

The Role of Religion as a Protective Factor for Worry

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Recently, there is an increasing interest in identifying potential protective factors against worry in the hopes of alleviating it. Religion has often been considered an important factor to study in the field of mental health given its universality and omnipresence in daily life. A growing body of research now suggests that religion may effectively act as a protective factor against worry. This study examined how time spent in religious activities, religious affiliation, and trust and mistrust in God are associated with trait and state worry levels in a religiously and demographically diverse sample of 72 participants. Following regression analysis, only mistrust in God, among our religious constructs, demonstrated a significant relationship with trait worry: higher mistrust in God predicted higher worry levels. Trust in God was found to correlate moderately with lower levels of state worry. Conversely, mistrust in God was found to correlate moderately with higher levels of trait worry. These findings suggest that certain religious behaviors can serve as protective factors for worry, although the effects may be modest.

Keywords: state worry, trait worry, religion, trust in God, mistrust in God

Récemment, il existe un intérêt croissant pour identifier les facteurs de protection potentiels contre l'inquiétude, dans le but de réduire ses effets. La religion est un facteur important dans le domaine de la santé mentale, due à son universalité et son omniprésence dans la vie de tous les jours. Plusieurs études suggèrent que la religion pourrait être un facteur de protection contre l'inquiétude. Cette étude examine en quoi le temps consacré à des activités religieuses, l'affiliation religieuse, la foi ou la non-foi en Dieu sont associés à divers niveaux de trait et d'état de l'inquiétude dans un groupe de 72 participants religieusement et démographiquement diversifié. Après les analyses de régression, seulement la non-foi en Dieu, parmi nos construits religieux, était positivement reliée avec l'inquiétude. En effet, un haut niveau de non-foi prédisait un haut niveau d'inquiétude. La foi en Dieu était corrélée modérément avec un bas niveau d'état d'inquiétude. À l'opposé, la non-foi était corrélée modérément avec un haut niveau de trait d'inquiétude. Ces résultats suggèrent que certains comportements religieux peuvent être des facteurs de protection contre l'inquiétude, même si leurs effets peuvent s'avérer modestes.

Mots-clés : état d'inquiétude, trait d'inquiétude, religion, foi en Dieu, non-foi en Dieu

Worry is a universal phenomenon that has been found to affect individuals in nearly every culture and society studied. Most individuals have experienced worry at some point, yet it is often not severe enough for them to seek clinical help (Dupuy, Beaudoin, Rhéaume, Ladouceur, & Dugas, 2001). Worry often registers modest, yet still disconcerting, levels of debilitation. Past researchers have found that even slight levels of worry can impair performance on moderately difficult tasks (Deffenbacher, 1978). In a

sample of undergraduate students, for instance, it was found that those with higher levels of state worry performed worse on a mock test than those with lower levels of worry (Deffenbacher, 1978). In more severe forms, worry can reach highly debilitating levels and is associated, in these cases, with serious problems of mental and physical health. Worry is, in fact, a core characteristic of generalized anxiety disorder (American Psychiatric Association, 2013) and has been linked to long-term physiological consequences such as cardiovascular disease (Brosschot & Thayer, 2004). Given its impairment and prevalence in non-clinical populations as well as its health significance in more severe worriers, researchers have sought to identify various factors that predict worry levels, including social, cultural, and economic factors

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(Schwartz & Melech, 2000). Recently, researchers have sought to isolate protective factors for worry in the hopes of alleviating it (Rosmarin, Krumrei, & Andersson, 2009; Schwartz & Melech, 2000). Considering the many positive traits that have been historically associated with religious adherence (Peterson, 2006; Stack, 1983), one such potential protective factor for worry is religion. Despite many past studies which have found a positive association between religion and mental health benefits, it remains unclear as to whether religion, and more specifically, which aspects of religion predict lower worry levels. The aim of the present study is to examine whether different characteristics of religious behavior and affiliation are associated with a reduction in individuals' experience of worry. Based on previous studies, three key religious constructs were identified as the most relevant for worry: time spent in religious activities, beliefs about the divine—namely, trust/mistrust in God—and religious affiliation.

Core Characteristics of Religion and their Association with Psychological Distress

Considering that religion is a defining attribute of a majority of the world's population and often shapes intergroup relations, personal identity, and behavior, elucidating the psychological consequences of religious behavior may have wide reaching implications for many individuals. A Pew Research Center poll (2015) found that nearly 85% of the global population belonged to some form of religious group. Another study showed that 82% described religion as an important part of their daily lives (Crabtree, 2010). In addition, religion has been shown to contribute to the development of individual identity by providing an interpretive appraisal of life events which promotes an associated identity. Indeed, Youniss, McLellan, Su, and Yates (1999) found that Catholic youth who volunteered in community service projects, adopted religious reasoning for their behavior thereby enhancing an identity formation.

Beyond its importance in identity formation and maintenance, there is evidence that religion can act broadly as a protective factor for life challenges. Studies have described the potential buffering effect religion has against anxiety (Soenke, Landau, & Greenberg, 2013) and the benefits religion provides as a coping mechanism to reduce anxiety in hospitalized individuals (Pargament, Koenig, Tarakeshwar, & Hahn, 2004). Overall, religion has been found to be generally beneficial for physical and mental health

(Koenig & Larson, 2001). Another study has concluded that religion is comforting, pain relieving, and makes life worth living (Stack, 1983). Although this viewpoint is widely adopted in psychology textbooks and has found ground in the field of positive psychology (Peterson, 2006), disagreement in the scientific community remains. Some researchers have found that religious individuals do not exhibit lower levels of psychological distress than their non-religious counterparts (Ross, 1990). The present research aims to clarify the ambiguity in the literature surrounding the effects of religious behavior on worry by differentiating which specific aspects of religion may serve as protective factors against worry. More specifically, the present research focuses on three core components of religion that may serve as protective factors: (1) religious activities, (2) religious affiliation, and (3) spiritual/personal religious beliefs.

In terms of religious activities, past studies have attempted to determine whether engaging in religious practices is associated with lower levels of worry. For example, three core religious practices were identified among Christians and Jews—frequency of prayer, attendance at religious services or sermons, and reading religious literature or listening to religious speakers. In this same study, researchers found that all three practices correlated with lower levels of worry (Rosmarin, Krumrei et al., 2009). With the aim of extending this research, we propose that in general, practicing one's religion will serve as a protective factor against worry.

For religious affiliation, the majority of past research has overwhelmingly focused on distinguishing psychological distress levels between them (McGowan, 2012; Rosmarin, Krumrei et al., 2009; Rosmarin, Pargament, & Mahoney, 2009; Ross, 1990) and often did not compare their results to non-religious individuals. These studies demonstrated that differences in worry levels between religious groups, such as Jews and Catholics, are often small to none. We theorized that religious groups, regardless of affiliation, share common elements which protect against worry, such as offering the benefits of a social support group—social support has been shown to protect against worry and depression (Anari, Tahmassian, & Fathabadi, 2011). Thus, in general, affiliated individuals, regardless of their specific religious group should be expected to have lower levels of worry compared to non-affiliated individuals.

Concerning spiritual/personal religious beliefs, research has shown that individuals' degree of personal

religious commitment correlates with lower levels of anxiety and depression (McGowan, 2012). Another study found that personal beliefs about the divine, in particular, the degree of trust and mistrust in God, correlate with worry levels (Rosmarin, Krumrei et al., 2009). Trust in God is a religious construct that encompasses the beliefs that God has one's best interests in mind and will take care of those interests (e.g., "God watches over me"). Trust in God involves three core beliefs about God or the Creator: (1) God is omniscient (e.g., knows about all affairs, including one's interests); (2) God is omnipotent (e.g., absolutely powerful, can help achieve one's interests); and (3) God is omnibenevolent (e.g., is just, merciful, and kind; is willing to help achieve one's interests). Mistrust in God involves the beliefs that God is not omniscient, omnipotent, or omnibenevolent (e.g., "God is ignorant of my needs"). In addition, mistrust in God concerns negative appraisals of God, such as hatefulness (e.g., "God hates me"). It was found that religious individuals with a higher trust in God showed lower levels of worry and those with a higher mistrust in God showed higher levels of worry. Building on the research of Rosmarin, Krumrei et al. (2009), we propose that trust/mistrust in God may be an important moderator for the extent to which engaging in religious practices or belonging to a religious affiliation can serve as protective factors against worry.

Present Study

Thus far, no single study has simultaneously investigated whether time spent in religious activities, religious affiliation, and trust/mistrust in God are equally important in predicting lower levels of worry. The present research investigates these components simultaneously in an attempt to further understand how religion can potentially protect against increased worry levels. Furthermore, few have directly analyzed the relationship between religion and worry (Rosmarin, Krumrei et al., 2009) and this study was limited in that they solely studied trait worry. Although trait measures are useful in capturing an individual's typical worry pattern, evidence suggests that state measurements may be a more accurate depiction of worry as an episode unfolds in real time. Indeed, a recent study has found that trait measures often fail to capture frequently changing levels of worry and hence are not accurate representations of worry as it actually occurs (Verkuil, Brosschot, & Thayer, 2007). We addressed this previous limitation in the present study by introducing a novel

smartphone application, which allowed us to study worry at the state level. The application signaled participants three times per day and asked a series of questions about their thought processes at that moment. In order to generalize our findings with past research, we also studied worry at the trait level.

Additionally, past studies have almost exclusively relied on self-report data in analyzing participants' time spent in religious activities as well as their reported levels of worry and/or psychological distress (Pargament et al., 2004; Rosmarin, Krumrei et al., 2009; Ross, 1990; Soenke et al., 2013). Self-report measures are problematic because they rely on participants' memory of events occurring days or weeks earlier and are, hence, subject to recall bias. We addressed this limitation by administering surveys every night for four nights so as to limit this bias.

Hypotheses

Based on previous literature and past limitations, we have identified three key hypotheses: (1) Building on previous studies documenting a negative relationship between religious activities and psychological distress (Mosher & Handal, 1997; Rosmarin, Krumrei et al., 2009), we expected that individuals who spent more time engaging in religious activities would report lower levels of both state and trait worry. (2) We hypothesized that religiously affiliated individuals would report lower levels of state and trait worry in comparison to their non-affiliated counterparts. (3) We predicted that for affiliated participants, being high in trust in God would relate to lower levels of worry and being high in mistrust in God would be related to higher levels of worry (see also Rosmarin, Krumrei et al., 2009). Additionally, we tested whether trust in God/mistrust in God could moderate the relationship between time spent in religious activities and worry levels as well as religious affiliation and worry levels. It was reasoned that individuals who engage in religious activities and/or belong to a religious affiliation may differ in their degrees of trust and mistrust in God, which may in turn affect the corresponding relationships with worry. For example, a believer who engages frequently in religious activities may not show a benefit from such practices if he or she has a high level of mistrust in God.

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Method

Participants

Seventy-two participants were recruited from the Philadelphia community and from a private university located in the Philadelphia area. Participation was limited to those who were 18 or older, fluent in English, and had access to a smartphone running an Android operating system. Student participants ($n = 24$) were recruited through the Psychology Department's research participation website. Community participants ($n = 48$) were recruited through Craig's List advertisements and flyers posted in convenience stores and bus stops. The mean age of the total sample ($N = 72$) was 27.7 years ($SD = 10.21$) and the majority ($n = 40$) were female. The sample was racially diverse with the following representation: 16% Asian or Pacific Islander, 31% Black or African, 36% Caucasian, 14% Hispanic, and 3% who identified with another racial group. The majority of participants were religiously affiliated ($n = 48$). Of those who were affiliated, participants were 46% Protestant, 27% Catholic, 10% Jewish, and 17% Other (e.g., Muslim, Buddhist).

Of the 72 participants who completed trait questionnaires, 34 also completed daily measures as recorded by the smartphone application. The subsample that completed daily assessments (state measures) on their phones was smaller because participants often failed to attend an orientation session after completing online trait questionnaires or attended the session but were unsuccessful in downloading the application. The mean age of the subsample was 26.4 years ($SD = 11.92$) and the majority were female ($n = 18$). The sample was racially diverse with the following representation: 26% Asian or Pacific Islander, 24% Black or African, 35% Caucasian, 9% Hispanic, and 6% who identified with another racial group. The majority of participants who completed the daily measures were religiously affiliated ($n = 20$, 60%). Of those who were affiliated, 40% were Protestant, 30% Catholic, 10% Jewish, and 20% Other (e.g., Buddhist, Greek Orthodox). To determine if our subsample that participated in the daily measures was an unbiased subset of the total sample population, we compared trait religious activity and trait worry levels between the subsample and the total sample. The participants who completed daily measures as well as trait measures did not reliably differ on trait worry or engagement

in religious activity from those who only completed trait measures.

Trait Measures

Trait religious activity assessment. Participants reported the amount of time spent in the following religious activities in a typical week: attending a religious service, reading a holy book, and praying. Participants rated each type of activities separately. The amount of time, in minutes, spent in religious activities over the course of a typical week was combined into a total time spent in religious activities for each participant.

Trust in God/Mistrust in God Scale. *The Trust in God/Mistrust in God scale (TIGMIG)* assesses for both positive and negative core religious beliefs by measuring two subscales: trust in God (11 items-e.g., "God watches over me") and mistrust in God (13 items-e.g., "God is ignorant of my needs"). Items are rated on a 4-point Likert-type scale (0 = *not at all*, 4 = *very much*). To ensure that scale items were consistent with the religious values of Jews and Christians, the authors consulted three Jewish and three Christian authorities (Rosmarin, Krumrei et al., 2009). A brief version of this scale has also been shown to be valid in measuring core religious beliefs in a population of Persian Muslims (Hafizi, Rosmarin, & Koenig, 2014), suggesting the scale is generalizable beyond Judeo-Christian faiths. In the present study, participants who did not believe in God were encouraged to select the responses that felt most appropriate to them. Both subscales demonstrated adequate reliability in the current sample (trust in God $\alpha = .97$; mistrust in God $\alpha = .85$).

Religious affiliation assessment. Participants reported their religious affiliation using response options of Catholic, Jewish, Protestant, other, or none. Participants who reported a religious affiliation were grouped into "religiously affiliated" and those who reported "none" were grouped into "non-affiliated."

Trait worry assessment. Trait worry was assessed using the *Penn State Worry Questionnaire*, a 16-item measure of the respondent's typical level of worry (Meyer, Miller, Metzger, & Borkovec, 1990; PSWQ). The PSWQ is a widely used measure of trait worry (Wuthrich, Johnco, & Knight, 2014) which has demonstrated high internal consistency (Meyer et al., 1990). This measure demonstrated high internal consistency in the present sample ($\alpha = .93$).

Daily Measures

State worry assessment. Momentary worry was assessed via a smartphone application, Metus, that was designed to measure daily worry in persons’ natural environment. Metus signaled participants three times per day at a random time during the morning, afternoon, and evening. At each signal, Metus initiated a survey asking a respondent “How much were you worrying?” in a particular moment. Respondents rated their worry levels on a 5-point Likert-type scale (1 = *not at all*, 5 = *very much*). The numerical values from each momentary assessment over the course of the four day study were combined into a mean worry level for each participant.

Daily religious activity assessment. Each night participants were asked to report the start and end times of any of the following religious activities that took place that day: attending a religious service, reading a holy book, and praying. Participants rated each type of activity separately. In addition, if participants had undertaken a given type of religious activity on multiple occasions (e.g., if they prayed more than once), they were instructed to report on what had the biggest impact on them. The amount of time, in minutes, spent each day in religious activities over the study period was combined into a total time for each participant.

Procedure

Prior to attending an orientation session in our laboratory, participants completed an online survey including their religious affiliation, a demographics questionnaire, the PSWQ, the TIGMIG scale, and time spent in religious activities in a typical week. After completing the online survey, participants were asked to sign up for an orientation session held in our laboratory. Orientation sessions were led by two

experimenters and conducted in small groups of no more than four participants, with separate groups held for student and community participants simply because of differing availabilities in participants’ schedules. During the orientation session, participants were provided information about worry, received instructions for the study, and downloaded the Metus application onto their smartphones. Experimenters guided participants through a trial run using the application to ensure proper use and address any questions. The orientation session lasted 45 minutes. For the next four days, participants used Metus to report three times per day, and completed a survey, in which they reported religious activities that occurred that day, every evening.

A debriefing session was held seven days after the orientation session, during which Metus was removed from phones and participants were debriefed. Community participants received 40\$ after the debriefing session while student participants received four research participation credits toward their psychology course.

Results

Relationship between Trait Measures of Religious Activity and Worry

A total of 42 participants reported that they spent some amount of time in a religious activity during a typical week. Table 1 shows that, on average, participants reported spending more minutes per week praying than either reading a holy book or attending a religious service. In addition, a majority of the participants (65%) did not report any time spent attending a religious service or reading a holy book for a typical week. The distributions were positively skewed, with a minority of participants reporting many hours spent in religious activity. Of those who

Table 1
Time spent^a in religious activities over a typical week and 4-day study period

Religious activity	Typical Week			Study Period		
	<i>M (SD)</i>	Min	Max	<i>M (SD)</i>	Min	Max
Praying	152.21 (354.95)	0	2400	2.63 (5.97)	0	30
Attending	42.63 (100.49)	0	600	6.62 (23.56)	0	120
Reading	61.78 (190.08)	0	1500	5.83 (21.50)	0	120

Note. ^aTime spent in minutes; Attending = attending a religious service; Reading = reading a holy book.

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Table 2
Correlations of religious measures with trait and daily worry

Religious measure	Worry measure	
	Trait (<i>n</i> = 72)	Daily (<i>n</i> = 34)
Religious activity		
Trait	-.24*	-.17
Daily	-.07	-.12
Religious belief		
Trust in God	-.08	-.28
Mistrust in God	.22	.17

Note. * $p < .05$.

reported religious activity, the median amount of minutes spent in each are as follows: prayer ($Mdn = 60$), attending religious service ($Mdn = 120$), and reading a holy book ($Mdn = 120$). Table 2 shows correlations of time participants spent in religious activity with worry levels. As hypothesized, participants who reportedly spent more time in religious activities in a typical week, showed lower levels of trait worry $r(70) = -.24, p = < 0.5$. The correlation with state worry (daily measure), was similar, but did not reach statistical significance in the smaller subsample for which this measure was available $r(32) = -.17, p = .334$.

Relationship between Daily Religious Activity and Worry

Table 1 shows time spent in religious activities over the four day duration of the study. Of the 34 participants who completed daily state worry measures, only 9 reported any type of daily religious activity. Participants reported spending the most

minutes attending a religious service, then reading a holy book, and finally, praying. Time estimates were far lower and distributions were less skewed in this daily subsample than in the other subsample, in which participants were asked for the amount of time typically spent in religious activities for a given week.

Religious activity, as measured by daily reports, shared small, marginally significant and non significant associations with trait worry $r = -.07, p > .05$ and daily worry $r = -.12, p > .05$.

Relationship between Religious Affiliation and Worry

Participants reporting an affiliation with a religious group (67%) were compared with participants reporting no religious affiliation (33%) on levels of trait and state worry (see Table 3). Trait worry, as measured by PSWQ scores, was not significantly higher for non-affiliated ($M = 56.91, SD = 10.95$) than religiously affiliated participants ($M = 54.02, SD = 14.28$), $t(69) = -0.62, p = .540$. Similarly, state worry, as measured by mean worry ratings submitted through the smartphone application, were comparable for non-affiliated ($M = 1.94, SD = .73$) and religiously affiliated ($M = 1.95, SD = .65$) participants, $t(31) = -1.50, p = .972$.

Relationship between Trust and Mistrust in God with Worry

Table 2 shows correlations of trust in God and mistrust in God with worry levels. The sample, on average, reported a trust in God score of ($M = 21.89, SD = 15.80$) and a mistrust in God score of ($M = 14.90, SD = 9.82$). Trust in God showed a negatively skewed distribution ($Mdn = 23$) with a minority of participants reporting very low trust in God scores. Mistrust in God showed a positively skewed distribution ($Mdn = 13$) with a minority of participants reporting very high scores for mistrust in God.

Table 3
Results of t-test for religious affiliation with trait and daily worry

Measure	Affiliated	Non-affiliated	<i>t</i> (df)	<i>p</i>
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)		
PSWQ	54.02 (14.28)	56.91 (10.95)	- 0.62 (69)	.54
Daily Worry	1.95 (0.65)	1.94 (0.73)	- 1.50 (31)	.97

Note. PSWQ = Penn State Worry Questionnaire.

Trust in God showed a moderate negative correlation with state worry but did not reach statistical significance $r(32) = -.28, p = .111$. The association with trait worry was small and non-significant $r(70) = -.08, p = .523$. Conversely, mistrust in God was moderately correlated with higher levels of trait worry and was marginally significant $r(70) = .22, p = .070$. The correlation with state worry did not reach statistical significance $r(32) = .17, p = .340$.

Additionally, a moderation analysis (using the PROCESS macro written by Hayes, (2012) was tested to investigate whether the association between time spent in religious activities and worry levels was moderated by the degree of trust and mistrust in God. The main effect interaction between trust in God and religious activity on the outcome variable trait worry showed a non-significant relationship, $\beta = -.04, t(66) = -1.21, p = .230, \Delta R^2 = .03$. The main effect interaction between trust in God and religious activity on the outcome variable state worry showed a non-significant relationship, $\beta = .04, t(29) = .43, p = .673, \Delta R^2 = .01$. In further analyzing the interaction, we looked at conditional effects of time spent in religious activities on trait worry at different values of the moderator. The interaction was found to be non-significant at both plus one and minus one standard deviation from the mean value.

To explore the interaction between mistrust in God and time spent in religious activities, we conducted a similar moderation analysis. A non-significant interaction was found between mistrust in God and religious activity on the outcome variable trait worry, $\beta = .04, t(66) = .75, p = .458, \Delta R^2 = .02$. A non-significant interaction was found between mistrust in God and religious activity on the outcome variable state worry, $\beta = -.05, t(29) = -.43, p = .673, \Delta R^2 = .01$. Similarly, neither side of the extremes, plus/minus one standard deviation from the mean, showed significant conditional effects when analyzed.

Additionally, we studied the degree to which trust in God and mistrust in God act as moderators between religious affiliation and worry levels. A non-significant relationship was found for the main effect—the interaction between trust in God and religious affiliation on trait worry, $\beta = -.04, t(66) = -.12, p = .901, \Delta R^2 = .00$. A non-significant relationship was found for the main effect when we analyzed the interaction between trust in God and religious affiliation on state worry level, $\beta = -.19, t(29) = -.80,$

$p = .432, \Delta R^2 = .06$. Similarly, the main effect results were not significant when we analyzed the interaction between mistrust in God and religious affiliation on trait worry, $\beta = .023, t(66) = .08, p = .934, \Delta R^2 = .00$. The main effect results were non-significant when we analyzed the interaction between mistrust in God and religious affiliation on state worry, $\beta = .07, t(29) = .19, p = .934, \Delta R^2 = .00$. Next, we analyzed the extent to which there were conditional effects of religious affiliation on state and trait worry at values of the moderator. It was found that for both mistrust and trust in God, there were no significant effects at either plus one or minus one standard deviation from the mean value.

Effect of Each Religious Component in Predicting Worry Levels

Lastly, a multiple regression analysis was run to predict trait and state worry levels from the following variables: time reported spent in religious activities in a typical week, time spent in religious activities over the 4-day study period, religious affiliation, and trust/mistrust in God. These variables overall did not predict with statistical significance trait worry levels, $F(5, 26) = 1.80, p = .148, R^2 = .26$. The only variable that was found statistically significant to the prediction was mistrust in God ($p < .05$). The unstandardized coefficient for mistrust in God was .52, ($p = .022$, see Table 4).

Table 4
Regression analysis of dependent variable trait worry

Independent variables	β	p
Religious activity: trait	-.08	.726
Religious activity: daily	-.23	.309
Mistrust in God	.46	.022
Trust in God	.24	.350
Religious Affiliation	.13	.560

Finally, a similar regression analysis was run to predict state worry levels from the following variables: time reported spent in religious activities in a typical week, time spent in religious activities over the 4-day study period, religious affiliation, and trust/mistrust in God. Results showed that these variables did not significantly predict state worry levels, $F(5, 26) = 1.03, p = .42, R^2 = .17$ (see Table 5).

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Table 5
Regression analysis of dependent variable state worry

Independent variables	β	<i>p</i>
Religious activity: trait	.06	.805
Religious activity: daily	-.26	.290
Mistrust in God	.07	.748
Trust in God	-.29	.283
Religious Affiliation	.30	.205

Discussion

The purpose of the present research was to investigate the relation between several religious factors—time spent in religious activities, religious affiliation, and trust/mistrust in God—and worry levels—trait and state worry—in a religiously and demographically diverse sample. First, we hypothesized that more time spent in religious activities would correlate with both lower state and trait levels of worry. Next, we hypothesized that individuals who were religiously affiliated (regardless of which affiliation) would report lower levels of state and trait worry in comparison to individuals who did not belong to a religious affiliation. Lastly, we predicted that higher trust in God would correlate with lower levels of state and trait worry. Conversely, we predicted that higher mistrust in God would correlate with higher levels of state and trait worry.

In general, individuals who reported more time in trait religious activities reported lower trait worry levels. With respect to daily experiences of religious activities as well as state and trait levels of worry, these two correlations were weak to moderate and not statistically significant. The difference in whether an individual belonged to a religious affiliation or was not affiliated, did not reliably associate with worry levels at either the state or trait level. Mistrust in God was moderately correlated with higher trait worry and demonstrated marginal statistical significance. Trust in God was moderately correlated with lower daily worry but failed to reach a statistically significant level. Additionally, trust or mistrust in God were not found to moderate a relation between religious affiliation or time spent in religious activities and worry levels (both when measured at the trait or daily experience level of analysis). Finally, a regression analysis

showed that only one independent variable, mistrust in God, added statistical significance to the prediction of trait worry levels. The results demonstrated that higher levels of mistrust in God predict higher levels of trait worry but not state worry. However, the overall model was non-significant, which means these results must be interpreted with caution.

Consistent with our hypothesis, participants who spent more time in religious activities reported lower levels of worry. These results are consistent with Rosmarin, Krumrei et al. (2009) findings that persons who report frequent engagement in religious activities also report moderately lower trait worry levels. Furthermore, these results help demonstrate the benefit of religious activities as a protective factor against worry. However, the correlations were weak to moderate, and the only one that was marginally statistically significant was between trait measures of religious activity and trait worry.

It was interesting to discover that individuals were far more likely to estimate high religious activity levels in a typical week than to do so in the daily survey. It is plausible that persons overstated the amount of time spent in religious activities in a typical week due to recall bias. For example, the majority of our sample (58%) reported spending some time in religious activities in a typical week, yet during the four-day study, slightly more than a quarter of participants (27%) reported any religious activities. In addition, we found that participants reported spending the most amount of time in a typical week praying. Yet, in the four-day subsample, praying was reported the least amount of time. Considering prayer is more flexible in terms of allotted time than, for example, attending a religious service, it is likely that individuals easily overestimated the amount of time they actually spent in prayer.

Another explanation for the disparity in these results could be the differing sampling periods for trait and daily religious activities. Our study was limited in that participants who completed daily measures were asked to report religious activities over the course of four days in comparison to seven days for trait religious activities. Thus, our daily sample may have been limited by a restriction of opportunities to engage in religious activities. In addition, the four-day study period was not necessarily conducted during the weekends. Considering most religious services occur during the weekend—such as mosque services on Friday, synagogue services on Saturday, and church

services on Sunday—it is advisable that future studies should ideally collect daily religious activity during a full seven-day period. Lastly, the statistical power was much lower for state worry than for trait worry analyses because the first subsample size was smaller (see Table 2).

We posited that religiously affiliated individuals, regardless of their faith, would be members of a social support community which could help reduce worry levels. Our analysis, however, did not support our hypothesis that religiously affiliated individuals would report lower worry levels than non-affiliated, and instead found that non-religiously affiliated persons reported nearly similar levels of worry as religiously affiliated individuals. This finding is in line with past research which showed that individuals belonging to a religious group did not report a statistically significant difference in psychological distress levels from their non-religious counterparts (Ross, 1990). What might account for the absence of a relationship between religious affiliation and worry? One possibility is that religious affiliation is a passive process which does not necessitate active engagement in a religious community. Another possibility is that religiously affiliated individuals may greatly differ in the importance of religious practices and beliefs in their lives. To assess this, we suggest that future research include a measure of religious motivation, such as the Duke University Religion Index (Koenig & Büssing, 2010), which measures religious commitment in beliefs and practices. It would allow researchers to identify the aspects which may be the most associated with worry in religiously affiliated individuals.

In line with our hypotheses, we found a negative correlation between trust in God and worry, and a positive correlation between mistrust in God and both state and trait worry. However, the correlations were weak to moderate, and the only relation that demonstrated marginal significance was the correlation between mistrust in God and trait worry. It is likely that having trust/mistrust in God is not a relevant or a valid construct for non-believers and that including these individuals in our sample distorted the results. However, when we reran the analysis using only participants who indicated a belief in God, the results were unchanged. Furthermore, past research, which exclusively studied religiously affiliated individuals, found similar correlations between trust in God and mistrust in God with trait worry as measured by the PSWQ (Rosmarin, Krumrei et al., 2009). There did exist a slight divergence in the correlational value

found in our trust in God and trait worry association in comparison with their study.

Contrary to our predictions, the present study indicates that positive religious beliefs did not show protective effects for state worry and that religious activities were only moderately correlated to state worry. What might account for a none to modest relationship? Regarding positive beliefs, it is plausible that individuals high in trust in God may hold other beliefs about the divine which could increase their worry levels. For example, it is somewhat common for religious individuals to believe that God punishes them for engaging in bad deeds. Anticipation of punishment, albeit perhaps righteous punishment, may raise worry and counteract some of the positive benefits trust in God confers. In addition, the worry reducing effects religious activities offer may only exist for a brief period of time. It is possible that praying in the morning may not lower worry levels over the course of the day, but could decrease worry levels for minutes or even a few hours after.

Future studies could examine this directly by analyzing the trajectory of momentary worry levels after engagement in religious activities. For example, when a respondent records a prayer session, the researcher could assess the participant's baseline worry once before engagement in prayer, once immediately after, and then assess every several minutes for an hour. This particular design would describe worry patterns after religious activities, but would require an event-contingent approach in which the participant initiates a signal immediately before and after the religious activity. Such a design has its inconveniences. For example, participants may not always remember or choose to initiate an assessment.

Conclusion

To the best of our knowledge, this was the first study to examine the relation between state worry and religious behavior. Additionally, this is the sole study to analyze simultaneously the core religious components Rosmarin, Krumrei et al. (2009) identified: time spent in religious activities, religious affiliation, and trust/mistrust in God and their effect on worry levels. Our findings demonstrated that mistrust in God and religious activities had modest effects on worry levels. Although more studies will be needed to continue to analyze these three core components of religious behavior, it is important to note that perhaps other less studied aspects of religious behavior can help protect

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against worry levels as well. This study has laid a basis future researchers to examine state worry levels in relation to other religious factors which may serve protective functions. Along with religion, there exists many other potential protective factors for worry, such as social interaction, educational attainment, and physical activity. As worry will likely remain a significant psychological distress, it will remain imperative for researchers to study these other factors and their relation to state worry moving forward.

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