998).

Based on the two-dimensional model, a single *avoidance* subscale score was computed by reverse-scoring the positively worded items reflecting security, and summing these with the three items reflecting avoidance. The three items tapping anxious-ambivalent attachment to God were combined to create the *anxious* subscale. The correlation between the avoidance and anxious scales was positive and moderately strong ($r = 0.56$, $p < 0.001$), and remained similar when social desirability was statistically controlled (partial $r = 0.53$, $p < 0.001$). Men evinced slightly, but not significantly, higher scores on the avoidance dimension ($M = 15.47$, $SD = 7.97$) than women ($M = 13.89$, $SD = 7.37$), $F(1,366) = 2.65$, $p < 0.10$. Men ($M = 6.13$, $SD = 4.35$) and women ($M = 5.81$, $SD = 4.48$) did not differ on the anxiety dimension, $F(1,366) = 0.40$, $p > 0.10$.

Correlational Analyses

Both attachment to God dimensions were inversely and significantly, though only modestly, correlated with impression management (avoidance $r = -0.22$; anxious $r = -0.26$; $ps < 0.001$). Consequently, impression management was used as a covariate in the remaining analyses. Because multiple correlation coefficients were computed, a conservative criterion for rejecting null hypotheses was used ($p < 0.001$). This value was selected by dividing the traditional alpha level ($p < 0.05$) by the number of correlation coefficients to be computed (50). As shown in Table 2, several associations between anxious and avoidant attachment to God, adult attachment, personality, religiosity, and general psychological outcomes remained significant when controlling for social desirability.

Correspondence Between Adult Attachment and God Attachment Dimensions

To be more consistent with adult attachment measurement standards, we converted Bartholomew and Horowitz's four adult attachment categories to two continuous dimensions, a negative self-model (anxiety) and a negative other-model (avoidance), as described by Griffin and Bartholomew (1994:29). Adult attachment *anxiety* scores were derived by adding together respondents' ratings on the negative self patterns (preoccupied and fearful) and subtracting respondents' ratings on the positive self patterns (secure and dismissing). Adult attachment *avoidance* scores were derived by adding together respondents' ratings of the negative other patterns (dismissing and fearful) and subtracting respondents' ratings on the positive other patterns (secure and preoccupied). As shown in Table 2, these adult attachment dimensions were only modestly correlated with the two attachment to God dimensions (with impression management controlled). These low partial correlations provide evidence of discriminant validity of the attachment to God measures. That is, dimensions of attachment to God are not merely reflections of a more general adult attachment style.

TABLE 2
PARTIAL CORRELATIONS BETWEEN ADULT ATTACHMENT, PERSONALITY, RELIGIOSITY, AND AFFECT VARIABLES WITH ATTACHMENT TO GOD DIMENSIONS (CONTROLLING FOR SOCIALLY DESIRABLE RESPONDING)

Personality Construct	Attachment to God Dimensions	
	Anxiety	Avoidance
<i>Adult Attachment</i>		
Anxiety dimension	0.29	0.21
Avoidance dimension	0.13	0.12
<i>Big Five Personality</i>		
Extraversion	-0.15	-0.05
Agreeableness	-0.21	-0.32
Conscientiousness	-0.15	-0.21
Neuroticism	0.31	0.22
Openness	0.01	0.04
<i>Image of God</i>		
Loving	-0.28	-0.74
Controlling	0.35	0.55
<i>Religious Orientation</i>		
Intrinsic	-0.29	-0.60
Extrinsic	0.38	0.18
Quest	0.19	0.18
<i>Doctrinal Orthodoxy</i>		
	-0.23	-0.59
<i>Symbolic Immortality</i>		
Religious	-0.28	-0.62
Biological	-0.06	-0.09
Nature	0.03	0.08
Creative	0.12	0.09
Experience	0.18	0.17
<i>Death Anxiety</i>		
	0.12	0.07
<i>Manifest Anxiety</i>		
	0.25	0.09
<i>Positive Affect</i>		
	-0.17	-0.17
<i>Negative Affect</i>		
	0.25	0.12
<i>Self-Deception</i>		
	-0.10	-0.24

Note: $n = 250$; $r_s \geq |0.20|$; $p < 0.001$.

Personality Traits and Attachment to God

Neuroticism correlated positively with both attachment to God dimensions. Agreeableness and conscientiousness correlated negatively with each attachment to God dimension. Neither attachment to God dimension correlated appreciably with extraversion or openness, when impression management was controlled.

Dimensions of Religiosity and Attachment to God

As expected, the attachment to God measures were correlated with several other religion-related measures. In particular, a strong negative partial correlation was found between an image of God as loving and the avoidance dimension of attachment to God ($r = -0.74$). The avoidance dimension was also negatively correlated with intrinsic religious orientation, doctrinal orthodoxy,

and the religious component of symbolic immortality. In contrast, the anxious attachment to God dimension was most strongly correlated with extrinsic religious orientation ($r = 0.38$). Moderate positive partial correlations were also found between both attachment to God dimensions and an image of God as controlling. Neither attachment to God dimension correlated substantially with the quest orientation to religion or with nonreligious components of symbolic immortality, when impression management was statistically controlled.

Psychological Outcomes and Attachment to God

Small positive partial correlations were observed between the anxious dimension of attachment to God, manifest anxiety, and negative affect. A small negative partial correlation was found between the avoidance dimension and self-deception.

Taken together, the partial correlation analyses shown in Table 2 indicate that even when variance accounted for by social desirability is removed, dimensions of attachment to God are associated with meaningful aspects of the self (i.e., affect, personality, and religiosity).

Multiple Regression Analyses

Because the attachment to God scales were correlated with other measures of religiosity, we conducted multiple regression analyses to determine whether the correlations reported above, between attachment to God dimensions and several theoretically important external variables, could be explained as a byproduct of other (correlated) aspects of religiosity. For each of our most important external variables, a regression equation was computed including three existing measures of religiosity—*intrinsic religiousness*, *doctrinal orthodoxy*, and *loving God image*—as well as *social desirability* and the two attachment to God scales.

As shown in Table 3, anxious attachment to God accounted for unique variation in positive affect, negative affect, and neuroticism, above and beyond these covariates. Positive affect was directly related to negative affect and neuroticism, and inversely related to positive affect. The avoidance dimension was not significantly related to these variables. Instead, avoidant attachment to God emerged as a significant negative predictor in the equations for agreeableness and the religious component of symbolic immortality. Note that because both attachment to God dimensions were included simultaneously in the regressions, the tests for each always control statistically for the other—an important point given that they were themselves moderately intercorrelated.

Finally, we repeated these regression analyses controlling for the two adult attachment dimensions, in addition to the religiosity and social desirability measures, to demonstrate that the effects of attachment to God variables are not merely byproducts of adult attachment styles in general but rather are specific to attachment to God. All the significant effects for attachment to God scales reported above were replicated: anxious attachment to God was a significant predictor ($p < 0.01$, except where indicated) of positive affect ($\beta = -0.14$, $p < 0.10$), negative affect ($\beta = 0.22$), and neuroticism ($\beta = 0.17$), whereas avoidant attachment to God was a significant predictor of agreeableness ($\beta = -0.27$) and religious symbolic immortality ($\beta = -0.23$).

DISCUSSION

In the introduction of this article we specified four goals for this research: (1) to construct a brief multi-item measure of attachment to God; (2) to identify dimensions of attachment to God; (3) to examine how the dimensions of attachment to God correlate with existing measures of affect, religiosity, and personality; and (4) to examine the empirical relationships between the attachment to God dimensions and several widely known measures of personality and affect, while statistically controlling for social desirability and these other dimensions of religiosity. In this section we briefly review our findings in light of these goals.

TABLE 3
MULTIPLE REGRESSION RESULTS SHOWING ATTACHMENT TO GOD
DIMENSIONS ACCOUNT FOR UNIQUE VARIANCE IN SELF-REPORTED AFFECT,
PERSONALITY, AND SYMBOLIC IMMORTALITY

Independent Variables	β	t	p
<i>Criterion: Positive Affect</i>			
Social desirability	-0.00	-0.06	ns
Intrinsic religiousness	0.24	2.69	.008
Doctrinal orthodoxy	-0.14	-1.64	.10
Loving image of God	0.05	0.49	ns
Avoidant attachment to God	0.00	0.02	ns
Anxious attachment to God	-0.15	-2.00	.05
Multiple R = 0.29; $F(6,233) = 3.53, p < 0.002$			
<i>Criterion: Negative Affect</i>			
Social desirability	-0.17	-2.62	.009
Intrinsic religiousness	-0.07	-0.77	ns
Doctrinal orthodoxy	0.12	2.21	ns
Loving image of God	0.02	0.23	ns
Avoidant attachment to God	0.04	0.26	ns
Anxious attachment to God	0.24	3.15	.002
Multiple R = 0.35; $F(6,234) = 5.34, p < 0.0001$			
<i>Criterion: Neuroticism</i>			
Social desirability	-0.08	-1.18	ns
Intrinsic religiousness	-0.01	-0.13	ns
Doctrinal orthodoxy	0.19	2.21	.03
Loving image of God	-0.06	-0.61	ns
Avoidant attachment to God	0.16	1.31	ns
Anxious attachment to God	0.25	3.39	.001
Multiple R = 0.35; $F(6,229) = 6.33, p < 0.0001$			
<i>Criterion: Agreeableness</i>			
Social desirability	0.09	1.49	.08
Intrinsic religiousness	-0.04	-0.51	ns
Doctrinal orthodoxy	-0.18	-2.09	.04
Loving image of God	0.18	1.90	.06
Avoidant attachment to God	-0.28	-2.33	.02
Anxious attachment to God	-0.07	-0.96	ns
Multiple R = 0.40; $F(6,228) = 7.10, p < 0.0001$			
<i>Criterion: Religious Symbolic Immortality</i>			
Social desirability	0.03	0.60	ns
Intrinsic religiousness	0.37	6.55	.001
Doctrinal orthodoxy	0.30	5.36	.001
Loving image of God	0.02	0.28	ns
Avoidant attachment to God	-0.22	-2.80	.006
Anxious attachment to God	0.02	0.49	ns
Multiple R = 0.79; $F(6,231) = 62.17, p < 0.0001$			

Note: ns = not significant ($p > 0.10$).

Improved Measurement of Attachment to God

Our results suggest that individual differences in attachment to God, like other forms of adult attachment, can be measured and conceptualized in terms of two underlying dimensions: avoidance (vs. security) and anxiety. Measures of each of these dimensions were internally consistent and, perhaps more important, displayed differential patterns of empirical relationships with other variables included in the study.

It is no doubt true, however, that the scales for measuring these dimensions could be expanded and improved in ways that would be beneficial for future research. Our strategy here involved disassembling each of the three attachment-style paragraphs used by Kirkpatrick and Shaver (1992) into multiple items, as was done in the romantic attachment literature by Collins and Read (1990) and Simpson, Rholes, and Nelligan (1992). In that literature, this proved to be only the first step in scale development, and subsequent researchers have since expanded the scales in terms of both number of items and conceptual breadth (see Brennan, Clark, and Shaver 1998). A majority of the items on Brennan, Clark, and Shaver's (1998) measure, for example, involve a person's comfort in being close to or relying on others and affective reactions to being abandoned. In our God attachment measure, however, most of the items refer to a person's perception of God's consistency with, interest in, and responsiveness to the individual. Fewer items refer to the person's comfort in being close to or relying on God. As such, the scales reported in the present article could probably be expanded. Researchers could draw upon the work by Brennan, Clark, and Shaver by selecting and modifying other items in their more extensive scales to assess attachment to God. This approach could be useful for maintaining parallels between adult romantic attachment and attachment to God, both psychometrically and conceptually.

On the other hand, researchers should not be constrained by the content of existing adult attachment items in developing measures of attachment to God. Despite theoretical parallels between interpersonal relationships and relationships with God, there are many ways attachment to God is unique. For example, the degree to which God is perceived as omnipresent makes it possible for God to be continually available and responsive, unlike human attachment figures. Likewise, even though we can *experience* closeness with God and humans, and turn to either in times of need, the fundamental nature of the closeness could differ. Future item development will need to be guided by consideration of such unique aspects of beliefs about God and the ways individual differences with respect to such beliefs might reflect anxious or avoidant attachment, respectively.

Correlations with Other Personality, Religiosity, and Psychological Outcome Variables

A number of theoretically interesting correlations between the attachment to God dimensions and other variables were found that support both the convergent and discriminant validity of the measures. Importantly, these correlations remained significant even when social desirability was statistically controlled through partial correlation techniques.

First, partial correlations with measures of adult romantic attachment were largely consistent with expectations. Anxious adult romantic attachment was positively correlated with anxiety in attachment to God. In addition, avoidant attachment to God was positively correlated with the avoidant dimension of adult attachment. These findings are consistent with previous research on cross-sectional relationships between adult attachment and religious belief (Granqvist and Hagekull 1999; Kirkpatrick and Shaver 1992; Kirkpatrick 1998) and support the theoretical correspondence between attachment in these two domains.

Second, the correlations between attachment to God and general personality traits are consistent with associations between adult attachment and the Big Five (Shaver and Brennan 1992). That is, the attachment to God dimensions correlate negatively with agreeableness, positively with neuroticism, minimally with conscientiousness, and negligibly with extraversion and openness to experience.

Third, the attachment to God dimensions correlate with other widely used measures of religious belief and motivation, supporting the validity of the scales as measures of dimensions of religious belief. The avoidance dimension correlates particularly strongly with loving God images, Christian orthodoxy, intrinsic religious orientation, and religious symbolic immortality (all inversely) and positively with controlling God images. In contrast, the anxiety dimension correlates more strongly with extrinsic religious orientation, supporting the interpretation that these God attachment dimensions are distinct and separable from one another.

Fourth, the God attachment dimensions correlate differentially with psychological outcome measures. Specifically, anxious attachment to God correlated with both negative affect and manifest anxiety; avoidant God attachment was not significantly related to these variables. Again, these findings suggest that the two subscales are assessing distinct constructs that relate differentially to other theoretically important variables.

These findings left open the question we addressed in our next set of analyses regarding the degree to which our attachment to God measures, vis-à-vis other measures of religiosity, are predictive of personality and psychological outcome variables when the others are statistically controlled. The findings also raise the question as to whether previous findings on the relationship between these religious measures and psychological outcomes (see Ventis 1995 for a review) might be attributable to individual differences in attachment to God rather than, say, intrinsic religiousness or general religious commitment.

Predicting Personality Variables and Psychological Outcomes

In our most important set of analyses, the new attachment to God scales were entered into standard multiple regression equations, along with measures of social desirability and other dimensions of religiosity, in the prediction of personality and psychological outcome measures. In multiple regression analysis, the coefficients and significance tests are computed for each variable in such a way as to assess that variable's contribution to prediction *above and beyond* that of the other variables in the equation. That is, the results for each predictor variable reflect its relationship to the criterion variable with all other predictor variables statistically controlled or held constant. In this way we were able to disentangle the correlated (confounded) effects of the intercorrelated religion measures to determine which contributed unique predictive power.

The results provide strong support for the importance of the attachment to God dimensions as conceptually and empirically distinct aspects of religiosity. Even after statistically controlling for social desirability, loving images of God, intrinsic religiousness, and doctrinal orthodoxy, anxious attachment to God emerged as a significant predictor of negative affect, positive affect, and neuroticism. Similarly, avoidant (vs. secure) attachment emerged as a significant predictor of the personality variable of agreeableness and of religious symbolic immortality. Based on these exploratory analyses it seems likely that the anxiety dimension of attachment to God might similarly account for unique variation in other aspects of emotion regulation (cf. Fuendeling 1998), personality (cf. Emmons and McCullough 1999), and religious experience (Kirkpatrick and Shaver 1992).

It is important to note that in some of these equations other religion variables also emerged as significant predictors: intrinsic religiousness predicted positive affect; doctrinal orthodoxy predicted neuroticism and agreeableness; and both these religion variables predicted religious symbolic immortality. These findings suggest that measures of orthodoxy and intrinsic religiosity, though correlated with attachment to God, contain additional components that independently (of attachment to God) relate to these other variables. Our measures of attachment to God therefore cannot replace these existing measures, but rather contribute additional predictive power beyond that afforded by extant measures.

CONCLUSION

To begin this article, we mentioned that people with secure attachments tend to be physically and mentally healthier than people with insecure attachments. The exact processes by which attachment influences health are not fully known. One possibility involves stress buffering (Cohen and Williamson 1991). Experiencing significant others or God to be near, warm, and responsive, as people with a secure attachments do, probably reduces perceptions that demands outweigh resources and might buffer negative effects of stress on the immune system (Cohen and Williamson 1991). This stress-buffering process might be partially responsible for positive influences of religion on coping (Pargament et al. 1998; Solomon et al. 1998) and on mental or physical health (cf. Koenig 1998; Mikulincer et al. 1999). However, additional research will be necessary to determine whether the magnitude of stress reduced by perceiving that others or God are supportive is sufficient to alter susceptibility to disease or whether it simply influences perceptions of well-being. In any event, measures of individual differences in attachment to God appear to have a place in research designed to understand these processes.

NOTES

1. We used the three-category God attachment measure to generate potential scale items instead of items from an existing adult attachment scale (e.g., Brennan, Clark, and Shaver 1998) for two reasons. First, the meaning of items on existing adult attachment measures that assess people's comfort with physical closeness (e.g., I get uncomfortable when a romantic partner wants to be very close) or abandonment (e.g., I often want to merge completely with romantic partners, and this sometimes scares them away) could change when the referent is changed from romantic partner to God. Second, the three God attachment categories were significant predictors of several important psychological processes, such as loneliness and mental health (Kirkpatrick and Shaver 1992; Kirkpatrick, Shillito, and Kellas 1999).
2. See Byrne (1998) for a detailed discussion of LISREL goodness-of-fit statistics and other recommended readings on their formulae and functions.
3. A three-dimensional model also provided satisfactory fit for this data. This model specified three items corresponding to secure attachment to God (i.e., God as warm, responsive, supportive) to be indicators of one latent variable. Three items corresponding to avoidant attachment to God (i.e., God as impersonal, disinterested in personal problems, disinterested in personal affairs) were indicators of the second latent variable. Three items corresponding to the anxious attachment to God (i.e., God as inconsistent, sometimes warm-cold, sometimes responsive/nonresponsive) were indicators of the third latent variable. The three latent variables in this model were allowed to correlate, as were significantly correlated error variances that were indicators of the same latent variable. This three-dimensional model of attachment to God fit the data well (AGFI = 0.97, NNFI = 0.99, RMSEA < 0.001, $\chi^2(17) = 13.94$, $p = 0.67$). However, we opted to focus on the two-dimensional solutions for the reasons stated in the text.

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