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Attachment to God, Stressful Life Events, and Changes in Psychological Distress

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Abstract Considerable research shows that social relationships, attachments, and support systems promote emotional well-being. The present study adds to this literature by examining the connection between attachments to God and psychological distress. Analyzing longitudinal data (two waves) from a study of Presbyterian (PCUSA) elders and rank-and-file laypersons, results show that: (1) a secure attachment to God at baseline is associated with a decrease in distress over time; (2) a secure attachment to God buffers against the deleterious effects of stressful life events on distress; and (3) an anxious attachment to God exacerbates the harmful effects of stress. In these analyses, a secure attachment to God is a more robust predictor of changes in distress than many, more commonly studied variables including race, gender, SES, and church attendance. Future research should therefore replicate and extend this line of promising scholarship by examining additional outcomes such as psychiatric illness, physical health, and even mortality risk.

Keywords Religion · Mental health · Attachment theory · Stress · Psychological distress

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Introduction

Considerable research suggests that religious involvement is associated with desirable mental health outcomes (Ellison and Levin 1998; Hackney and Sanders 2003; Smith et al. 2003). Studies in this area have identified a number of relevant religious and spiritual domains, including organizational participation, congregational support systems, spiritual coping practices, religious motivations, and others (Hill and Pargament 2008; Idler et al. 2003; Krause 2008). However, researchers have only intermittently focused on relationships between individuals and the divine (Bradshaw et al. 2008; Ladd and Spilka 2002; Pollner 1989; Poloma and Gallup 1991). The present study contributes to research in this area by examining links between intimate relationships with God and mental health.

A long tradition of scholarship reveals that positive social relationships, attachments, and support systems can promote psychological well-being (Cohen 2004; House et al. 1988). One important strand of this literature builds on Bowlby's (1969, 1973, 1980) theory of parent–child attachments, demonstrating that intimate relations play an important role in child and adult development (Hazan and Shaver 1987; Kirkpatrick and Davis 1994; Kirkpatrick and Hazan 1994; Shaver et al. 1988; Sroufe and Fleeson 1986). Attachment theory has recently been imported into the psychology of religion, and a small but growing literature reports positive associations between patterns or styles of attachment to God and psychological well-being (Granqvist 1998; Rowatt and Kirkpatrick 2002).

However, this body of work is modest in size, and relies heavily on cross-sectional data. Moreover, studies in this tradition have not adequately investigated whether attachment to God moderates the deleterious effects of stressful life events on mental health outcomes. This paper addresses each of these limitations. Briefly, after developing core theoretical arguments, relevant hypotheses will be tested using data from a longitudinal (two-wave) study of Presbyterian (PCUSA) elders and rank-and-file laypersons. Results will then be presented, and their implications are discussed in terms of attachment theory, the psychology of religion, and the broader literature on religion and health.

Theoretical and Empirical Background

Attachment theory proceeds from several basic premises. According to this perspective, a close socio-emotional relationship between infant and caregiver represents an evolved adaptation that promotes survival. To develop successfully, all infants need, and seek, a "safe haven" of protection in an uncertain environment, and a "secure base" from which to explore the physical and social worlds around them.

The nature of the bonding experience in early childhood has the potential to shape subsequent intimate relationships, such as those between romantic partners, close friends, and possibly even humans and God (Hazan and Shaver 1987; Kirkpatrick 2005; Kirkpatrick and Davis 1994; Kirkpatrick and Hazan 1994; Shaver et al. 1988; Sroufe and Fleeson 1986). Individuals are especially inclined to engage

in proximity-seeking behavior—i.e., to seek out the company of their attachment figures—when facing stressful conditions. Building on these ideas, researchers have identified several distinct patterns or styles of attachment including: (1) secure attachment, in which the relationships between individuals and attachment figures are based on feelings of love, approval, closeness, security, and warmth; (2) avoidant attachment, where individuals perceive attachment figures as consistently cold and distant; and (3) anxious attachment, which is characterized by inconsistency and confusion, and attachment figures are experienced as warm and loving at some times, but removed and unreliable at others. There is growing consensus in the literature on adult attachment styles that multi-item self-report measures tap two continuous and relatively orthogonal dimensions of attachment: (1) secure/avoidant (with secure and avoidant attachment being opposite ends of a single continuum); and (2) anxious (Rowatt and Kirkpatrick 2002).

Many of the early studies conducted in the attachment theory tradition concentrated on either the developmental origins of attachment styles, or the degree of correspondence (or lack thereof) between attachments in distinct relationships (e.g., parent–child, romantic partners, etc.) (Hazan and Shaver 1987; Sroufe and Fleeson 1986). More recently, researchers have linked attachment styles with aspects of psychological functioning (Kirkpatrick and Davis 1994; Kirkpatrick and Hazan 1994). For example, several studies have reported that individual differences in attachment styles (e.g., secure, anxious) predict variations in symptoms of depression, distress, and other mental health problems (Murphy and Bates 1997; Pielage et al. 2005; Riggs et al. 2007). Other studies suggest that variations in attachment styles also contribute to differences in coping strategies (Mikulincer and Florian 1998).

Only in recent years, however, have researchers integrated insights from attachment theory with the study of religion (Granqvist 1998; Granqvist and Hagekull 2003, 1999; Kirkpatrick 2005). A growing literature indicates that close bonds between humans and God meet the defining criteria of attachments (Hood et al. 1996; Kirkpatrick 1997). The portrait of God as a parental attachment figure is highly compatible with the beliefs of Christianity, and indeed, with many of the major world religions, in which God is commonly depicted as a loving God who is responsive to the needs of believers. As Kirkpatrick (2005) has pointed out, religious persons may view God as the ultimate attachment figure. Individuals may seek an intimate relationship with God through prayer, a proximity-seeking behavior, and God will be available to protect and comfort them in times of stress and threat. Thus, the faithful often view God as a haven of safety. Further, the mere awareness of God's presence and accessibility may lead believers to confront challenges and problems with confidence and security. In this way, they may experience God as a secure base from which to conduct their affairs.

Empirical studies also confirm that individuals view God as an attachment figure. For example, believers often turn to God for help when facing chronic strains or major life events (Ellison and Taylor 1996; Pargament 1997). Although early coping researchers tended to dismiss religion as a passive, potentially maladaptive coping response. More recent work by Pargament et al. (1998, 2000) has revealed a multiplicity of religious coping methods. To be sure, some persons use religion in a

passive way, ceding control and responsibility over problems to God, while others experience distance from, and anger toward, God (Pargament 1997; Pargament et al. 2000). On the other hand, many other individuals cope by seeking spiritual support and comfort from God, and by cultivating dynamic partnerships with the divine, collaborating with God to address personal problems (Pargament et al. 1988, 2000). A meta-analysis of 49 empirical studies confirmed the hypothesis that positive forms of religious coping are generally associated with positive psychological adjustment, while negative forms of religious coping are linked with undesirable outcomes (Ano and Vasconcelles 2005).

These avenues of religious coping are signs of proximity-seeking behavior and also symbolize the function of God as a "safe haven" for many believers. Researchers have attempted to more precisely measure the variations in styles of attachment between humans and God. Using the categorical self-report measure developed by Hazan and Shaver (1987), Kirkpatrick and Shaver (1992) classified participants into three distinct attachment groups—secure, avoidant, and anxious—based on their perceptions of their relationships with God. In an important subsequent study, Rowatt and Kirkpatrick (2002) developed a new multi-item scale to measure these styles of attachment to God more precisely.

Several studies to date also reveal links between patterns of attachment to God and aspects of psychological well-being. For example, in a sample of adult volunteers recruited from a newspaper survey, Kirkpatrick and Shaver (1992) found that individuals who are securely attached to God have greater life satisfaction and lower levels of anxiety and depression than persons with avoidant attachments to God. Another study of undergraduate students by Kirkpatrick et al. (1999) reported an inverse association between secure attachment to God and feelings of loneliness, particularly among women. Using data on a sample of adult volunteers recruited through advertisements in newspapers and airports, as well as undergraduate students, Rowatt and Kirkpatrick (2002) found an inverse association between avoidant attachment to God and both agreeableness and symbolic immortality. In addition, their results indicated that anxious attachment to God is positively related to neuroticism and negative emotion, and inversely associated with positive affect. Finally, Bradshaw et al. (2010) found that secure attachment to God was inversely related to psychological distress among members of a single Protestant denomination, while anxious attachment to God was a positive predictor of distress in this population.

Taken together, these findings clearly suggest that attachment to God may influence aspects of mental health. However, there are at least two significant limitations of the work in this area. First, each of these studies is based on cross-sectional data, making it impossible to determine the temporal order of key variables. For example, it is possible that attachment does not affect psychosocial outcomes, but rather that individuals experiencing psychological distress (or other mental health problems) may be less able to develop or maintain a secure attachment to God. Although longitudinal data are not a panacea for establishing causality, only with longitudinal data can investigators begin to resolve these issues.

Second, the central tenets of attachment theory—i.e., that God may be an ideal attachment figure, a secure base or safe haven, and that persons tend to engage in proximity-seeking behavior through prayer and other acts of devotion—seem to

imply that the effects of attachment to God on mental health may be contingent upon individuals' exposure to stress. A wealth of literature has focused on the deleterious effects of stressful events and conditions on individual mental health, and on the role of various psychosocial resources in moderating these noxious effects (Pearlin 1999; Turner and Roszell 1994; Turner and Lloyd 1999). To be sure, the stress-moderating role of other facets of religiousness and spirituality, such as religious coping styles and practices, has been examined in prior work (Tix and Frazier 1998; Ellison et al. 2001; Fabricatore et al. 2004). Yet, with the partial exception of the Bradshaw et al. (2010) study, to our knowledge this issue has been neglected in the emerging research on attachment to God and its implications for mental health.

The present study addresses these limitations in the literature by using two waves of data from a longitudinal study of members of the Presbyterian Church (USA) to test the following hypotheses:

1. Secure attachment to God at baseline will be associated with a decrease in psychological distress over time.
2. Anxious attachment to God at baseline will be associated with an increase in psychological distress over time.
3. Stressful life events at baseline will be associated with an increase in psychological distress over time, but secure attachment to God will buffer against (mitigate) this effect.
4. Stressful life events at baseline will be associated with an increase in psychological distress over time, and anxious attachment to God will exacerbate (worsen) this effect.

Data and Methods

Participants

To examine these models, data on 906 participants in a national panel survey conducted among representative samples of two populations affiliated with the Presbyterian Church (U.S.A.) were analyzed: (1) active elders (i.e., active members who have been ordained as an elder in a Presbyterian congregation and who are currently serving on the session, or governing board, of a Presbyterian congregation); and (2) other active members (i.e., all active members minus the subset of active elders). For convenience, these populations and the samples derived from them are referred to simply as "elders" and "members" in this paper.

Elders were sampled in a two-stage process. First, all congregations ($n = 11{,}019$) were classified into strata based on region, racial-ethnic composition, and size. A sample of 400 congregations was then drawn, with the number in each stratum proportional to the number of elders currently serving in the congregations of that stratum. Random sampling was used within strata to select the specific congregations. Second, each selected congregation was contacted by mail and asked to

provide the names of all active elders if the session size was eight or fewer, or if larger, to sample eight names by matching eight pre-assigned random numbers to a numbered list of the session. In all 206 (51%) congregations cooperated, providing 1,471 names.

The member sample was also drawn in two stages. First, congregations were allocated to strata based on region, race-ethnic composition, and size. Then a sample of 500 was drawn from the population of congregations, with the number selected in each stratum proportional to the membership total of the congregations in that stratum. Random sampling was used within strata. Second, sampled congregations were contacted by mail and asked to provide eight member names by matching eight pre-assigned random numbers to a numbered list of active members. In all, 273 (54%) congregations cooperated, providing 1,892 names.

The individuals in each sample were mailed an initial questionnaire in the fall of 2005. A total of 1,163 elders (79%) and 1,099 rank-and-file members (58%) returned this screening survey. These respondents comprise the panel. Information on respondents' sociodemographic characteristics (e.g., gender, race/ethnicity, education, etc.), which were unlikely to change across waves of the panel, was taken from this initial screening questionnaire. All other data used in this study (i.e., on religiousness, attachment to God, psychological distress, and stressful events) come from the fifth and sixth waves of data, which were collected in January 2007 and November 2008, respectively. Because of attrition, the number of participants had declined slightly by the fifth wave. At that time there were 1,135 elders, of whom 693 (61%) responded to the fifth wave questionnaire, and 1,037 members, of whom 557 (53%) responded. Data from these two sampled yielded a total of 1,041 cases with complete data at wave 5, which is referred to as the baseline (T1) in the following analyses. At wave 6 (T2), the number of participants with complete data on the dependent variable had declined to 906. Therefore, all findings are based on an effective sample size of 906.

Measures

Dependent Variable

Psychological distress was measured at T1 and T2 with a mean index composed of the following six questions, each of which was coded 1 = none of the time to 5 = all of the time (Cronbach's $\alpha = .818$ at T1 and .840 at T2): "During the past 30 days, how much of the time did you feel… (a) so sad nothing could cheer you up; (b) nervous; (c) restless or fidgety; (d) hopeless; (e) that everything was an effort; and (f) worthless?" This is the K6 scale of psychological distress developed by Kessler et al. (2002), and it distinguishes negative affect based on the type and amount of severity of the problem rather than diagnosis. The positive skew in this measure could bias our findings. The "ladder" command in Stata 11.2 suggested that a square root transformation would reduce some of the skew in this variable. We conducted all of the analyses shown below on both the transformed and non-transformed versions of the dependent variable, and the results were virtually

identical. Given this, we have chosen to report the findings for the non-transformed variable because the results are easier for readers to interpret.

Independent Variables

Attachment to God at T1 was measured with Rowatt and Kirkpatrick's (2002) nine-item, multidimensional measure. To facilitate linkages with their work, and for the same theoretical and empirical reasons stated in their paper, our study assumes a 2-factor model. Empirically, the data strongly suggests a 2-factor solution, with Factor 1 (secure and avoidant attachment to God as opposite ends of a single continuum) having an Eigenvalue of 3.631 and Factor 2 (anxious attachment to God) having an Eigenvalue of 1.191. When a third factor is allowed, its Eigenvalue is .305, which is far below the widely-accepted cut-off point of 1 for a significant additional factor (Kaiser 1960). Specifically, secure attachment to God was tapped with a mean index ($\alpha = .866$) composed of the following six questions (coded 1 = not true to 7 = very true.), all of which had factor loadings that ranged from .53 to .86: "(a) God seems impersonal to me (reverse coded). (b) God seems to have little or no interest in my personal problems (reverse coded). (c) God seems to have little or no interest in my personal affairs (reverse coded). (d) I have a warm relationship with God. (e) God knows when I need support. (f) I feel that God is generally responsive to me." Anxious attachment to God, a second latent construct, was gauged with a mean index constructed from the following three items ($\alpha = .698$), each of which was also coded 1 = not true to 7 = very true: "(a) God sometimes seems responsive to my needs, but sometimes not. (b) God's reactions to me seem to be inconsistent. (c) God sometimes seems very warm and other times very cold to me." The factor loadings for these three items ranged from .69 to .78.

Measures of stress were collected at T2, but the wording of the questions concerned stressful life events that occurred in the 12 months preceding the T2 questionnaire. This means that the stressor(s) could have occurred as early as 9 months after the T1 (January, 2007) survey, or they could have happened as late as the month (or week) preceding the T2 (November, 2008) interview, which would be 21 months after the T1 (January, 2007) interview. The following six items were used: "During the past year… (a) Did your spouse, child, parent, grandparent, or grandchild die? (b) Did you suffer from a major financial loss that involved 20% or more of your income? (c) Did your spouse, child, parent, grandparent, or grandchild suffer from a serious illness or accident? (d) Did you have a major disagreement with your spouse, child, parent, grandparent, or grandchild? (e) Did you have a major disagreement or serious argument with a close friend? and (f) Did you experience any other major problem or challenge?" Each of these questions was dichotomously coded (1 = yes, 0 = no), and the main measure of stressful events employed here was the sum of these items.

Covariates (T1)

To control for differences in religious commitment among the groups included in the sample, elder status was gauged with a dichotomous variable (elder = 1, other

active members = 0). Other covariates that have been linked with religious participation, attachment styles, God imagery, and/or psychological distress in previous studies were also included: age was measured in years (14–93), while both sex (female = 1, male = 0) and race (white = 1, other race = 0) were dichotomous variables. Education was tapped with a continuous measure coded 1 if the respondent reported having an 8th grade education or less to 8 if they possessed a graduated degree (e.g., M.D., Ph.D., J.D.). Marital status (married = 1, non-married = 0) was a dichotomous variable, while family income was a continuous variable that is coded 1 = less than $10,000 per year to 16 = $250,000 a year or more. To control for more traditional and distal aspects of religious life, the frequency of attendance at religious services was gauged with a single-item question (coded 1 = never to 8 = every week): "How often do you generally attend Sunday worship at your congregation?" Likewise, frequency of prayer was gauged with a single-item question: "Approximately how frequently do you pray privately?" Response categories for this variable ranged from 1 = never to 7 = daily/almost daily.

Statistical Analyses

The hypotheses outlined above were tested in several steps. First, descriptive statistics for all study variables were calculated. Bivariate correlations and a series of regression models were then estimated. Since the dependent variable employed was a continuous measure of psychological distress, ordinary least squares (OLS) regression was utilized. Since we have two waves of data, regression models analyzed changes in distress over the two waves of data by examining associations between key independent variables and covariates at T1 with distress at T2 while controlling for distress at T1. Both main effects of religious variables, as well as interactive relationships with stressful life events, were examined. In terms of the overall temporal sequence of the variables, we have: (1) baseline distress and attachment to God measures at T1; (2) stressors that occurred up to 12 months prior to the T2 questionnaire (i.e., 9–21 months after the T1 questionnaire); and (3) distress at T2. Thus, we assessed whether T1 attachment to God affected changes in distress over time, as well as the degree of resilience it provided against the deleterious effects of stress that individuals experienced subsequent to the T1 questionnaire and prior to the measurement of distress at T2.

Results

Shown in Table 1, results begin with a brief description of sample characteristics. Mean scores on psychological distress are relatively low, averaging 1.50 (T1)–1.45 (T2) on a 1–5 metric. Given the nature of the sample, which is drawn from church membership rolls, it is not surprising that scores on our measure of secure attachment to God are high, roughly 5.96 on a 1–7 scale, while scores on anxious attachment to God tend to be low, 2.64 for this measure that has a range of 1–7. Similarly, respondents attend religious services quite often, on average once per

week, and they pray daily. More than half of the respondents (57%) are church elders (compared with other members), meaning that they have been elected to leadership posts in their local congregations at some point. The average respondent is approximately 61 years old, has a bachelor's degree and an annual pre = tax income of $70–79K, and reported experiencing 1.2 major stressful life events or conditions during the year preceding the T2 questionnaire. A majority of respondents (57%) are female and only a small minority (4%) is nonwhite.

Of course, sample attrition across waves of the study has the potential to affect sample composition, and to bias our findings. Mindful of this possibility, we compared respondents to the initial screening questionnaire with those from T1 and T2 surveys on sociodemographic variables. We also compared T1 and T2 respondents on key substantive predictors (e.g., attachment to God, stressors). These ancillary analyses (not shown but available upon request) yielded no evidence of any systematic bias due to sample attrition.

Table 2 shows bivariate associations between key variables. The correlation between T1 and T2 distress is rather high ($r = .66$, $p < .001$), as one might expect given the relatively brief (21-month) period between data collection points the study. Because the measure of stressful events and conditions covers the 12-month period preceding the T2 distress measure, it is more highly correlated with T2

Table 1 Descriptive statistics

	Mean	SD	Range
Psychological distress, T2	1.45	.51	1–5
Psychological distress, T1	1.50	.50	1–5
Secure attachment to God	5.96	1.03	1–7
Anxious attachment to God	2.64	1.27	1–7
Number of stressful events	1.18	1.14	0–6
Frequency of church attendance	7.07	1.10	1–8
Frequency of prayer	6.45	1.19	1–7
Elder status			
Elder	.57	–	0–1
Other member	.43	–	0–1
Sex			
Female	.57	–	0–1
Male	.43	–	0–1
Age	60.93	13.37	18–96
Education	6.02	1.79	2–8
Income	8.76	3.61	1–16
Marital status			
Married	.76	–	0–1
Not married	.24	–	0–1
Race			
Nonwhite	.04	–	0–1
White	.96	–	0–1

$N = 906$

Table 2 Bivariate correlations

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1.00													
2	.66	1.00												
3	−.17	−.13	1.00											
4	.21	.22	−.32	1.00										
5	.26	.21	.02	.05	1.00									
6	−.10	−.09	.29	−.09	.01	1.00								
7	−.01	.00	.43	−.08	.02	.25	1.00							
8	−.05	−.03	.02	.02	.01	.23	.01	1.00						
9	.08	.08	.15	−.08	.01	.06	.22	−.07	1.00					
10	−.20	−.24	.02	−.01	−.08	.18	.05	.01	−.04	1.00				
11	.00	.00	−.12	.01	.07	−.06	−.09	.02	−.15	−.09	1.00			
12	−.03	−.01	−.14	.06	.06	−.11	−.10	.00	−.18	−.27	.43	1.00		
13	−.04	−.03	.05	.03	.07	−.03	−.02	.04	−.25	−.08	.09	.39	1.00	
14	.00	−.01	.09	−.07	.00	.00	.04	.03	−.03	−.08	.01	−.07	−.07	1.00

1 distress T2, *2* distress T1, *3* secure attachment to God, *4* anxious attachment to God, *5* number of stressful events, *6* frequency of church attendance, *7* frequency of prayer, *8* elder, *9* female, *10* age, *11* education, *12* income, *13* married, *14* nonwhite

distress than with the baseline (T1) measure of distress ($r = .26$, $p < .01$ vs. $r = .21$, $p < .01$), but this difference is not statistically significant. In terms of religion measures of interest, secure attachment to God bears a modest but significant inverse association with T2 distress ($r = -.17$, $p < .01$) and T1 distress ($r = -.13$, $p < .01$). Anxious attachment to God is positively associated with both T2 distress and T1 distress ($r = .21$, $p < .01$ and $r = .22$, $p < .01$, respectively). Secure and anxious attachment to God are inversely associated with each other ($r = -.32$, $p < .01$). In terms of other religious variables, frequency of attendance at services bears a small inverse association with T1 and T2 distress scores, while frequency of prayer is unrelated to distress at either point. Both attendance ($r = .29$, $p < .01$) and prayer ($r = .43$, $p < .001$) exhibit robust associations with secure attachment to God, but they are only modestly correlated with anxious attachment to God.

Table 3 displays the results of a series of multiple regression models, in which T2 psychological distress is regressed upon T1 distress, recent stressors, T1 measures of attachment to God, and control variables. The findings are quite straightforward. As is often the case in lagged dependent variable models, in model 1 (the baseline model) T1 distress is by far the strongest predictor of T2 distress (b = .614, $\beta = .622$, $p < .001$), a pattern that persists across the remaining models as well. In addition, the number of stressful life events experienced during the 12-month period prior to the T2 questionnaire is a significant positive predictor of T2 distress, as expected (b = .060, $\beta = .142$, $p < .001$). Interestingly, no other covariate emerges as a predictor of T2 distress, including the frequency of church attendance or personal prayer.

When attachments to God are included in model 2, several results are noteworthy. First, consistent with the patterns in model 1, both T1 distress (b = .587, $\beta = .597$, $p < .001$) and stressful events (b = .062, $\beta = .145$, $p < .001$) are robust predictors of T2 distress. Second, as anticipated by H1, secure attachment to God bears a clear inverse association with T2 distress (b = −.052, $\beta = -.132$, $p < .001$) controlling for all over variables and distress at T1. Thus, secure attachment to God is associated with a decrease in distress between the two waves of data. Contrary to H2, however, there is no net relationship between anxious attachment to God and changes in distress (b = .016, $\beta = .043$, ns).

Models 3 and 4 incorporate interaction terms to test the stress-moderator hypotheses (H3 and H4). Prior to calculating these multiplicative terms, main effect variables were zero-centered to minimize collinearity between raw and product terms, as recommended by Aiken and West (1991). In model 3, consistent with H3, we find that the deleterious effects of stressful events and conditions on T2 distress (controlling for T1 distress) are mitigated by secure attachment to God (b = −.032, $\beta = -.087$, $p < .01$). This finding is graphically depicted in Fig. 1. At low levels of secure attachment to God, stressful life events bear a strong positive relationship with distress, but as these attachments increase, the effects of stress decline. In model 4 and Fig. 2, as anticipated by H4, the noxious consequences of stressors are exacerbated by anxious attachment to God (b = .017, $\beta = .063$, $p < .05$). At low levels of anxious attachment to God, the relationship between stressful life events

Table 3 Estimated net effects of attachment to God, stress, and covariates on changes in psychological distress

	(1)	(2)	(3)	(4)
Distress, T1	.614***	.587***	.587***	.589***
	.622	.597	.596	.598
	(.028)	(.028)	(.028)	(.028)
Stressful life events	.060***	.062***	.066***	.063***
	.142	.145	.156	.145
	(.011)	(.011)	(.011)	(.011)
Secure attachment to God	–	−.050***	−.052***	−.048***
		−.132	−.130	−.126
		(.015)	(.015)	(.015)
Anxious attachment to God	–	.020	.016	.019
		.043	.034	.037
		(.012)	(.013)	(.012)
Church attendance	−.013	−.003	−.002	−.004
	−.035	−.008	−.004	−.011
	(.013)	(.013)	(.013)	(.013)
Prayer	−.006	.010	.008	.010
	−.011	.039	.033	.038
	(.011)	(.012)	(.012)	(.012)
Elder (Ref = other member)	−.028	−.033	−.033	−.031
	−.053	−.061	−.060	−.057
	(.028)	(.028)	(.029)	(.029)
Female (Ref = male)	.026	.037	.034	.037
	.047	.058	.056	.058
	(.029)	(.029)	(.029)	(.029)
Age	−.002	−.002	−.002	−.002
	−.045	−.056	−.060	−.055
	(.001)	(.001)	(.001)	(.001)
Education	.003	.002	.002	.003
	.001	.003	.003	.000
	(.008)	(.008)	(.008)	(.008)
Income	−.006	−.008	−.009	−.008
	−.031	−.048	−.050	−.049
	(.005)	(.005)	(.005)	(.005)
Nonwhite (Ref = white)	.022	.048	.046	.049
	.016	.028	.026	.029
	(.067)	(.068)	(.067)	(.068)
Married (Ref = not married)	−.001	.004	.004	.004
	−.000	.015	.012	.016
	(.036)	(.036)	(.036)	(.036)

Table 3 continued

	(1)	(2)	(3)	(4)
Stress × secure attachment	–	–	−.032**	–
				−.087
				(.012)
Stress × anxious attachment	–	–	–	.017*
				.063
				(.008)
Intercept	.810	.703	.720	.696
	(.146)	(.149)	(.148)	(.148)
Adjusted R^2	.473	.489	.496	.493

Notes $N = 906$; first row = metric coefficients; second row = standardized estimates; third row = standard errors (in parentheses)

*** $p < .001$; ** $p < .01$; * $p < .05$

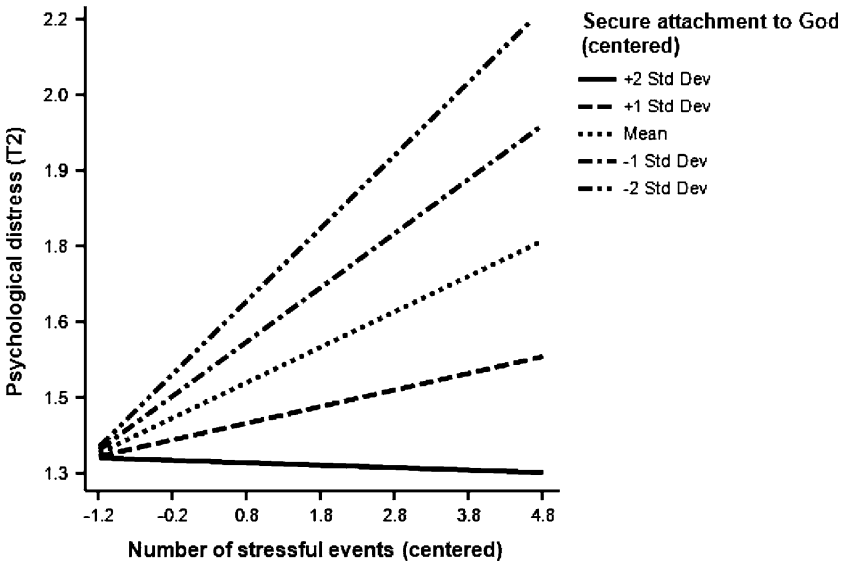

Fig. 1 The interactive influence of stressful life events and a secure attachment to God on changes in psychological distress

and distress is weak, but as anxious attachment increases, stress becomes a stronger predictor of psychological distress.

On closer inspection, we examined whether secure and anxious attachments to God had particularly significant moderating effects with respect to specific types of stressful events or conditions that made up the index. Several patterns emerged from these ancillary analyses (not tabled, but available upon request). First, secure attachment to God buffers against the deleterious effects of conflicts with close friends ($p < .01$), while anxious attachments to God exacerbates the harmful

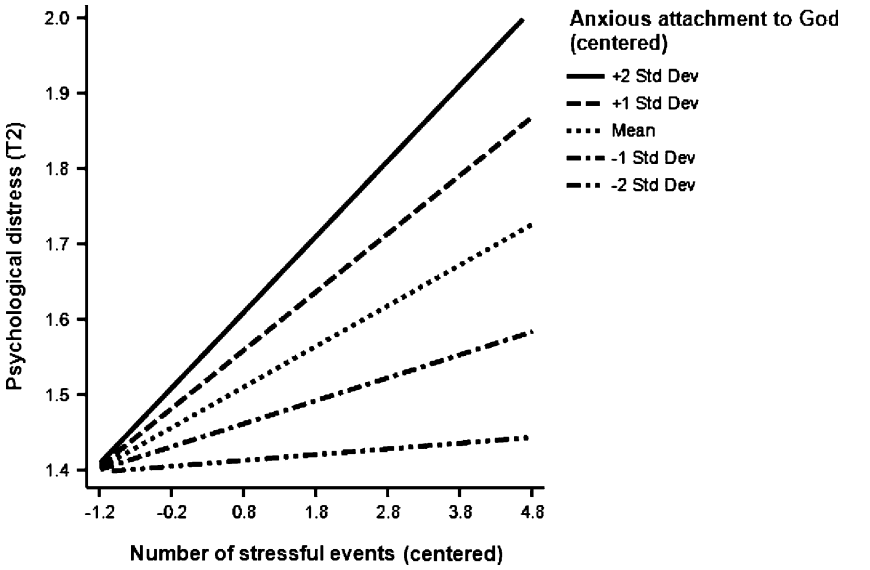

Fig. 2 The interactive influence of stressful life events and an anxious attachment to God on changes in psychological distress

sequelae of significant financial losses ($p < .05$). Second, in addition to the small number of stressors that were tapped by specific survey items, respondents were asked whether they experienced any other major problems or challenges during the preceding year. Our ancillary analyses revealed that secure attachments to God buffers the noxious effects of these "other" stressors ($p < .01$), while anxious attachments to God exacerbates their effects ($p < .01$).

Discussion

In recent years, theorists and empirical researchers have made a major contribution to the psychology of religion by importing ideas from Bowlby's (1969, 1973, 1980) work on attachment relationships. Offering a particularly important insight, Kirkpatrick (2005) has noted that God may be the ideal secure attachment figure, offering a safe haven from an uncertain world, and a secure base from which to explore one's social and existential context.

Drawing on these developments, as well as concepts and models from the stress process literature, the present study has examined the effects of individuals' attachment to God on psychological distress using data on a longitudinal study of members of the Presbyterian Church USA. Specifically, this work builds on a recent study by Bradshaw et al. (2010) by: (1) estimating the links between baseline secure and anxious attachment styles on changes in distress; and (2) investigating whether baseline attachment to God moderates the effects of subsequent stressful events or conditions on distress. Although a number of previous studies have reported on

cross-sectional associations between attachment and various aspects of mental health and well-being, to our knowledge this is the first longitudinal exploration of these issues.

The results of this study confirm that—consistent with the arguments of Kirkpatrick (2005) and others—secure attachment to God at baseline is linked with improvements in distress over the 21-month study period. In contrast to the clear patterns involving secure attachment, the effects of anxious attachment on changes (increases) in distress are negligible. In addition to the results of these main effects models, results also show that secure attachment to God at baseline predicts less emotional reactivity to social stressors, especially those involving conflict or loss, and greater resilience in the face of such negative events and conditions. This pattern affords support to the stress-buffering hypothesis outlined above. In a less pronounced pattern, anxious attachment to God appears to exacerbate, i.e., worsen, the deleterious consequences of stressors.

Although these patterns are statistically significant, it is important to acknowledge that the effect sizes associated with these variables, and their contributions to overall model fit, remain modest. This may result from several factors. First, in our longitudinal models there is a high correlation between T1 and T2 distress measures. Consequently only two baseline predictors—stressful events and secure attachment to God—are statistically significant at the $p < .01$ level or greater, and given their established associations with T1 distress (Bradshaw et al. 2010), it is not surprising that their added contributions to the predictive power of the change model are modest (only 2–3% of the overall variance explained). Second, studies have demonstrated that effect sizes, as well as the overall predictive power of statistical models, can depend upon the number of variables that influence the given outcome under study (Ahadi and Diener 1989). In this instance, many variables –including unmeasured factors such as personality, genetics, response biases, and others—may affect individual propensities for psychological distress.

Several other aspects of these findings deserve comment. First, our analyses demonstrate the temporal order among key variables, such as attachment styles, stressors, and distress. This is a necessary, albeit not sufficient, condition for the establishment of causal relationships. Previous cross-sectional studies reporting correlations have left open multiple possible interpretations, e.g., that distress may foster insecure or anxious attachment to God, or that individuals may experience the loss of a secure attachment to God in the wake of negative life events or other stressors. This study helps to resolve such ambiguities. Second, the main and stress-moderating effects of attachment to God persist over and above the estimated effects of other religious variables that are often cited as predictors of mental health, such as the frequency of attendance at religious services or prayer, and distinction between church elder vs. rank-and-file layperson, which has been used in previous studies as a proxy measure for the salience of (and investment in) religious roles (e.g., Krause et al. 1998). Third, the results withstand statistical adjustments for secular covariates such as age, gender, socioeconomic status, and several other potentially confounding factors.

There are also noteworthy limitations to this work. Most obviously, our sample is taken from one Protestant denomination in the US, the Presbyterian Church (USA),

which consists largely of upper middle-class white members. Because individuals were sampled from the membership rolls of PCUSA congregations, it is not surprising that they are much more religious than their counterparts in the US adult population at large, which constitutes a potential limitation of the present study. Moreover, prior research has reported significant denominational differences in attachment to God (e.g., Eurelings-Bontekoe et al. 2005). In light of such findings, further research is needed to replicate these findings using data on other denominations or general population samples. Another limitation has to do with data collected by self-administered surveys, which leaves open the possibilities of bias due to shared method variance and social desirability bias. Although not feasible in this study, it would have been desirable to incorporate adjustments for Paulhus' (1991) Balanced Inventory of Desirable Responses to control for individuals' tendencies toward impression management and self-deception, since these factors could plausibly have affected respondents' willingness to give accurate answers on items about religion and (perhaps) distress. Nevertheless, it bears mentioning that recent studies have found only minimal tendency for social desirability or other common sources of response bias to influence estimates of the effects of religious factors on sensitive behaviors (Regnerus and Smith 2005; Regnerus and Uecker 2007).

Future studies on styles of attachment to God might profitably explore the effects on other mental and physical health outcomes. Examples might well include psychiatric illness, physical health measures using biomarkers (e.g., blood pressure, allostatic load), and even mortality risk. The nexus of attachment theory and the psychology of religion could also help to inform recent developments in the neurophysiology of faith, which has used structural and functional magnetic resonance imaging (sMRI and fMRI) for example, to examine how religion has anxiolytic power by altering neural signals (Inzlicht and Tullett 2010). In addition, although our study has focused only on attachment to God, it would be desirable to incorporate measures of attachments to other objects, such as parents, intimate partners, family members, and close friends. Prior theory and research has centered on the ways in which attachments to God parallel other attachments, or seek to compensate for attachment deficits in other areas (Granqvist and Hagekull 1999). Given the well-established associations between social ties and health (House et al. 1988; Cohen 2004), another promising direction for the future would be to investigate whether attachments to God may complement, amplify, or substitute for other attachments in shaping health and well-being outcomes.

The research literature on religion and mental health has grown exponentially over the past two decades. Much of this work has centered on the role of religious practices, such as attendance at services and private prayer, while other important contributions have emphasized religious motivations, congregational support systems, and methods of religious coping. Only recently have psychologists of religion begun to integrate insights from attachment theory into this body of work (Rowatt and Kirkpatrick 2002; Kirkpatrick 2005; Bradshaw et al. 2010). Our results contribute to a small but growing body of evidence that God can serve as an attachment figure, and that secure attachment to God may have important salutary implications for mental health, particularly for persons facing high levels of stress.

Indeed, it is possible that previous research may have generated "low-ball" estimates of the "true" connection between religion and mental health by neglecting to consider this issue. Future studies of the types described above can amplify and extend this line of inquiry, especially by clarifying the kinds of individuals and stressful circumstances that may be most affected by secure attachment to God.

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