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Religious and Spiritual Struggles and Their Links to Psychological Adjustment: A Meta-Analysis of Longitudinal Studies

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In light of a growing body of longitudinal research on religious and spiritual (r/s) struggles and adjustment, a meta-analysis was conducted in order to synthesize literature on whether r/s struggles predict decrements in psychological adjustment over time. Multiple databases were searched for journal articles and dissertations reporting on studies that met inclusion criteria. For each study, necessary statistical information was extracted to calculate or estimate the standardized regression coefficient predicting follow-up psychological adjustment from baseline r/s struggles, controlling only for autoregressive effects. The search and screening process yielded 32 studies meeting inclusion criteria for which the necessary statistics were able to be extracted or obtained from study authors. Results indicated that r/s struggles significantly predicted increases in negative psychological adjustment (32 studies), $Z_r = 0.08$, 95% CI [0.04, 0.10]. Results for positive psychological adjustment were non-significant (12 studies), $Z_r = -0.04$, 95% CI [−0.11, 0.03]. These findings are consistent with a primary r/s struggles model in which r/s struggles lead to worsening psychological adjustment. This study underscores the importance of attending to spiritual struggles within clinical practice. Future studies on this topic could add to our understanding by examining longer time frames and testing secondary and complex models of the longitudinal relationship between r/s struggles and psychological adjustment.

Keywords: religion, spirituality, psychological adjustment, meta-analysis, longitudinal studies

Introduction

Although many studies of religion and spirituality (r/s) have linked a variety of r/s expressions to indicators of psychological adjustment (e.g., Koenig, King, & Carson, 2012), some aspects of r/s may be more problematic. In the last 25 years, a growing body of research has focused on one such form of r/s: r/s struggles. Many studies have demonstrated robust ties between higher levels of r/s struggles and lower levels of psychological adjustment (e.g., Abu-Raiya, Pargament, Krause, et al., 2015; Currier et al., 2017; Ellison & Lee, 2010; McConnell et al., 2015; Ogden et al., 2011). The majority of this research, however, has been cross-sectional in design, leaving unanswered questions about whether r/s struggles may contribute to poorer adjustment over time. In this paper, we present the results of a meta-analysis that focuses specifically on longitudinal studies of r/s struggles and considers the degree to which r/s struggles measured at baseline are predictive of changes in adjustment over time.

Defining and Measuring R/S Struggles

R/s struggles have been defined as tensions, conflicts, and negative emotions around sacred matters (Exline, 2013; Pargament, 2007; Pargament et al., 2005). More specifically, r/s struggles may be supernatural, intrapsychic, or interpersonal in nature; that is, they may center around conflicts with supernatural forces, such as God and the demonic, tensions within oneself about moral issues, doubts about religion, questions of ultimate meaning, and conflicts with other people about r/s issues.

A number of measures have been used to assess r/s struggles. Some of these scales focus on specific types and contexts of r/s struggles (e.g., struggling with particular life stressors). For example, the Religious Conflict Scale assesses doubts about one's religion (Funk, 1958). The Penn Inventory of Scrupulosity (Abramowitz et al., 2002) measures fears about having committed sins and being punished by God. The Inventory of Complicated Spiritual Grief (Burke et al., 2014) measures r/s struggles with the divine and other people in the context of bereavement. Other scales assess a wider range of r/s struggles. Bryant and Astin (2008)

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developed a five-item measure of r/s among college students that assessed their questions about religious/spiritual beliefs, anger towards God, questions about evil, suffering, and death, and discontent with one's religious upbringing. Exline, Yali, and Sanderson (2000) devised a Religious Strain scale that measures alienation from God, religious rifts with others, and fear/guilt. The negative subscale of the Brief RCOPE is the most widely used measure of r/s struggles (Pargament et al., 1998). This 7-item scale focuses largely on struggles with God, but also assesses conflicts with the devil and with one's religious community.

More recently, Exline and her colleagues developed and validated the Religious and Spiritual Struggles Scale, a 26-item measure that taps into six types of struggles: divine, demonic, doubt-related, ultimate meaning, moral, and interpersonal (Exline et al., 2014). Initial analyses showed that these six types of struggle are empirically distinct but can also be combined reliably to form a general index of struggle (Exline et al., 2014). Subsequent analyses of the RSS using bifactor modeling (Stauner et al., 2016) clarified that r/s struggles can be empirically distinguished from both religiousness and distress and demonstrated that both multidimensional and unidimensional scoring systems are appropriate. Taken together, these findings suggest that it is meaningful to examine both particular types of r/s struggle and r/s struggles as a group.

Review of Empirical Literature

Dozens of empirical studies have examined the relationship between r/s struggles and indicators of psychological adjustment. Overall, these studies have shown significant ties between higher levels of r/s struggles and poorer psychological adjustment. These findings are robust across diverse samples, including healthy groups (e.g., Bjorck et al., 2010), medical samples (e.g., Lee et al., 2014), people with serious psychological disorders (e.g., Rosmarin et al., 2013), individuals facing major life stressors (e.g., Ahrens et al., 2010), people from diverse religious traditions (e.g., Abu-Raiya, Pargament, Weissberger, & Exline, 2016; Falb & Pargament, 2013; Tarakeshwar, Pargament, & Mahoney, 2003), and across cultures (e.g., Berzengi et al., 2017; Mihaljevic et al., 2011; Stroppa & Moreira-Almeida, 2013; Zarzycka, 2019).

The large majority of studies on the relationship between r/s struggles and adjustment are cross-sectional. As a result, important questions remain unanswered about whether r/s struggles lead to lower levels of adjustment. Theoretically, r/s struggles could play a primary causal role in producing psychological distress and disrupting positive adjustment. Janoff-Bulman (1992) described the deleterious psychological consequences that can occur when individuals' fundamental assumptions about themselves and the world are shaken. R/s struggles in particular are likely to touch matters of deep value and importance, such as explanations for suffering in the world, beliefs about goodness and evil, perspectives on what makes life worthwhile, personal goals and aspirations, and beliefs about God. Struggles around sacred matters then may set the stage for psychological disorientation and emotional disequilibrium (Pargament, 2007; Pargament & Exline, in press). However, it is important to note that two other explanations for the r/s struggles—adjustment connection are possible. Conceivably, poorer psychological adjustment could trigger r/s struggles. In this case, the r/s struggles would be secondary to adjustment. Or r/s struggles and poor adjustment could relate to each other in a complex, reciprocal fashion. These possible explanations have been labeled primary, secondary, and complex models of r/s struggles (Pargament & Lomax, 2013).

A few meta-analyses of the relationship between r/s struggles and adjustment have been conducted in the last 15 years that attempt to summarize the results of multiple studies to reach a more reliable and stronger conclusion about this association than any single study can offer. In their meta-analysis of studies of religion and depression, Smith et al. (2003) found a small significant link ($r = 0.14$, 95% CI [0.06, 0.21]) between r/s struggles and depressive symptoms in a sub-analysis of mostly cross-sectional studies examining this association ($N = 1999$). Ano and Vasconcelles (2005) found a modest significant relationship ($Z_r = 0.22$, 95% CI [0.19, 0.24]) between higher levels of r/s struggle and poorer psychological adjustment in their analysis of 22 cross-sectional studies. In an unpublished study, Lucero (2011) reported on the results of a meta-analysis of 326 published articles that examined the relationships between r/s struggles, religious coping, and adjustment. In the overall analysis of primarily cross-sectional associations, small significant relationships were found between greater r/s struggles and poorer psychological adjustment ($Z_r = -0.12$, 95% CI [−0.14, −0.09] for positive psychological adjustment; $Z_r = 0.19$, 95% CI [0.17, 0.21] for negative psychological adjustment). Reynolds et al. (2016) conducted a focused meta-analysis of 14 studies of youth coping with chronic illness. Analysis of a small number of mostly cross-sectional studies (3 for quality of life, 2 for internalizing problems) revealed a moderate relationship between higher levels of r/s struggles and lower quality of life ($r = -0.34$, 95% CI [−0.58, −0.05]), as well as a small to moderate relationship for internalizing problems ($r = 0.20$, 95% CI [−0.12, 0.48]), though this effect size was non-significant when random-effects modeling was used, possibly due to the small number of studies included.

Overall, meta-analytic studies point to consistent links between r/s struggles and adjustment. Some of the findings suggest that these associations may be more pronounced for criteria of maladjustment (e.g., depression, anxiety, and psychological distress) than indicators of positive adjustment (e.g., well-being, quality of life, and growth). Ano and Vasconcelles (2005) found that r/s struggles were significantly associated with greater psychological maladjustment ($Z_r = 0.22$, 95% CI [0.19, 0.24]) but not with lesser positive adjustment ($Z_r = 0.02$, 95% CI [−0.02, 0.05]). Lucero (2011) reported that r/s struggles were significantly associated with both greater maladjustment and less positive adjustment, but the size of the effect was larger for indicators of maladjustment than positive adjustment ($Z_r = 0.19$, 95% CI [0.17, 0.21] for negative psychological adjustment; $Z_r = -0.12$, 95% CI [−0.14, −0.09] for positive psychological adjustment). This pattern of findings could be consistent with theoretical and clinical writings that suggest r/s struggles are a source of growth as well as distress (e.g., Chittister, 2003; Fowler, 1981; Pargament et al., 2006). It is possible that the growthful potential of r/s struggles mitigates the negative implications of r/s struggles for positive adjustment for some individuals.

Importantly, to our knowledge, all prior published meta-analyses on the relationship between r/s struggles and psychological adjustment have focused on cross-sectional findings. They have either pooled correlations exclusively from cross-sectional studies, as in the analysis by Ano & Vasconcelles (2005), or have pooled correlations from both cross-sectional and longitudinal studies, with the large majority being cross-sectional. For instance, in the

analysis by Smith et al. (2003), 125 of 147 studies included were cross-sectional. Lucero's (2011) unpublished analysis is notable in that it separately reported effect sizes for longitudinal studies, which were found to be similar in size to the effect sizes for overall results ($Z_r = -0.13$ and 0.22 for positive and negative psychological adjustment, respectively; confidence intervals unavailable). However, these longitudinal effect sizes reported by Lucero (2011) did not control for baseline associations between r/s struggles and adjustment. This is concerning due to autoregressive effects—that is, the tendency of constructs to be stable over time. Because of autoregressive effects, a zero-order correlation between one variable at baseline and another at follow-up may simply reflect the association between the two variables at baseline, along with stability over time in each of these variables (see Finkel, 1995). To our knowledge, no prior meta-analysis on the longitudinal association between r/s struggles and psychological adjustment has controlled for auto-regressive effects.

The Present Study

The focus of the present analysis was to test whether existing literature is consistent with the primary struggles model, in which r/s struggles play a causal role in diminishing well-being and exacerbating distress over time. This focus was chosen not only because of its potential contribution to a general understanding of r/s struggles, but also because of the significance of this model for clinical work. That is, if r/s struggles generally lead to worsening mental health, clinicians should be aware of the negative impact of r/s struggles, and management or alleviation of r/s struggles may represent an important target for treatment. It is important to stress that this test of a primary model of r/s struggles does not preclude the possibility that secondary and complex models of r/s struggles may also be operative. Tests of secondary and complex models were deemed outside of the scope of the current project due to concerns that there would be an insufficient number of studies measuring r/s struggles at both baseline and follow-up.

The present analysis pools data from longitudinal studies of r/s struggles and psychological adjustment, examining the association between r/s struggles at baseline and psychological adjustment at follow-up. To address autoregressive effects, the present analysis focused on the longitudinal regression coefficients for the association between baseline r/s struggles and follow-up psychological adjustment, controlling for the effect of baseline psychological adjustment—an approach adopted from Sowislo and Orth (2013). Given some evidence in the literature that r/s struggles may be more strongly related to indicators of negative adjustment than positive adjustment, ties between r/s struggles and adjustment were separately analyzed for positive and negative psychological adjustment measures. Pooled cross-sectional correlations were also calculated for the associations between both positive and negative psychological adjustment at baseline and r/s struggles at baseline to allow for comparison to the prior cross-sectional meta-analysis of Ano and Vasconcelles (2005).

Method

Operational Definitions

R/s Struggles

For this study, r/s struggles were operationalized as negatively valenced ways of engaging with religion or spirituality. Generally, any scale purporting to measure negative religious coping, r/s strain, or r/s struggles was considered a measure of r/s struggles, unless the description of the measure clearly indicated that it assessed something other than r/s struggles as defined here. This differs somewhat from the approach of Ano and Vasconcelles (2005) in that measures of struggles were not required to reference a stressor. However, long-standing, stable ways of understanding the nature of God or understanding one's relationship to God (e.g., agnosticism/atheism, negative God image, anxious attachment to God) were not considered measures of r/s struggles.

Psychological Adjustment

Psychological adjustment was operationally defined to encompass indicators that could serve as a positive or negative psychological outcome of a r/s coping or struggles process, including both stressor-specific outcomes (e.g., post-traumatic growth, burnout) and general outcomes (e.g., quality of life, hope, and substance abuse; see Appendix A for more detail).

Inclusion Criteria

A study was included in the meta-analysis only if it examined the association between r/s struggles at baseline and psychological adjustment at follow-up in such a way to allow for the calculation of the effect size of interest: the standardized regression coefficient for r/s struggles at baseline predicting psychological adjustment at follow-up, controlling only for the same measure of psychological adjustment at baseline. Because of the wide variety of control variables across different studies, the potential for regression coefficients in such models to differ in important ways as a result, and the logistic difficulty of stipulating which control variables would be acceptable and which would not, we were strictly interested in the regression coefficients as specified, with baseline psychological adjustment as the only control variable. For the purposes of this study, the partial correlation between baseline struggles and follow-up adjustment, controlling for baseline adjustment, was considered an adequate approximation of the desired regression coefficient.

Dissertations and studies published in peer-reviewed journals were included in the meta-analysis. We searched for dissertations rather than soliciting authors for data from unpublished research, due to evidence that the latter approach is less systematic and can lead to bias (Ferguson & Brannick, 2012). Book chapters were excluded based on the assumption that most data published in book chapters would also have been presented either in a dissertation or a peer-reviewed article.

Search Strategy

This meta-analysis was originally part of a larger effort to obtain all published quantitative studies—cross-sectional and longitudinal—of the relationship between psychological adjustment and either r/s coping or r/s struggles. Prior to updating the meta-analysis, the scope of the project was narrowed to only longitudinal studies of the relationship between psychological adjustment at baseline and r/s struggles at follow-up. For this reason, the original search process differed from the search process used to update the meta-analysis. Also, the search process was modified again when

searching for dissertations. See Figure 1 for a summary of the search and screening process.

Original Search Process

EBSCOhost was used to simultaneously search MEDLINE, PsycINFO, SocINDEX, and ERIC for articles containing any one of a number of phrases meant to capture the full range of categories and subtypes of r/s struggles. These terms were as entered as follows:

> "punishing God" or "punished by God" or "God's punishment" or "religious struggle*" or "spiritual struggle*" or "religious strain" or "spiritual strain" or "divine struggle*" or "moral struggle*" or "religious conflict" or "spiritual conflict" or "religious discontent" or "spiritual discontent" or "demonic" or "devil" or "anger at God" or "religious doubt*" or "religious guilt" or "spiritual injury" or "spiritual pain" or "moral injury" or "existential pain" or "existential struggle*."

(Note that search terms for r/s coping were also entered into EBSCO because of the broader scope of the project at that time. See Appendix A for the religious coping search terms used.)

EBSCOhost results were restricted to citations published in academic journals from 1982 to May 2016 written in English. After filtering out duplicates, this yielded 3335 unique citations.

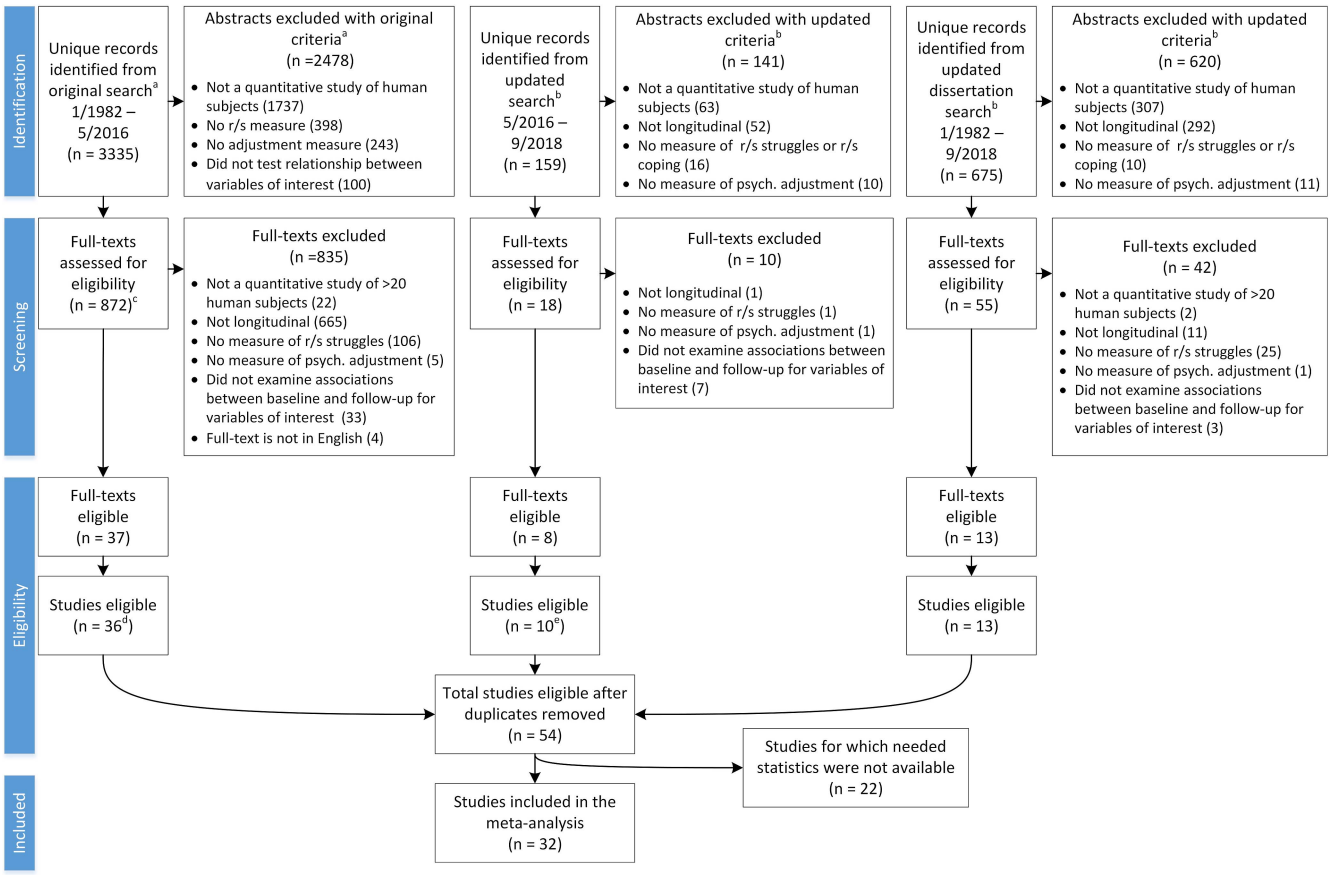
Updating the Meta-Analysis

In order to update the meta-analysis, the same search terms were used as above (indicated by ellipsis below), along with additional terms at the start and end of the list, as follows:

> ("negative religious coping" or "negative spiritual coping" or . . . [see above list of terms] or "existential struggle*") AND (longitudinal* or prospective* or antecedent)

(Note these changes were made to account for the fact that the updated search did not include the other search terms listed in Appendix B and to help narrow the search to longitudinal studies only, in keeping with the rationale above.) This process yielded 159 unique citations when searching the full-text of articles published in English from May 2016 to September 2018.

Figure 1
Flowchart



a) The search and abstract screening processes were originally designed to include studies of r/s coping and cross-sectional studies.
b) The search and screening processes were later changed to reflect a narrower focus on longitudinal studies of r/s struggles only.
c) Note that more full-texts were screened for eligibility than passed abstract screening (857) likely due to errors in transcribing or possibly due to irregularities in citation management software used to calculate the total of the 857 passing abstract screening.
d) Two articles (Gall, Charbonneau & Florack, 2011; Gall, Guirguis-Younger, Charbonneau & Florack, 2009) were counted as a single study because the sample was the same for these studies (though the variables and time frames examined were different) to avoid duplication of data within our analysis.
e) One article contained three eligible studies (Wilt, Grubbs, Lindberg, Exline & Pargament, 2017).

Note. See the online article for the color version of this figure.

Searching for Dissertations

Proquest was used to search for dissertations completed from 1982 to September of 2018. Searching full-text dissertations in the same manner described above yielded an exorbitant number of citations (64,557). For this reason, we turned to an abstract-only rather than full-text search process. The abstract-only search terms were amended by reviewing the abstracts of all articles from our original search that met inclusion criteria to ensure that the search terms used for dissertation abstracts would not have resulted in exclusion of any of these articles. The process led to the addition of a number of terms to the second set of parentheses above (*baseline*, *predict**, and *chang**, each separated by Boolean connector "or" when entered into the search bar). Searching proquest in this way yielded 675 citations after removing duplicates.

Abstract Screening

As with the search process, abstract screening also changed while updating and expanding the meta-analysis, due to the change in the scope of the project described above, which occurred subsequent to the original abstract-screening process.

Original Abstract Screening

A liberal approach was used to avoid missing articles that might contain relevant data even if those data were not specifically mentioned in the abstract. Abstracts passed screening at this stage when the abstract met the following criteria: a) indicated that the article presented original, quantitative data on human subjects; b) mentioned the measurement of r/s coping or r/s struggle, or mentioned measurement of multiple types of coping with the implication that not all types of coping measured were listed in the abstract, or mentioned measurement of multiple aspects of religion or spirituality with the implication that not all types of r/s measured were listed in the abstract; c) mentioned measurement of positive psychological adjustment or multiple types of adjustment with the implication that not all types of adjustment were listed in the abstract; d) reported on the relationship between r/s coping or r/s struggles and psychological adjustment, or reported on a number of different relationships with the implication that not all tested relationships were listed in the abstract. At this stage we used an operational definition of r/s coping (available in Appendix C) as well as an operational definition of r/s struggle to guide our judgment. When no abstracts were available, full-text articles were retrieved and scanned for inclusion criteria, unless it was clear from the title that the article would not meet criteria (e.g., titles indicating the article was a case study or a book review). This process yielded 872 citations.

Three researchers were involved in screening abstracts at this stage—two graduate students in clinical psychology (J.P., V.H.) and one with a doctorate in clinical psychology (M.B.), all with prior research experience in the area of the psychology of religion and spirituality. Approximately every 20th article in a list assigned to a particular coder was selected for re-screening by the other coders. Kappa was calculated for the agreement between each of three coder combinations, yielding values ranging from good to very good: 0.845, 95% CI [0.75, 0.94]; 0.73, 95% CI [0.61, 0.86]; and 0.75, 95% CI [0.62, 0.87].

Updated Abstract-Screening Process

A more restrictive process than described above was used to screen abstracts obtained from our updated search for published articles (159 citations) and from our search for dissertations (675 citations). Abstracts passed screening if the abstract was written in such a way to suggest it was likely that a) the study was an original quantitative study of human subjects, b) data were collected at two time points, c) r/s coping or struggles was measured as a part of the study, and d) psychological adjustment was measured as a part of the study. We tested this abstract screening process on all studies that met inclusion criteria in our original search (and those that met inclusion criteria except for lack of statistical data needed to calculate the effect size of interest) to ensure that none of these articles would have been excluded through this screening process, and none were excluded by using these criteria. This updated abstract-screening process yielded 18 published citations and 55 dissertations, respectively.

Two researchers (M.B. and S.W.—a graduate student in clinical psychology at the time) were involved in screening abstracts of published studies and dissertations for the updated analysis. One researcher then screened all of the abstracts (M.B.). A subset of 44 abstracts was independently re-screened by the second researcher (S.W.). Interrater agreement on whether these 44 abstracts passed or failed screening was very good, $\kappa = 0.90$, 95% CI [0.70, 1.00].

Full-Text Screening

Full-text screening criteria were identical for the original and updated search/screening processes. Specifically, a study passed full-text screening only if it examined the association between baseline r/s struggles and follow-up adjustment in such a manner that we could calculate (if necessary statistical information were available or made available) the standardized regression coefficient for r/s struggles at baseline predicting psychological adjustment at follow-up, controlling only for the effect of the same psychological adjustment measure at baseline. One researcher (M.B.) was responsible for identifying studies that met criteria for inclusion. A total of 54 unique studies met criteria for inclusion.

A subset of 29 studies (from the years 2009–2012) was screened by a second researcher (J.P.) to assess reliability of the prior mentioned researcher's (M.B.) inclusion or exclusion of studies from the meta-analysis. Given that the vast majority of studies passing abstract screening were excluded from this analysis, this subset of 29 articles was selected for re-screening of the full text to disproportionately include nine studies published between 2009 and 2012 that met inclusion criteria. An additional 20 from this same time period were chosen by selecting every 10th study (in alphabetical order by title) from the full list of studies for which full-text was obtained. Kappa was very good, $\kappa = 0.92$, 95% CI [0.76, 1.00].

Of the 54 unique studies meeting eligibility criteria, 19 provided sufficient statistical information to calculate the effect size of interest within the full-text of the article or dissertation. Authors of the remaining 35 studies were contacted to request needed data. Two authors (M.B. and S.W.) of the present analysis were responsible for contacting authors, and the second author (K.P., a senior researcher in the field) was cc'd to encourage

response. When no response was received, researchers contacted study authors a second time. In some cases, study authors responded but were still unable to provide requested data due to lack of access to the original data set, especially for older studies. Authors of the present analysis were able to obtain necessary data for 13 out of the 35 studies with missing data, yielding a total of 32 studies to be included in the meta-analysis. See Appendix D for a list of the 22 studies that were excluded for lack of necessary statistics. See Figure 1 for a flow-chart depicting the search and screening processes.

Coding

All studies were coded by M.B. and another researcher (A.S. coded 13, and S.W. coded the remaining 19; both A.S. and S.W. were clinical psychology graduate students at the time). Differences were resolved through discussion. The following variables were coded: name of measure of r/s struggles, name of measure of psychological adjustment, type of psychological adjustment measured (e.g., quality of life, depression), positive or negative valence of the adjustment measure, length of time from baseline to follow-up, size of the sample that completed both time points of the study, description of the sample, country of the sample, religious make-up of the sample, number of females, mean age, ethnic make-up of the sample, and the standardized regression coefficient of baseline r/s struggles predicting follow-up psychological adjustment, controlling only for the effect of baseline adjustment, or other statistical information needed to calculate or estimate this regression coefficient (see below for the specific zero-order correlations needed and the equation used). The type of r/s struggles measured was also coded: divine, demonic, interpersonal, moral, doubt, ultimate meaning, and general, referring to measures that address multiple types of r/s struggles and/or were meant to measure struggle generally rather than a specific type of struggle.

When studies provided adequate data for coding effect sizes for more than one measure of r/s struggles, more than one measure of psychological adjustment, or more than one time frame, data were extracted and effect sizes were calculated for all of these, with this exception—if codable data were available for all the subscales of a given measure and the overall score for that measure of psychological adjustment or r/s struggles, only data for the subscales were extracted to avoid obtaining redundant information.

In some cases, the exact data for time frame, mean age, and other demographics were not available. In these cases, an estimate was made based on the data available, similar to approaches used in other meta-analyses (e.g., Starr & Davila, 2008; Sowislo & Orth, 2013). For instance, some studies only provided demographics for the total sample at baseline, and not for the subset of the sample that also completed follow-up questionnaires. In these cases, demographic data for the sample of interest were extrapolated from baseline demographic data. For example, if 80% of the baseline sample was white, it was assumed that 80% of the follow-up sample was white.

Some studies provided the regression coefficient of interest or a partial correlation that could be used to approximate it. For most studies, however, the regression coefficient was calculated from a set of three zero-order correlations using the following equation for the standardized regression coefficient of one predictor (X_1) when there is a second predictor (X_2) in the model (from Cohen, Cohen, West, & Aiken, 2003, p. 68):

$$\beta_{Y1.2} = \frac{r_{Y1} - r_{Y2}r_{12}}{1 - r_{12}^2}.$$

For our purposes, $\beta_{Y1.2}$ represents the standardized regression coefficient for baseline struggle predicting follow-up adjustment, controlling for the effect of baseline psychological adjustment; Y is psychological adjustment at follow-up; 1 is r/s struggles at baseline; 2 is psychological adjustment at baseline; and each of r_{Y1}, r_{Y2}, and r_{12} are the zero-order correlations between the two variables indicated in the subscript.

Study Quality

Risk of bias in individual studies was assessed to identify weaknesses and strengths of studies included and to aid in interpretation of meta-analytic results. For each study, one researcher (M.B.) noted the following: a) sampling procedure, b) response rate, c) whether the study used established measures with acceptable reliability and validity, and d) retention rate, along with a judgment as to the risk of bias (low, intermediate, and high) introduced by each of these criteria, respectively.

Meta-Analytic Procedure

Effect sizes for positive psychological adjustment and negative psychological adjustment were analyzed separately, consistent with the methodology of Ano and Vasconcelles (2005). When there was more than one effect size for a given study (i.e., more than one time frame, r/s struggles measure, or adjustment measure with codable data for a given study), an average standardized regression coefficient was calculated for the study. All subsequent computations were made using MetaWin 2.0 (Rosenberg et al., 2000). The standardized regression coefficients were converted to Fisher's Z_r. Each study was weighted by the reciprocal of the sampling variance ($n - 3$). Publication bias was assessed using Spearman's rank-order method, in which a correlation is calculated between effect size and n. Heterogeneity was assessed by examining Q_T (Hedges & Olkin, 1985). A random-effects model was specified for all effect size analyses in MetaWin, consistent with recommendations from Field and Gillett (2010), though in some cases MetaWin used a fixed-effects model instead because the estimate of the pooled variance was less than or equal to zero.

Results

Study Characteristics

Thirty-two unique studies met inclusion criteria, and the total sample size was 5729. Publication years ranged from 1999 to 2018, $M = 2011.80$, $SD = 4.41$ (weighted average = 2012.74). Most studies were conducted in the United States, while two were conducted in Canada and one in Chile. Sample sizes ranged from 42 to 532, $M = 178.93$, $SD = 132.59$. Proportion of female participants ranged from 0.18 to 1, $M = 0.62$, $SD = 0.20$ (weighted average = 0.58). Average age of participants ranged from 14.30 to 67.68 years, $M = 39.41$, $SD = 18.41$ (weighted average = 37.41; note that one study (Wadsworth et al., 2009) did not provide an

average age and was left out of these calculations). Regarding ethnicity, the total sample included white, black, Latino, mixed race, Native American, and Asian participants. Proportion of non-white participants ranged from 0 to 1, $M = 0.27$, $SD = 0.20$ (weighted average = 0.29). The average time frame for each study (three studies had multiple time frames with codable data) ranged from 1.14 weeks to 208.56 weeks, $M = 33.12$, $SD = 41.80$ (weighted average = 34.9).

Study samples included Christian, Jewish, Muslim, and other religions, as well as unaffiliated and/or agnostic/atheist participants, though six studies did not provide information regarding religious affiliation. The proportion of Christian participants ranged from 0.00 to 1.00, $M = 0.73$, $SD = 0.22$ (weighted average = 0.69). The proportion of unaffiliated, atheist, or agnostic ranged from 0.00 to 0.44, $M = 0.14$, $SD = 0.05$ (weighted average = 0.19). Nine studies made use of convenience samples of patients with a particular medical concern, five used samples of individuals with mental health concerns, eight were university student samples, and the remaining ten were a mix of other types of convenience samples (accounting for 18.41%, 14.79%, 35.78%, and 31.02%, of the sample, respectively).

R/s struggles were measured with a number of validated instruments. The Brief RCOPE (Pargament et al., 2011) was used more frequently than any other measure (weighted by sample size), followed by the Religious and Spiritual Struggles Scale (Exline et al., 2014), accounting for 33.27% and 24.27% of the sample respectively. Regarding type of struggle, general struggle (i.e., measured with items assessing a mix of types of struggle) was measured most frequently, followed by doubt, accounting for 59.09% and 26.17% of the sample, respectively.

Included studies assessed a range of types of psychological adjustment with a number of validated instruments. The types of negative psychological adjustment measured included depression symptoms, anxiety symptoms, and posttraumatic stress (according to descriptors used in each article), accounting for 44.65%, 22.35%, and 17.07% of the sample respectively. Most commonly used measures of each of these were the Center for Epidemiological Studies—Depression scale (Radloff, 1977), the GAD-7 (brief scale of generalized anxiety disorder symptoms; Spitzer et al., 2006), and the PTSD Checklist—Military version (Blanchard et al., 1996). The types of positive psychological adjustment accounting for most of the total sample were post-traumatic growth (20.93%), life satisfaction (15.68%), optimism (12.17%), and self-esteem (12.17%), measured respectively by the Post-traumatic Growth Inventory (Tedeschi & Calhoun, 1996), Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985), Life Orientation Test (Scheier & Carver, 1985), and the Self-esteem Scale (Rosenberg, 1965).

See Tables 1 and 2 for more information regarding sample characteristics and effect sizes.

Study Quality

The risk of bias attributable to the quality of studies included was judged to be moderate, depending primarily on the degree to which factors that affect response rate also influence the effect size of interest. Source populations varied widely as described above. Two studies had low response rates (less than 50%), one had a moderate response rate (50%–75%), seven had high response rates (75%–100%), and most (22) used sampling procedures for which calculation of a response rate was not possible or appropriate. Eleven studies had high retention rates, 12 had moderate retention rates, 4 had low retention rates, and 5 had unclear retention rates. All included studies used established measures with acceptable reliability and validity.

Negative Psychological Adjustment

For all 32 studies (total sample size of 5729) included in the meta-analysis, adequate data were provided or obtained to allow for the calculation or estimation of the standardized regression coefficient for the effect of r/s struggles at baseline on negative psychological adjustment at follow-up, controlling only for the effect of baseline negative psychological adjustment. Spearman's rank-order method did not reveal publication bias, $r_s = 0.005$, $p = 0.98$. Though a random-effects model was originally specified, MetaWin defaulted to a fixed-effects model because the estimate of the pooled variance was less than or equal to zero, suggesting a fixed-effects model was more appropriate for the data. Examination of Q_T indicated that heterogeneity was non-significant—that is, the variance among effect sizes was no greater than what would be expected given sampling error (Cooper, 1998), $Q_T(30) = 20.57$, $p = 0.90$. The effect size was positive, and the confidence interval did not cross zero, indicating that r/s struggles significantly predicted negative psychological adjustment longitudinally, controlling for the effect of baseline negative psychological adjustment; specifically, higher levels of r/s struggles at baseline were associated with increases in negative psychological adjustment over time, $Z_r = 0.08$, 95% CI [0.05, 0.10].

The baseline cross-sectional correlations between r/s struggles and negative psychological adjustment were also meta-analyzed to allow comparison with a prior meta-analysis by Ano and Vasconcelles (2005). Random-effects modeling was used. Spearman's rank-order method yielded a non-significant correlation, suggesting lack of publication bias, $r_s = -0.34$, $p = 0.06$. Heterogeneity was non-significant, $Q_T(30) = 25.80$, $p = 0.68$. The effect size was positive and the confidence interval did not cross zero, indicating that r/s struggles were significantly associated with negative psychological adjustment at baseline, $Z_r = 0.27$, 95% CI [0.23, 0.31], (c.f., the same association calculated in Ano and Vasconcelles (2005), $Z_r = 0.22$, 95% CI [0.19, 0.24]).

Positive Psychological Adjustment

For 12 studies (total sample size of 1381) included in the meta-analysis, adequate data was provided or obtained to allow for the calculation or estimation of the standardized regression coefficient for the effect of r/s struggles at baseline on positive psychological adjustment at follow-up, controlling only for the effect of baseline positive psychological adjustment. Spearman's rank-order method did not reveal publication bias, $r_s = 0.10, p = 0.76$. Random effects modeling was used. Examination of Q_T indicated that heterogeneity was non-significant, $Q_T(3) = 10.96$, $p = 0.45$. The effect size was negative, indicating that higher levels of r/s struggles at baseline were associated with decreases in positive psychological adjustment over time. However, the confidence interval crossed zero, indicating this effect was not significant, $Z_r = -0.04$, 95% CI [−0.11, 0.03]. These results indicate inadequate evidence to support the assertion that r/s struggles are a significant predictor of positive psychological adjustment.

Table 1
Sample Characteristics

Authors (year)	N[a]	Description of sample (country if not U.S.)	% female	% Christian	% Unaff.[b]	% Non-white	Mean age
Ahles et al. (2016)	320	Students at Christian college	71	—	—	30	19.08
Ai et al. (2007)	309	Patients undergoing major cardiac surgery	42	83	10	10	62.40
Ai et al. (2011)	250	Students in a university mental health class	84	—	—	36	31.07
Burke et al. (2011)	46	Homicidally bereaved African American adult	89	—	—	100	50.23
Carpenter et al. (2012)	111	Adolescents from community	72	84	14	22	16.4
Currier et al. (2015)	532	Veterans in a PTSD residential program	12	50	23	42	50.59
Currier et al. (2018)	303	Student sample of veterans	40	69	23	32	35.47
Dew et al. (2010)	145	Adolescent psychiatric outpatients	42	93	5	43	14.30
Exline et al. (2016)	68	Patients in a 3-week outpatient intensive headache treatment program	83	82	10	5	43.40
Exline et al. (2011)	167	Cancer survivors	69	72	19	10	45.30
Faigin et al. (2014)	90	Midwestern college students	72	87	10	17	18.00
Fitchett et al. (1999)	96	Medical rehabilitation inpatients	67	88	2	32	65.2
Gall et al., (2011) and Gall et al. (2009)[c]	90	Breast cancer patients (Canada)	100	90	6	2	60.95
Garcia et al. (2018)	216	Adults who experienced a recent work accident (Chile)	24	—	—	—	39.92
Harris et al. (2012)	79	People from community churches with a history of stressful life events	70	89	0	11	58.00
Hawley (2015)	113	Undergraduates after a romantic break-up	77	70	21	16	19.35
Hunsberger et al. (2002)	336	High school students(Canada)	71	62	34	—	19.30
Kothari (2016)	287	Seventh-day Adventist adults	60	100	0	33	67.68
Krumrei (2008)	89	Recently divorced adults	59	78	18	13	39.72
Park & Dornales (2012)	42	Patients hospitalized with first acute myocardial infarction	48	—	—	8	57.00
Park et al. (2011)	101	Patients with severe CHF and ineligible for transplant	40	83	9	44	66.70
Phillips & Stein (2007)	43	Young adults with serious mental illness	46	65	0	23	24.00
Pirutinsky et al. (2011)	80	Orthodox Jews participating in therapy trial—no treatment arm	81	0	0	—	40.35
Reynolds et al. (2014)	87	Adolescents diagnosed with type 1 diabetes or cystic fibrosis	47	86	11	16	16.37
Rosmarin et al. (2013)	47	Psychotic patients in a day treatment program	58	43	36	19	29.73
Sherman et al. (2009)	94	Myeloma patients undergoing stem cell transplantation	38	90	5	9	55.70
Wadsworth et al. (2009)	93	Evacuees from Hurricane Katrina	58	—	—	64	Adults[d]
Webb (2008)	265	Evacuees from Hurricane Katrina	100	73	23	36	36.80
Wilt, Grubbs, Lindberg, et al. (2017 - study 1)[e]	268	Recently divorced mothers	62	43	24	44	19.30
Wilt, Grubbs, Lindberg, et al. (2017 - study 2)[e]	527	Undergraduates	58	43	44	25	36.00
Wilt, Grubbs, Lindberg, et al. (2017 - study 3)[e]	292	Mturk adults	68	72	21	41	18.40
Wortmann et al. (2012)	140	Christian undergraduates at public university	64	100	0	11	18.70

[a] Number of participants completing baseline and follow-up measures.
[b] Includes atheist, agnostic, and unaffiliated.
[c] Demographics were averaged for these two studies because they analyzed the same sample.
[d] Only age-related information available.
[e] Different studies within the same article.

As with negative psychological adjustment, the baseline cross-sectional correlations between r/s struggles and positive psychological adjustment were also meta-analyzed to allow comparison with the work of Ano and Vasconcelles (2005). Random-effects modeling was used. Spearman's rank-order method yielded a non-significant correlation, suggesting lack of publication bias, $r_s = 0.22$, $p = 0.48$. Heterogeneity was non-significant, $Q_T(3) = 10.89$, $p = 0.45$. The effect size was negative, indicating that higher levels of r/s struggles at baseline were associated with lower scores on measures of positive psychological adjustment. However, the confidence interval crossed zero, indicating that this association was not significant, $Z_r = -0.10$, 95% CI [−0.25, 0.04], (c.f., the same association calculated in Ano and Vasconcelles (2005), $Z_r = 0.02$, 95% CI [−0.02, 0.05]).

Discussion

This paper examined whether r/s struggles predict changes in psychological adjustment over time through a meta-analysis of studies of the longitudinal association between these variables, selecting and pooling an effect size that controlled for autoregressive effects. Selection procedures yielded 32 studies of r/s struggles and psychological adjustment that met criteria for inclusion and provided statistical information adequate to calculate the effect size of interest. Effect

Table 2
Effect Size Information

Authors (year)	Time frame (weeks)	Type of struggle (measure description)	Type of adjustment[a] (measure description)	Cross. *R* S → A[b]	Long. β S → A[c]
Ahles et al. (2016)	1.00	General (NRC—Brief RCOPE)	Depression (CESD)	0.18	0.005
	2.00				0.20
	3.00				0.05
	4.00				0.03
	5.00				0.09
	6.00				0.13
	7.00				0.07
Ai et al. (2007)	6.29	General (NRC—Brief RCOPE)	Depression (CESD)	0.30	0.10
			Anxiety (TAI)	0.31	0.13
Ai et al. (2011)	13.02	General (NRC—Brief RCOPE)	PTSD (PTSD Symptom Scale)	0.16	0.09
Burke et al. (2011)	26.00	General (NRC—Brief RCOPE)	Complicated grief (ICG)	0.41	0.01
Carpenter et al. (2012)	1.00	General (NRC—Brief RCOPE)	Depression (CDIS)	0.24	0.10
	2.00				0.02
	3.00				0.29
	4.00				0.07
	5.00				0.03
	6.00				–0.05
	7.00				0.20
	8.00				0.01
	12.00				–0.12
Currier et al. (2015)	10.71	General (NRC—BMMRS)	PTSD (PCLM)		0.10
Currier et al. (2018)	26.04	Divine (RSSS)	Suicidal ideation (SBQR)	0.35	–.09
			Probability of future suicide attempt (SBQR)	0.19	0.02
		Morality (RSSS)		0.39	–0.08
				0.18	0.04
		Meaning (RSSS)		0.54	–0.02
				0.35	0.26
		Interpersonal (RSSS)		0.26	–0.00
				0.19	0.07
		Doubting (RSSS)		0.23	–0.01
				0.11	0.04
Dew et al. (2010)	26.04	General (NRC—BMMRS)	Depression (BDI2)	0.45	0.11
Exline et al. (2016)	14.57	Divine (Anger/disappointment in God—ATGS-9)	Anxiety (DASS)	0.4	0.16
			Depression (DASS)	0.38	0.08
			Stress (DASS)	0.39	0.17
			Meaning in headache	*0.04*	*–0.18*
			Activities Engagement (CPAQ)	*–0.28*	*–0.09*
			Willingness (CPAQ)	*–0.22*	*0.06*
		Divine (Protest behaviors toward God)	Anxiety	0.39	–0.09
			Depression	0.32	–0.19
			Stress	0.43	–0.13
			Meaning in headaches	*0.13*	*0.12*
			Activities engagement	*–0.24*	*0.07*
			Willingness	*–0.37*	*0.03*
Exline et al. (2011)	52.14	Divine (Anger/disappointment in God—ATGS-9)	*Adjustment (Mental Component—MOSS12)*	*–0.43*	*–0.03*
Faigin et al. (2014)	5.00	General (NRC—modified RCOPE)	Alcohol addiction (SPQ)	0.15	–0.075
			Caffeine addiction (SPQ)	0.13	0.014
			Exercise addiction (SPQ)	0.22	0.01
			Food binging (SPQ)	0.33	0.00
			Food starving (SPQ)	0.19	0.05
			Gambling addiction (SPQ)	–0.07	0.07
			Prescription drug addiction (SPQ)	0.23	–0.04
			Recreational drug addiction (SPQ)	0.20	–0.11
			Sex addiction (SPQ)	0.08	–0.01
			Shopping addiction (SPQ)	0.17	0.04

(*table continues*)

Table 2 (*continued*)

Authors (year)	Time frame (weeks)	Type of struggle (measure description)	Type of adjustment[a] (measure description)	Cross. *R* S → A[b]	Long. β S → A[c]
			Tobacco addiction (SPQ)	0.18	0.02
			Work addiction (SPQ)	0.31	0.06
			Problematic video gaming (PVP)	0.02	–0.09
			Problematic internet use (PIUQ)	0.09	–0.03
Fitchett et al. (1999)	17.36	General (NRC—Brief RCOPE)	Depression (BDI)	0.21	0.09
			Life satisfaction (SWLS)	*–.02*	*–0.21*
Gall et al. (2011)	52.14	Divine (Spiritual discontent from RCOPE)	*Post-traumatic growth (PTGI)*	*0.16*	*0.01*
Gall et al. (2009)	8.68	Divine (Spiritual discontent from RCOPE)	Distress (POMS)	0.24	–0.08
	13.02				–0.05
	34.72				0.06
	60.76				–0.09
	112.84				–0.07
Garcia et al. (2018)	52.14	General (NRC—Brief RCOPE)	Depression (CESD)	0.32	0.16
Harris et al. (2012)	52.14	General (NRC—Brief RCOPE)	PTSD (PCL)	0.43	0.11
		Divine (Alienation from God—RSS)		0.43	0.14
		Intrapsychic (Religious fear and guilt—RSS)		0.55	0.21
		Interpersonal (Religious rifts—RSS)		0.29	0.19
Hawley (2015)	52.14	General (NRC—RCOPE)	Anger (STAE)	0.19	0.02
			Distress (IES)	0.24	0.19
			Depression (CESD)	0.18	–0.03
			Post-traumatic growth (PTGI)	*0.33*	*0.16*
Hunsberger et al. (2002)	104.28	Doubt (Religious Doubts Scale)	Depression (CESD)	0.06	–0.01
			Optimism (LOT)	*–0.09*	*0.02*
			Self-esteem (SES)	*0.02*	*0.02*
Kothari (2016)	208.56	General (NRC—Brief RCOPE)	Depression (CESD)	0.28	0.09
Krumrei (2008)	52.14	General (NRC—Brief RCOPE)	PTSD or distress (IES)	0.51	0.01
			Depression (CESD)	0.61	–0.01
			Anger (STAE)	0.29	0.08
			Post-traumatic growth (PTGI)	*–0.05*	*0.00*
		Interpersonal (RCOPE)	PTSD or distress (IES)	0.06	0.03
			Depression (CESD)	0.27	–0.03
			Anger (STAE)	0.15	0.05
			Post-traumatic growth (PTGI)	*0.03*	*–0.15*
Park & Dornelas (2012)	4.34	General (NRC—BMMRS)	Depression (CESD)	0.24	0.25
Park et al. (2011)	13.02	General (RSS)	Depression (CESD)	0.29	0.08
			Life satisfaction (SWLS)	*–0.23*	*–0.12*
			Mental HRQOL (SF12)	*0.06*	*–0.17*
Phillips & Stein (2007)	52.14	Divine (Punishing God reappraisals—RCOPE)	Personal loss (PLMI)	0.43	0.07
			Distress (GSI—BSI)	0.43	0.04
		Divine (Reappraisals of God's power—RCOPE)	*Stress-related growth (SRGS)*	*–0.11*	*0.05*
			Psychological wellbeing (PWB)	*–0.46*	*0.06*
			Personal loss (PLMI)	0.18	0.31
			Distress (GSI—BSI)	0.27	0.22
			Stress-related growth (SRGS)	*0.13*	*0.08*
			Psychological wellbeing (PWB)	*–0.23*	*–0.08*
Pirutinsky et al. (2011)	2.00	General (NRC—JCOPE)	Depression (CESD)	0.38	0.24
Reynolds et al. (2014)	104.28	General (NRC—Brief RCOPE)	Depression (BASC2)	0.37	–0.07
			Conduct problems (BASC2)	0.21	0.04
Rosmarin et al. (2013)	1.14	General (NRC—Brief RCOPE)	Psychosis (BASIS-24 Psychosis)	0.22	–0.10
			Depression (CESD)	0.41	–0.14
			Anxiety (PSWQ)	0.33	–0.10
			Psychological wellbeing (SOS)	*–0.41*	*–0.03*

Table 2 (*continued*)

Authors (year)	Time frame (weeks)	Type of struggle (measure description)	Type of adjustment[a] (measure description)	Cross. *R* S → A[b]	Long. β S → A[c]
Sherman et al. (2009)[d]	14.76	General (NRC—Brief RCOPE)	Depression (BSI)	0.32	0.26
			Emotional wellbeing (FACTBMT)	*–0.32*	*–0.22*
			Transplant concerns (FACTBMT)	*–0.29*	*–0.22*
Wadsworth et al. (2009)	26.04	General (NRC—RCOPE)	PTSD (UCLA PTSD Index)	0.39	0.04
			Depression (ASR)	0.18	–0.03
Webb (2008)	26.04	General (NRC—Brief RCOPE)	Depression (CESD)	0.40	0.13
Wilt, Grubbs, Lindberg, et al. (2017 - study 1)	2.00	Doubt (RSSS)	Anxiety (GAD7)	0.23	0.08
Wilt, Grubbs, Lindberg, et al. (2017 - study 2)	4.34	Doubt (RSSS)	Anxiety (GAD7)	0.27	0.05
Wilt, Grubbs, Lindberg, et al. (2017 - study 3)	52.14	Doubt (RSSS)	Anxiety (GAD7)	0.27	0.05
Wortmann et al. (2012)	8.68	General (RSS modified)	PTSD (IES-R)	0.25	0.04
			Depression (CESD)	0.43	0.04
			Stress-related growth (SRGS)	*0.00*	*0.01*
			Life satisfaction (SWLS)	*–0.22*	*–0.07*

Abbreviations: ASR = Adult Self Report, ATGS-9 = Attitudes toward God Scale, BASC2 = Behavior Assessment System for Children, 2nd Edition, BASIS-24 = Behavior and Symptom Identification Scale, BDI = Beck Depression Inventory, BMMRS = Brief Multidimensional Measure of Religiousness and Spirituality, BSI = Brief Symptom Inventory. CESD = Center for Epidemiological Studies Depression Scale, CDIS = Children's Depression Inventory Short Form, CPAQ = Chronic Pain Acceptance Questionnaire, DASS = Depression Anxiety Stress Scales, FACTBMT = Functional Assessment of Cancer Therapy—Bone Marrow Transplant, GAD7 = Generalized Anxiety Disorder-7, GSI = Global Symptom Index, ICG = Inventory of Complicated Grief, IES = Impact of Events Scale, JCOPE = Jewish Religious Coping Scale, LOT, Life Orientation Test, Medical Outcome Survey Short Form-12, NRC = Negative religious coping, PCL = PTSD Checklist, PCLM = PTSD Checklist Military Version, PSWQ = Penn State Worry Questionnaire, PIUQ = Problematic Internet Use Questionnaire. PLMI = Personal Loss from Mental Illness Scale, POMS = Profile of Mood States, PTGI = Post-Traumatic Growth Inventory, PVP = Problem Video Game Playing Scale, PWB = Scales of Psychological Well-being, RCOPE = Religious Coping Scale, RSS = Religious Strain Scale, RSSS = Religious and Spiritual Struggles Scale, SBQR = Suicidal Behavior Questionnaire), SES = Self-Esteem Scale, SF12 = Short Form 12, SOS = Schwartz Outcome Scale, SPQ = Shorter PROMIS Questionnaire, SRGS = Stress-Related Growth Scale, STAE = State-Trait Anger Expression Inventory, SWLS = Satisfaction with Life Scale, TAI = Trait Anxiety Inventory.

[a]Positive psychological adjustment measures and effect sizes are italicized and right-justified.

[b]Cross-sectional Pearson correlations between baseline r/s struggles and baseline psychological adjustment.

[c]Standardized regression coefficient of interest, or its approximation (i.e., partial correlation), reflecting the association between baseline r/s struggles and follow-up adjustment, controlling for the effect of baseline adjustment.

[d]To correct skewness, transformations were used—square-root for depression scores and log for negative religious coping scores.

sizes for positive and negative psychological adjustment were examined separately, as prior research suggested that the effect of r/s struggles may be stronger for negative psychological adjustment than positive psychological adjustment.

All 32 of the studies selected provided codable effect sizes for negative psychological adjustment. Meta-analysis of these studies yielded a small, significant effect size, suggesting r/s struggles predict modest worsening in negative psychological adjustment over time. Cross-sectional correlations were meta-analyzed for these studies as well, yielding a significant, small-to-moderate effect size, comparable to prior meta-analytic work on the cross-sectional relationship between r/s struggles and negative psychological adjustment (Ano & Vasconcelles, 2005).

Twelve studies provided codable effect sizes for positive psychological adjustment, and the effect size found was non-significant. This may indicate that there is no clinically significant relationship between r/s struggles and positive psychological adjustment over time. Alternatively, the lack of significance may be due to the smaller number of studies contributing to this effect size. It is also possible that the relationship between r/s struggles and well-being is nuanced, with effects emerging only for particular forms of well-being, such as perceived growth. Additionally, it may take more time for any positive effects of r/s struggles on well-being to emerge. In any case, further longitudinal studies are needed to clarify potential links between r/s struggles and well-being.

These findings are consistent with a primary r/s struggles model in which r/s struggles lead to changes in psychological adjustment (Pargament & Lomax, 2013). Perhaps because r/s struggles involve questions, tensions, and conflicts around beliefs, practices, and values of sacred importance, they have the capacity to disrupt the individual's adjustment in the emotional and psychological realm. Note, however, that the findings of this analysis do not preclude the validity of the secondary struggles model or a complex model, in which poor psychological adjustment precipitates or exacerbates r/s struggles, or r/s struggles and adjustment affect each other in a reciprocal fashion. Related to this, the data extracted for our analysis did not allow for testing and confirming some findings that the chronicity of r/s struggles is predictive of poorer mental health outcomes (e.g., Pargament, Koenig, Tarakeshwar, & Hahn, 2004).

Practically speaking, these findings underscore the importance of attending to r/s struggles within clinical and educational contexts. With respect to assessment, therapists can inquire about r/s struggles within their more general assessment process by asking a few basic questions, such as, "How have your psychological concerns affected

you spiritually?" (Pargament, 2007). In terms of interventions, therapists can help clients name and normalize their struggles, facilitate acceptance and reflection, and access resources (e.g., pastoral counseling, readings, and spiritual practices). A few studies evaluating the effects of psychological interventions designed to help people experiencing r/s struggles have yielded promising results. These include a program entitled Winding Road for college students (Dworsky et al., 2013) and psychiatric inpatients (Gibbel et al., in press) and a program for patients with HIV/AIDS (Tarakeshwar et al., 2005). As struggles are common in medical settings (e.g., Morgan et al., 2014; Winkelman et al., 2011), screening for r/s struggles could also facilitate the work of hospital chaplains (Bahraini et al., 2020; Fitchett & Risk, 2009; King et al., 2017).

There are limitations to our findings. First, although our results are consistent with r/s struggles' causal role in worsening psychological adjustment, the observational designs of the meta-analyzed studies mean that confounding variables might explain the observed effects. For example, the findings could be confounded by the effects of personality variables, such as a tendency toward negativity or neuroticism. It is noteworthy, however, that a few cross-sectional studies have shown that the links between r/s struggles and adjustment remain significant after controlling for neuroticism (Abu-Raiya et al., 2015) and the Big Five (Wilt, Grubbs, Pargament, et al., 2017).

Second, the samples were predominantly from the U.S. and were mostly white and Christian, with a few noted exceptions. It is unclear whether our longitudinal findings would generalize to other populations, although cross-sectional studies have linked r/s struggles to lower levels of adjustment among diverse religious groups including Buddhists (Falb & Pargament, 2013), Hindus (Tarakeshwar et al., 2003), Muslims (Abu-Raiya, Pargament, Exline, & Agbaria, 2015), and Jews (Rosmarin et al., 2009).

Third, there were a substantial number of studies that met the criteria for inclusion except for lacking the statistical information needed to calculate the effect size of interest. Our analysis suggests the results may be reliable and valid in spite of this, however. Notably, publication bias was found to be non-significant, suggesting the pooled effect size is unlikely to be inflated relative to the total body of literature, published and unpublished.

Fourth, our study can only speak broadly to the longitudinal association between spiritual struggles and negative psychological adjustment, as our analysis summarized findings from studies with a wide range of time frames, stressors, samples, religious affiliations, and specific forms of r/s struggles. While the lack of significant heterogeneity in our analyses suggests there are no systematic differences in effect sizes among the studies we synthesized, it is possible this reflects a lack of power to detect these differences. Publication of more longitudinal studies will allow for larger and/or more focused meta-analyses with accompanying moderation analyses, potentially revealing factors that may have an important impact on the size of the longitudinal association between r/s struggles and negative adjustment, such as the length of follow-up.

Fifth, our analysis cannot address the longer-term implications of r/s struggles. Only three studies in our analysis (Hunsberger et al., 2002; Kothari, 2016; Reynolds et al., 2014) have average time frames extending past one year, highlighting the importance of future studies that involve longer time frames. It may be that longer time frames reveal a different relationship between r/s struggles and psychological adjustment as compared to shorter time frames.

Finally, it is possible that deficits in the methodological quality of included studies biased our results. While included studies all used established measures of r/s struggles and psychological adjustment, most studies (21) had either a low initial response rate, unknown response rate, or used a design for which calculation of a response rate was not possible or appropriate, and a substantial number of studies (10) had low retention rates. Less than ideal response and retention rates could bias results of the present analysis if characteristics associated with the likelihood of participation or retention substantially moderate the degree to which r/s struggles are linked with changes in psychological adjustment over time. Again, tests for heterogeneity did not reveal systematic differences among effect sizes, suggesting study quality may not have had a substantial impact. However, as mentioned, this may be due to a lack of power. As the literature expands, a future meta-analysis might reveal how these variations in study quality moderate results.

In addition to examining the impact of possible moderators mentioned above, future larger meta-analyses could also examine other factors that may moderate the links between r/s struggles and poorer adjustment. A few studies have already identified buffers or exacerbators of these associations, such as acceptance of struggles (Dworsky et al., 2016), religious commitment, support, hope, and life sanctification (Abu-Raiya, Pargament, & Krause, 2016).

Furthermore, it would be enlightening to examine the power of a secondary r/s struggles model by calculating a pooled effect size for the prospective effect of psychological adjustment on r/s struggles. This effect could then be compared to the size of the primary r/s struggles model examined in this study. Relevant to this point is an eight-week longitudinal study by Pirutinsky et al. (2009), which examined the links between r/s struggles and depression among Orthodox Jews dealing with stress and worry. Consistent with a primary r/s struggles model, they found that r/s struggles predicted changes in depression; depression did not predict changes in r/s struggles over time. However, Wilt, Grubbs, Lindberg, et al. (2017) studied adolescent and adult samples over time frames of two weeks, one month, and one year, and found support for a secondary r/s struggles model with anxiety predicting increases in doubt-related struggles but not the converse. Whether primary, secondary, or complex models provide the best explanations of the ties between r/s struggles and adjustment may vary as a function of personal, situational, and social variables.

Overall, these findings highlight the significant implications of r/s struggles for psychological adjustment over time. The present research underscores the importance of better understanding how r/s struggles might influence recovery in the psychotherapeutic context, as well as the value of the further study of interventions targeting r/s struggles. Studies building on our findings are needed in order to identify the factors that mediate and moderate the ties between r/s struggles and adjustment, providing guidance on when, how, and for whom interventions for r/s struggles are likely to be beneficial.

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(*Appendices continue*)

Appendix A

Positive and Negative Psychological Adjustment

The following were considered indicators of positive psychological adjustment: positive affective states; reports of having grown from a stressor, such as benefit finding, post-traumatic growth, and stress-related growth; general quality of life, including general level of functioning and energy level; and well-being and other closely related concepts, including hope, optimism, self-esteem, self-acceptance, self-efficacy, and sense of coherence. Constructs not considered positive psychological adjustment included positive spiritual adjustment, specific types of adaptive behavior tangentially related to well-being (e.g., dental attendance, adherence, coping strategies), and measures of general health.

The following were considered indicators of negative psychological adjustment: negative affective states; general measures of distress; impairment in functioning; maladaptive behavior closely tied to psychopathology, such as externalizing behaviors; psychiatric diagnoses or core symptoms of psychiatric diagnoses, such as fatigue, sleep problems, and suicidality; substance abuse; and negative response to a particular stressor, such as burnout or compassion fatigue. Select measures of personality traits (e.g., neuroticism) were also considered negative psychological adjustment because of the potential of these variables to change over time (e.g., Bleidorn et al., 2018). Notable constructs *not* considered negative psychological adjustment included negative spiritual adjustment, substance use per se (vs. measures of substance abuse), subjective stressfulness of an event (i.e., primary appraisal of event stress); and specific kinds of pain or discomfort, such as headaches and gastrointestinal distress (though general measures of somatization and somatic concerns were considered reflective of psychological adjustment).

Appendix B

Religious Coping Search Terms

The following terms related to religious coping were entered exactly as follows into EBSCO HOST, along with terms related to r/s struggles found in the text of the article:

"religious coping" or "spiritual coping" or "prayer coping" or "collaborative coping" or "support coping" or "spiritually based coping" or "good deeds coping" or "deferring coping" or "receptive coping" or "pleading coping" or "self-directing coping" or "religious support" or "spiritual support" or "religious comfort" or "spiritual comfort" or "religious surrender" or "spiritual surrender" or "spiritual reappraisal" or "religious reappraisal" or "spiritual reframing" or "religious reframing."

Appendix C

Operational Definition of Religious Coping

For this study, religious coping was operationalized as a positive, adaptive or neutral way of engaging with religion or spirituality in order to manage or understand a stressor or stressors. For instance, finding comfort in spirituality as a way to manage a stressor and seeking spiritual support as a way to manage or understand a stressor were considered religious coping, while church attendance, religious affiliation, spiritual well-being, spiritual experiences, and an understanding of God as loving were not. Note that generally a scale purporting to measure religious coping was considered a measure of religious coping in this study, unless the description of the purported religious coping measure clearly indicated that the measure in question assessed something other than religious coping as defined here.

(*Appendices continue*)

Appendix D

Citations meeting criteria for inclusion except for inability to obtain necessary statistical information *,**

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*The effect size of interest was the standardized regression coefficient for baseline r/s struggles, with follow-up psychological adjustment as the criterion variable, controlling *only* for baseline psychological adjustment, using the same measure of psychological adjustment at both time points. The corresponding partial correlation for the same was considered an adequate estimate of the regression coefficient of interest. **When the effect size of interest or the appropriate partial correlation was not available, pearson correlations for all of the following relationships were needed in order to calculate the effect size of interest: T1 adjustment and T1 r/s struggles; T1 r/s struggles and T2 adjustment; T1 adjustment and T2 adjustment.

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