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Construction and validation of the apperception test God representations : An implicit measure to assess God representations

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Chapter 2.

God Representations and Aspects of Psychological Functioning: A Meta-Analysis

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Abstract

Context: Results of meta-analyses show weak associations between religiosity and well-being, but are based on divergent definitions of religiosity. ***Objective:*** The aim of this meta-analysis was to examine the magnitude of the associations between God representations and aspects of psychological functioning. Based on object-relations and attachment theory, the study discerns six dimensions of God representations: Two positive affective God representations, three negative affective God representations, and God control. Associations with well-being and distress and with self-concept, relationships with others and neuroticism were examined. ***Methods:*** The meta-analysis was based on 123 samples out of 112 primary studies with 348 effect sizes from in total 29,963 adolescent and adult participants, with a vast majority adherent of a theistic religion. ***Results:*** The analyses, based on the random-effects model, yielded mostly medium effect sizes ($r = .25$ to $r = .30$) for the associations of positive God representations with well-being, and for the associations of two out of three negative God representations with distress. Associations of God representations with self-concept, relationships with others and neuroticism were of the same magnitude. Various moderator variables could not explain the relatively high amount of heterogeneity. The authors found no indications of publication bias. ***Conclusion:*** The observed effect sizes are significantly stronger than those generally found in meta-analyses of associations between religiousness and well-being/mental health. Results demonstrate the importance of focusing on God representations instead of on behavioral or rather global aspects of religiosity. Several implications with respect to assessment, clinical practice, and future research are discussed.

Introduction

During the last decades, there has been a significant increase in attention in scientific research for religion in the context of mental health. In mental health care, religion has long been thought to have a negative effect on health (Neeleman & Persaud, 1995). This can be traced back to Sigmund Freud's view that religion is a projection of an infantile need for an authoritative being that can function as a father figure (Freud, 2004). As a consequence, religion was supposed to have a predominantly negative influence on mental health because, according to this view, religion would be accompanied by many restrictive rules that lead to strong feelings of guilt and fear of punishment by an angry god. Other psychologists (Rizzuto, 1979; Winnicott, 1971) have argued that religion may also have a positive influence on psychological functioning because believers may as well project positive attributes to their god. This can give them strength and may contribute to personal growth.

Although convincing evidence —as presented below— exists for the association between religiosity and well-being/mental health, not much is known yet about the underlying mechanisms that explain this relation. More insight is needed, and this is especially important for health professionals working with religious/spiritual patients. It might contribute to the development of interventions that may strengthen the potential positive influences of religion/spirituality (R/S), and to interventions that may lead to diminishing or solving negative influences.

There is a lot of debate about the definitions of religiosity and spirituality (Hill et al., 2000; Zinnbauer & Pargament, 2005). According to Koenig, King, and Carson (2012), the terms religion and religiosity are often used to refer to shared beliefs and rituals and to the membership of a faith community, whereas the term spirituality is often used to emphasize more individualistic beliefs and rituals. However, basically, both concepts share a belief in the sacred and the transcendental. In this meta-analysis, we will therefore use both terms interchangeably. However, the main focus of this study is on a specific aspect of religiosity and spirituality that is based on monotheistic religions (as, e.g. Christianity, Islam, and Judaism) that assume the existence of one personal God to whom the believer can relate (Davis, Granqvist, & Sharp, 2018b): the personal God representation.

In this meta-analysis, we will, amongst others, examine if the personal God representation has stronger associations with well-being/mental health than more general aspects of religiosity. There is confusion about the construct of God representations (Gibson, 2008). Terms like God concept, God image, and God representation are often used interchangeably. A useful distinction is that between two dimensions of God representations: cognitive/doctrinal beliefs (about how God is conceptually viewed by a person) and emotional/experiential feelings about God, about the personally experienced relationship with God (Davis, Moriarty, & Mauch, 2013; Zahl & Gibson, 2012). In this study we will focus on the relational/emotional/experiential dimension.

For adherents of a theistic religion, someone's God representation may indicate psychological mechanisms at work that could explain much of the association between religiosity and well-being. There are some sound reasons to focus on God representations concerning well-being and mental health. One of them is that findings from studies of the associations between broader defined religiosity and well-being suggest the importance of personal beliefs. Therefore, we will first explore the results of these findings. Another reason is that on theoretical grounds God representations can be viewed as an important explanation for the found associations between religiosity and wellbeing/mental health. We will subsequently discuss these theoretical grounds, based on attachment and object-relations theory. Well-being/mental health and its counterpart, psychological distress are summarized in this study with the term adjustmental psychological functioning, to emphasize the general notion that they can be

viewed as indicators of psychological adjustment (Ano & Vasconcelles, 2005; Salsman, Brown, Brechting, & Carlson, 2005).

The Associations Between Religiosity/Spirituality and Adjusmental Psychological functioning

The available meta-analyses of the associations between religion and adjustmental psychological functioning (Ano & Vasconcelles, 2005; Bergin, 1983; Hackney & Sanders, 2003; Smith, McCullough, & Poll, 2003; Witter, Stock, Okun, & Haring, 1985) suggest that in general being (more) religious is associated with higher well-being and with fewer mental health problems (see Table 1). The found associations are weak, but support the notions of Winnicott (1971) and Rizzuto (1979) about the potential positive influences of religiosity.

Various factors influence the strength and direction of the associations, such as the variety in dimensions and aspects of religiosity. Witter et al. (1985), for example, found stronger positive associations for activities than for beliefs. Hackney and Sanders (2003), in turn, found stronger associations for personal devotion than for institutional membership and ideology, whereas Smith, McCullough, and Poll (2003) found that extrinsic religiosity was positively, and other measures of religiosity (e.g., intrinsic religious orientation, religious attitudes, and beliefs), were negatively associated with depressive symptoms. A second factor is the distinction between positive and negative aspects of religiosity and of psychological adjustment. Results of Ano and Vasconcelles (2005), for example, suggest that positive aspects of religiosity (e.g. asking for forgiveness, seeking support from clergy, seeking spiritual connection) are more strongly associated with positive aspects of adjustmental psychological functioning, and negative aspects of religiosity (e.g. spiritual discontent, seeing God as punishing) more strongly with negative aspects of adjustmental psychological functioning. The relevance of these finer distinctions within the concept of religion (and spirituality) is that they may explain some of the ambiguous or inverse associations found in a minority of the included studies.

Most narrative reviews about the association between religiosity and adjustmental psychological functioning (Ellison & Levin, 1998; Gartner, Larson, & Allen, 1991; Koenig et al., 2012; Koenig, McCullough, & Larson, 2001; Larson et al., 1992; Payne, Bergin, Bielema, & Jenkins, 1991) also conclude that religiosity is predominantly positively associated with well-being, and predominantly negatively with mental problems, but that there are also studies with ambiguous or inverse results. One factor that seems related to negative or ambiguous results is psychopathology: Payne et al. (1991) found negative or no associations for the few studies with clinical samples in their review, and Koenig et al. (2012) found relatively more studies with positive associations between religiosity and mental problems for C-cluster Personality

Disorders (18 studies, 17% negative, 50% positive) and Bipolar Disorder (4 studies, 0% negative; 50% positive).

Table 1. *Meta-Analyses About the Association Between Religiosity and Well-Being/ Mental Health*

Study	Number of samples	Number of clinical samples	Measures of religiosity	Measures of well-being/mental health	Aggegrated association	Percentage of studies or effect sizes with positive /negative association
Bergin 1983	24	1	- Beliefs - Experiences - Activity - believers-nonbelie-vers	Clinical pathology measures	.09	47/23
Witter 1985	28	?	- Activities - Religiosity (single question) - Attitude	- Happiness - life satisfaction - Morale - general quality of life and well-being	.16	?
Hackney 2003	35	0	- Institutional - Ideological - Personal devotion	- Psychological distress - Life satisfaction - Self-actualization	.10	?/30%
Smith 2003	147	19 [1]	- Behaviors - Attitudes and beliefs - Orientation - Intrinsic - Extrinsic - Positive religious coping - Negative religious coping - Religious well-being - God concept	Depression	-.10	76/18
Ano 2005	49	?	Positive and negative religious coping in specific situations	Psychological adjustment measures	.33[2] -.12[3] .22[4] .02[5]	83/10

Note [1] adults 'with psychological concerns'; [2] positive coping and positive adjustment; [3] positive coping and negative adjustment; [4] negative coping and positive adjustment; [5] negative coping and negative adjustment; ? = not reported.

Explanations for the associations between R/S and well-being/mental health. Koenig et al. (2012) developed various comprehensive models to explain associations between religion and mental health. In their model for monotheistic religions they stress the importance of God representations: The relationship with God has direct effects on wellbeing and mental health, fostering positive emotions caused by a sense of being loved and protected by a beneficial divine being. They also include indirect effects in their model: religion generates social support, offers sources and strategies of coping, influences (good) choices, and diminishes the influence of negative life experiences. These effects are moderated by background factors as early life experiences, genetic factors shaping temperament, life events during adulthood, etc.

More specific explanations are offered by attachment and object-relations theory. Both developmental theories assume that a core element of personality and personality pathology, namely how persons view themselves and others (Livesley, 1998, 2013), influence how they see and experience their relationship with God. This approach of religion is known as 'relational spirituality' (Davis, Granqvist, & Sharp, 2018a; Hall, 2007a, 2007b) and also integrates findings from stress-coping theory, social cognition theory, and brain research.

Object-relations theory and attachment theory (Hall, 2007a, 2007b) both assume that mental representations of people are formed during early development, which in turn influence the way God representations are formed. These experiences lead to mostly unconscious relational schemas or internal working models, which comprise representations of self and others, as well as their affective quality.

Less optimal experiences of responsivity and availability, according to attachment theory, may result in insecure attachment styles, such as: (a) anxious attachment: trying to restore disturbed feelings of security by using hyperactivating strategies (e.g., expressing anxiety and anger) to establish the availability of the attachment figure; (b) avoidant attachment: trying to restore this inner sense of felt security by using deactivating strategies (e.g., suppressing disturbing emotions or thoughts (Bowlby, 1972, 2008; Bretherton & Munholland, 2008; Bretherton & Munholland, 1999; Mikulincer & Shaver, 2008). In normal development, internal working models foster the capacity for affect regulation and stress coping (Fonagy, Gergely, Jurist, & Target, 2004; Mikulincer & Shaver, 2008). Insecure working models of attachment relationships may confer risk for physical disease and psychopathology through non-adaptive coping and impaired stress and affect regulation (Maunder & Hunter, 2008). Several studies have confirmed the usefulness of the attachment theory framework in the domain of religion (Granqvist, 1998; Granqvist & Hagekull, 1999; Hall, Fujikawa, Halcrow, Hill, & Delaney, 2009; Kirkpatrick, 1998; Kirkpatrick & Shaver, 1990; Kirkpatrick & Shaver, 1992).

According to object relations theory (Fairbairn, 1954; Klein, 1946; Mahler, 1971; Winnicott, 1971), pathological internal working models involve less integrated representations of self and others. On the lowest levels, persons have difficulty in differentiating between the self and others, or in integrating positive and negative feelings about self or others. This often leads to emotional instability and the use of primitive defense mechanisms like splitting and projective identification. On lower levels others are predominantly viewed as less benevolent (affectionate, benevolent, warm, constructive involvement, positive ideal, nurturant) and more punitive (judgmental, punitive, and ambivalent) (Huprich, Auerbach, Porcerelli, & Bupp, 2015; Kernberg & Caligor, 1996). Higher, healthier levels correspond to more integrated and symbolized representations of self and others, involving affect tolerance, regulation, ambivalence and the ability to understand the perspective of others. There is also evidence of the usefulness of object-relations theory in the domain of religion (Brokaw & Edwards, 1994; Hall & Brokaw, 1995; Stalsett, Engedal, & Austad, 2010; Tisdale, Key, Edwards, & Brokaw, 1997).

Dimensions of God Representations

Most measures of God representations have been derived from these described theoretical frameworks, and therefore for this meta-analysis we based our dimensions of God representations predominantly on these theories: *Secure*, *anxious* and *avoidant* attachment to God (Granqvist & Hagekull, 1999; Kirkpatrick, 1998; McDonald, Beck, Allison, & Norsworthy, 2005), and *positive* and *negative* God representations, which we derived from measures using adjectives/attributes like benevolent, kind, supporting or wrathful, judging/punishing, for how God is perceived, and terms like gratitude, fear, anger etc., for the feelings a person experiences in his or her relationship with God (Benson & Spilka, 1973; Lawrence, 1997; Schaap-Jonker, Eurelings-Bontekoe, Verhagen, & Zock, 2002).

One aspect of God representations is not as clearly related to these theoretical frameworks, and regards the extent to which God —according to the subject— has power, exerts control, gives guidance (Benson & Spilka, 1973; Schieman, 2008). We refer to this aspect as the *God control* aspect.

God Representations and Dispositional Aspects of Psychological Functioning

Attachment and object-relations theory both assume that general schemas underlie both interpersonal representations of self and others and God representations. These general schemas or models are supposed to have trait-like characteristics. Traits are general 'underlying', not directly observable dispositions that have relative stability over time and are supposed to be related to heredity and upbringing (Fridhandler,

1986; Mischel, 2013; Strelau, 2001). Some scholars, for example, refer to attachment models as relatively stable traits (Green, Furrer, & McAllister, 2007) or chronic general models (Collins & Feeney, 2004). Davis et al. (2013) assume that God representations also have trait-like, chronic characteristics. However, it must be emphasized that these working models are especially determined by interactions with caregivers, and therefore have to be considered less stable than temperament-based traits.

If it is true that relatively stable general schemas underlie both God representations and internal working models of self and others, one would expect God representations and representations of self and others to be associated with each other. In attachment theory research in the domain of religion, this assumed association is known as the correspondence hypothesis (Granqvist, 1998; Kirkpatrick, 1998; Kirkpatrick & Shaver, 1990). But these authors also hypothesize that attachment to God representations may compensate for insecure or negative interpersonal representations (known as the compensation hypothesis). Hall et al. (2009) assume correspondence on the deeper level of (implicit) internal working models, and on a more behavioral level they expect evidence of compensation. This compensation implies that insecurely attached persons may be more actively involved in actions aimed at finding relief in religion and in the relationship with God.

We expect that God representations, are not only associated with adjustmental aspects of psychological functioning, but also with relatively stable, trait-like representations of self and others, and with neuroticism as an indicator of trait-like affect (dis)regulation. We will refer to these factors as dispositional aspects of psychological functioning. Existence of associations between God representations and dispositional aspects of psychological functioning can be considered as support for the importance of the ideas of attachment and object relations theory for understanding the development of God representations.

Aim of Meta-Analysis and Hypotheses

Aim of meta-analysis. In this meta-analysis we examine the associations between God representations and adjustmental aspects of psychological functioning, to see if these associations are stronger than the usually found associations with broader measures of religiosity. We also examine the associations between God representations and dispositional aspects of psychological functioning: theoretically related variables that are connected with internal working models of relationships: self-concept, relationships with others and neuroticism.

The meta-analytic method is suitable to detect sources of diversity (Borenstein, Hedges, Higgins, & Rothstein, 2005). Because we used a wide variety of God representation measures and measures of dispositional and adjustmental aspects of psychological functioning, originating from diverse samples, this meta-analysis especially aims at detecting sources of diversity. Therefore we performed analyses on three

levels, starting from the most general level that compromises all God representation dimensions and examining associations with undifferentiated adjustmental and dispositional aspects. On the second level, we split out the God representation measures in the six dimensions (*Secure attachment to God, Anxious attachment to God, Avoidant attachment to God, Positive God representations, Negative God representations, and God control*) again examining associations with undifferentiated adjustmental and dispositional aspects. On the third level, we examined more specific associations between dimensions of God representations and the adjustmental subdomains of well-being and distress and the dispositional subdomains self-concept, relationships with others, and neuroticism (as an operationalization of the capacity for affect regulation). We compared the strength of associations between these various measures. We also aimed to detect the effect of various moderator variables on the found associations. Finally we addressed the issue of publication bias, to determine whether in the selected studies an underrepresentation of studies with weak or non-significant associations existed.

Hypothesis 1. We expect that (a) positive God representations will be significantly and positively related to well-being and negatively to distress, and that (b) negative God representations will be significantly and negatively related to well-being and positively to distress. The strength of these associations will be larger (>.20) than the weak aggregated association of about $r = .10$ between religiosity and well-being/mental health that is generally found in the discussed meta-analyses, because we assume that God representations are a more determining aspect of religiosity than many other widely used measures.

Hypothesis 2. We expect that (a) positive God representations will be significantly and positively related to positive self-concept and to positive relationships with others, and negatively to neuroticism, and that (b) negative God representations will be significantly and negatively related to positive self-concept and to positive relationships with others, and positively to neuroticism.

Moderator analyses. To gain more insight into the association between God representations and psychological aspects, it is also important to examine the influence of potential moderator variables on this association. As moderator variables we use the various study- and sample characteristics of the included studies: (a) *context/respondent status* (samples with subjects with mental health problems or serious life problems); (b) *method of measurement* (self-report or implicit/indirect measures)*;* (c) *religion/denomination;* (d) *religiosity* (the degree of religious involvement); (e) *gender*; (f) *age*; (g) *quality of the study*; (h) *year of the study*; and (i) *quality of God representation measures*.

Method

Eligibility Criteria

Included were all studies with samples with a mean age of 15 years or older, regardless of design, using a combination of on the one hand a measure for God representations (aimed at a monotheistic belief in a personal god) and on the other hand a measure of an adjustmental or dispositional dimension factor (as defined), and of which we obtained a statistical association measure for one or more association(s) between them. Only scholarly (peer-reviewed) journal articles were included. No language restrictions were imposed. All studies complying with these criteria, dating from 1990 to May, 2015 were included.

Literature Search

The search strategy was developed by the first author, in cooperation with an experienced librarian/data information specialist and adjusted for the different search machines/databases. Searches were conducted in Psychology and Behavioral Sciences Collection, MEDLINE, PsycINFO and PsycARTICLES by the comprehensive search machine Academic Search Premiere, and in Science Direct, restricted to journals in the sections Nursing and Health Professions, Psychology and Social Sciences, in May 2015. Search terms for God representations were all possible combinations of the term G*od* with (different forms of) the terms *image* or *representation* or *concept* or *attachment*. These terms were combined with the terms for the adjustmental or for the dispositional dimension. For the adjustmental dimension the terms *anxiety*, *depression*, *pathology*, *distress*, *therapy*, *outcome*, *well-being*, *happiness*, *life satisfaction* and *adjustment* were used, and for the dispositional dimension the search consisted of the terms *personality*, *object relation*, *adult attachment* and *child attachment*.

Study Selection and Data Extraction Process

First, two researchers (first and third author) independently screened titles and abstracts for inclusion; articles on which both agreed about exclusion, were excluded. From the remaining articles, the full text was read and independently assessed. Disagreement or doubt was resolved in consensus discussions. This resulted in 135 initial studies to be included.

Fifty-six studies of forty-nine authors did not report (all) correlations. Authors of studies with missing data or without the required data format for any of the relevant associations were approached by email in an attempt to obtain the correct data. Two reminders were sent in case of no response. Twenty-five authors replied (51%), 13 authors (26.5%) provided us with the missing correlations for 20 studies, 12 replied that the data were not available anymore. Twenty-one did not respond to the emails, and from three authors their email address was unknown or no longer operational.

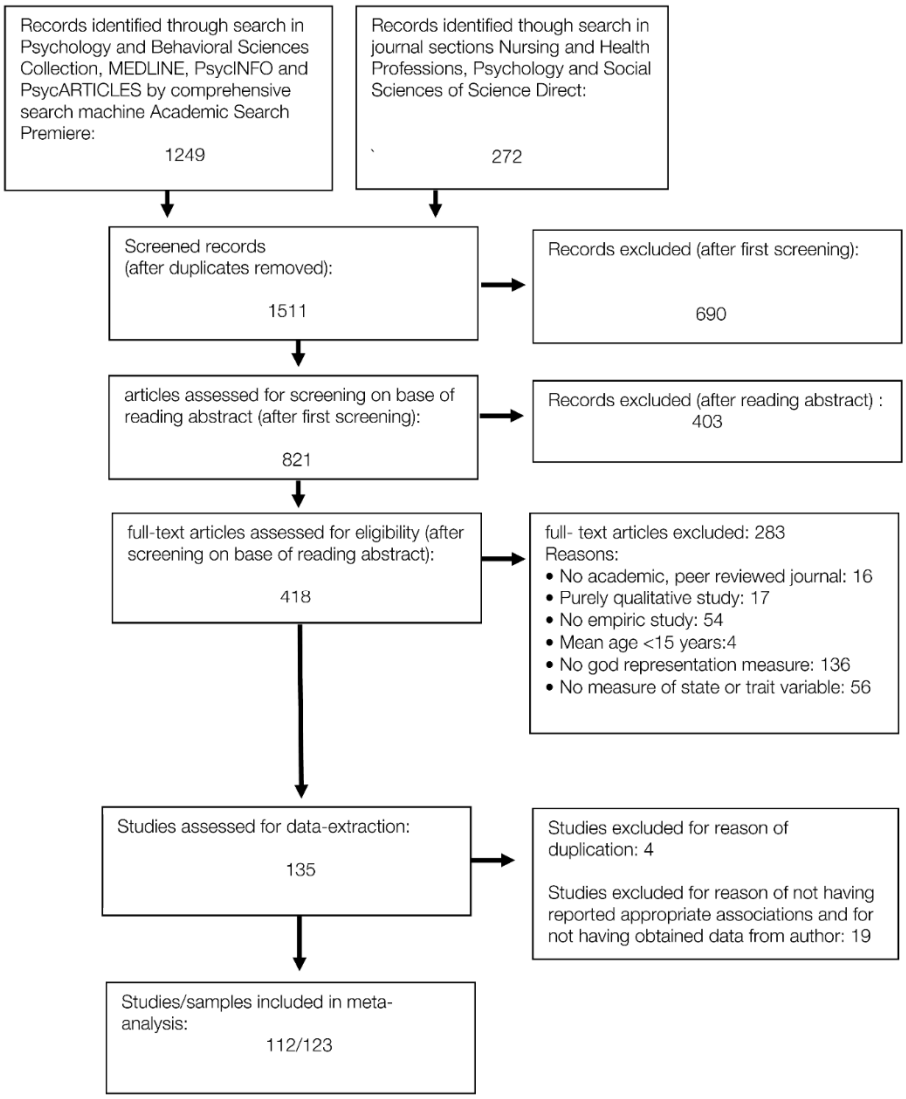

Figure 1. Flow Diagram of Study Selection

From the remaining 36 incomplete reporting studies, 17 studies could be included because they reported about at least one of the associations of this meta-analysis. The remaining (36 – 17 =) 19 studies had to be excluded from the meta-analysis because they did not report about any associations between the measures of this meta-analysis. This resulted in (135 – 19 =) 116 studies. Four of these studies were excluded because

they reported about the same samples and measures, resulting in (116 – 4 =) 112 studies.

Four studies had the same samples but reported about different measures. These studies were combined, resulting in (112 – 4 =) 108 separate or combined studies. Ninety-six of these studies consisted of one sample, 10 studies had two samples with appropriate associations, one study had three samples, and one study had four samples with appropriate associations, resulting in (96 x 1 + 10 x 2 + 1 x 3 + 1 x 4) = 123 independent samples (Figure 1).

Data from selected studies were extracted by the first author. The third author checked the accuracy of extraction on a sample of 22 of the 112 studies. Only one minor incorrect extraction was discovered, implying that the accuracy of data extraction was good.

Assessment of Methodological Quality of Studies

Because most studies had an observational design, many of the criteria of a well-known and widely used tool for assessing risk of bias —The Cochrane Collaboration tool— were not applicable. Therefore an adjusted tool was used, based on a selection of the criteria of the Newcastle-Ottawa Scale adapted for cross-sectional studies

(Kocsis et al., 2010) and of a checklist for the evaluation of research articles (Durant, 1994). It addresses the following aspects: *selection* (sample size, method of acquisition and criteria for in- and exclusion, non-response), *measurement* (method of measurement, reliability and validity), *statistics* (selection of adequate tests, dealing with confounders) and *conclusions* (logic, limitations). Every aspect was independently assessed by the first and third author on a three-point scale (0 to 2 points), resulting in a maximum score of 18 points. When scores of both raters differed at least three points, the scores on every criterion were assessed on the basis of consensus (12.6% of the quality scores had to be discussed this way). Total-score differences less than three were averaged. The interrater reliabilities were good to excellent, according to the Intra Class Correlation Coefficients (two-way random effects model, absolute agreement) for the independently scored quality-scores: ICC = .71 (single measure) /.83 (average measure).

Measures

God representation scores were categorized into three groups, consisting of in total six dimensions, based on theoretical distinctions. The first group contained all *attachment to God* measures, measuring the way the person feels and acts regarding his attachment-based relationship with God. Within this group, three types of measures were distinguished: (1) *secure attachment to God* (a mix of measures with only secure

attachment items and measures with secure and insecure items, placed on one dimension; (2) *anxious attachment to God*; (3) *avoidant attachment to God*. The second group of measures is called *positive/negative God representations* and focuses on the way a person perceives or affectively experiences God; here every measure is reduced to a (4) *positive image of God* or a (5) *negative image of God*. The third type of measure, (6) *God control* measures, regards the extent of *control*, *influence*, or *power* that is attributed to God. This also includes seeing God as a *judging/punishing* God, as far as it is not taken personally.

For the *adjustmental aspects of psychological functioning,* measures of (1) *well-being/adjustment* and of (2) *distress* were chosen. For well-being, studies with a variety of measures have been selected, such as *satisfaction* (of work, body, marriage, etc.), *adjustment* (to work, or after trauma), *personal growth* (after a crisis), *therapy outcome*, or *general measures of well-being*. For distress, also studies with a wide range of measures have been used: *general distress*, *anxiety, depression, dissatisfaction, state-anger,* etc.

The selection of measures of *dispositional aspects of psychological functioning* was based on attachment theory and object relations theory. For (1) *self-concept*, studies with measures of *self-concept* and *locus of control* were selected. *For (2) relationships with others*, studies with measures of *object-relational functioning* and *interpersonal attachment* (partners, parents, friends) were selected. All scores were treated as either secure/positive or insecure/negative representations of self and others. The link with *affect regulation* was established by selecting studies that measured (3) *worrying*, and the Big Five dimension *neuroticism* (negatively); or disposition measures of *hope* and *optimism* (positively). In Table 2 we listed the type(s) of measures we extracted from each study.

Assessing Moderator Factors

Assessing study- and sample characteristics/moderator factors took place on the basis of consensus, and involved the following variables and categories:

(1) *context/respondent status* (1 = sample with a non-patient mental health status, no serious life-events/problems; 2 = sample with non-patient status, but characterized by suffering from serious life-events/problems; 3 = sample defined by patient status);

(2) *method of measurement (*1 = God representations and psychological functioning measured with self-report only, 2 = only God representations measured otherwise than with self-report, 3 = only psychological functioning measured otherwise than with self-report, 4 = God representation and psychological functioning measured otherwise than with self-report);

(3) *religiosity (*1 = highly religious (> 80%); 2 = not highly religious, or unknown);

(4) *religion/denomination (1* = orthodox Christian (> 80%), 2 = mainstream of mixed Christian, 3 = evangelical/baptistic (> 80%), 4 = mixed Christian/other religions, 5 = Jewish, 6 = Islamic, 7 = other theistic religions, 8 = mixed religious/non-religious (non-religious > 20%);
(5) *sex* (1 = predominantly male (> 80%), 2 = predominantly female, 3 = mixed);
(6) *age* (1 = mean age between 15 and 25 years, 2 = mean age between 25.1 and 50 years, 3 = mean age higher than 50 years);
(7) *year of study*
(8) *quality of study* (0–18 points);
(9) *quality of God representation measures* (5 = all measures valid/reliable, 4 = mix of valid/reliable and moderately valid/reliable instruments, 3 = only moderately valid/reliable instruments, 2 = mix of moderately and weakly valid/reliable instruments, 1 = only instruments with weak or unknown validity/reliability).

Table 2 shows the scores on the moderator variables for each study, Table 3 shows the distribution of the number of studies across the categories of the moderator variables, overall and per combination of God representation measure and dispositional or adjustmental measures.

Calculation of Effect Sizes

Pearson's Correlation coefficient as effect size. The majority of selected studies (90%) reported the Pearson correlation coefficient for the associations between God representations and the dispositional or adjustmental dimension. For studies reporting data in other formats *and* for which we did not obtain correlation coefficients from the authors, data were transformed using standard meta-analytic calculations (Borenstein et al., 2005). These scores were then imported in the software program for meta-analyses Comprehensive Meta-Analysis Version 2 (CMA, Borenstein, Hedges, & Rothstein, 2014), leading to 30 possible outcomes per study: six types of God representation measures x five other measures (two types of adjustment measures + three types of disposition measures). In the present meta-analysis, this resulted in 348 effect sizes from 123 independent samples (average of 2.83 effect sizes (ES's) per sample). Effect sizes were assigned a positive value if they were consistent with the a priori predictions, and a negative value if they were inconsistent with the a priori predictions. All analyses for the present study were performed using the CMA software. Following Cohen (1988), correlations of .10 to .29 are considered as small effect sizes, correlations of .30 to .49 as medium effect sizes, and correlations of at least .50 as large effect sizes.

Table 2. *Study/Sample Characteristics*

Study name	God representation	Dispositional	Adjustmental	Sample size	Respondent Status	Measurement	Religiosity	Religion	Sex	Age	Quality study	Quality God Rep Measure
Abdelsayed 2013	P	N,S		75	NP	ASR	HR	OC	M	26-50	12	5
Alavi 2013	P,N		D	100	SLP	ASR	NHR	CO	Mx	26-50	7	4
Allen 2014	P	S	D,W	267	NP	ASR	HR	OC	Mx	15-25	13	5
Ano 2013	As,An,Av,P	N	D	309	NP	ASR	NHR	MC	Mx	15-25	13	4
Basset 2003	P,N	S		102	NP	ASR	NHR	MC	Mx	15-25	8	1
Bassett 2008	P,N,C	N		133	NP	ASR	NHR	MC	Mx	15-25	8	5
Bassett 2009	C	N		117	NP	ASR	HR	MC	Mx	15-25	12	4
Bassett 2013	An,N	R		152	NP	ASR	HR	MC	Mx	15-25	10	5
Beck 2004 study2	An, Av	R		118	NP	ASR	NHR	MC	Mx	15-25	11	3
Beck 2004 study3	An,Av	R		109	NP	ASR	NHR	MC	Mx	15-25	12	3
Belavich 2002	As,An,Av		W	155	SLP	ASR	NHR	CO	Mx	26-50	12	4
Bickerton 2014, 2015	An,Av	N	D	835	NP	ASR	HR	MC	Mx	26-50	12	4
Birgegard 2004 exp1	An	R		29	NP	ASR	NHR	MC	Mx	15-25	11	5
Birgegard 2004 exp2	An	R		47	NP	ASR	NHR	MC	Mx	26-50	11	5
Birgegard 2004 exp3	An	R		89	NP	ASR	NHR	MC	Mx	26-50	11	5
Bishop 2014	An		D,W	261	SLP	ASR	HR	RN	M	>50	14	5
Braam 2008a	P,N,C	N	D	60	NP	ASR	NHR	MC	Mx	>50	14	5
Braam 2008b	P,N,C	N	D	59	NP	ASR	NHR	MC	Mx	26-50	17	5
Braam 2014	P,N		D	292	MHP	ASR	NHR	MC	Mx	>50	17	5
Bradshaw 2008	P,N		D	1629	NP	ASR	NHR	MC	Mx	26-50	16	3
Bradshaw 2010	As,An,P,N		D	1041	NP	ASR	NHR	MC	Mx	>50	16	3
Brokaw 1994	P,N,C	R		92	NP	PSN	NHR	MC	Mx	15-25	14	4

Table 2 (Continued).

Study name	God representation	Dispositional	Adjustmental	Sample size	Respondent Status	Measurement	Religiosity	Religion	Sex	Age	Quality study	Quality God Rep Measure
Buri 1993	P	R,S		392	NP	ASR	HR	MC	Mx	15-25	14	5
Cassibba 2008	As	R			NP	PSN	NHR	MC	Mx	26-50	17	3
Cecero 2004-Fordham	P	R,S	D	205	NP	ASR	NHR	MC	Mx	15-25	12	3
Cecero 2004-Nau	P	R,S	D	68	NP	ASR	NHR	RN	Mx	15-25	12	3
Ciarrocchi 2009	P		D,W	541	NP	ASR	NHR	RN	Mx	26-50	14	5
Dickie 2006	P,C	R,S		132	NP	PSGN	NHR	MC	Mx	15-25	11	2
Dumont 2012 ACOA	An,AV		W	96	SLP	ASR	NHR	EB	F	15-25	14	4
Dumont 2012 nonACOA	An,AV		W	171	NP	ASR	NHR	EB	F	15-25	14	4
Eriksson 2009	P		D	111	NP	ASR	NHR	MC	Mx	26-50	13	5
Eurelings-Bontekoe 2005	P,N,C	R,S	D	206	NP	ASR	NHR	MC	Mx	26-50	16	5
Exline 2013 study 1	N	R		471	NP	ASR	NHR	CO	Mx	26-50	12	5
Exline 2013 study 2	An, N	R		236	NP	ASR	NHR	RN	Mx	15-25	13	5
Exline 2014	An,N		D	1025	NP	ASR	NHR	MC	Mx	15-25	14	5
Feenstra 2008	As		W	135	NP	ASR	NHR	MC	Mx	15-25	12	3
Fergus 2014	An,Av	R	D	450	NP	ASR	NHR	RN	Mx	26-50	13	5
Fisk 2013 study 1	An,N,C	S	D	157	NP	ASR	HR	MC	Mx	26-50	10	5
Fisk 2013 study 2	An,N		D	139	NP	ASR	HR	MC	Mx	15-25	11	5
Freeze 2015 study 1	An,Av	S	W	117	NP	ASR	NHR	OC	Mx	26-50	14	4
Freeze 2015 study 2	An,Av		D,W	185	NP	ASR	NHR	EB	Mx	26-50	14	4
Gall 2004	P,N,C	N,S	W	34	SLP	ASR	NHR	MC	M	>50	12	5
Gall 2007	P,C	N,S	D,W	101	SLP	ASR	NHR	CO	F	26-50	15	5
Gall 2009	P,N	N	D,W	93	SLP	ASR	NHR	MC	F	>50	15	5
Ghafoori 2008	An, P	R	D	102	SLP	PSN	NHR	RN	Mx	>50	15	5

Table 2 (Continued).

Study name	God representation	Dispositional	Adjustmental	Sample size	Respondent Status	Measurement	Religiosity	Religion	Sex	Age	Quality study	Quality God Rep Measure
Goeke-Morey 2014	P		D	667	NP	ASR	NHR	MC	M	15-25	15	5
Gonsalvez 2010	N		D	179	NP	ASR	NHR	RN	Mx	15-25	13	4
Granqvist 1999	An	R		156	NP	ASR	NHR	RN	Mx	15-25	12	3
Granqvist 2001	An	R		196	NP	ASR	NHR	RN	Mx	15-25	12	3
Granqvist 2005	As,An	R		197	NP	ASR	NHR	CO	Mx	26-50	13	3
Granqvist 2007	P,N	R		70	NP	PSN	NHR	RN	Mx	26-50	16	5
Granqvist 2012	An,Av,P	R		352	NP	ASR	NHR	JW	Mx	15-25	12	5
Greenway 2003 Females	P,N	S	D	132	NP	ASR	NHR	MC	F	26-50	10	3
Greenway 2003 Males	P,N	S	D	69	NP	ASR	NHR	MC	M	26-50	10	3
Grubbs 2013 sample1	N	N		413	NP	ASR	NHR	RN	Mx	15-25	14	5
Hale-Smith 2012	P,C	S		614	NP	ASR	NHR	RN	Mx	15-25	13	5
Hall 1998	N	R		76	NP	ASR	NHR	RN	Mx	26-50	11	3
Hall 2002	An,N	R		438	NP	ASR	NHR	RN	Mx	15-25	9	3
Hancock 2010	An,Av		D	96	NP	ASR	NHR	RN	Mx	26-50	11	4
Hernandez 2010	As		D	221	NP	ASR	NHR	MC	Mx	15-25	10	3
Ho 2013	As	N,S	D	336	NP	ASR	NHR	MC	Mx	15-25	14	5
Homan 2010	An,Av		D	231	NP	ASR	NHR	MC	F	15-25	12	4
Homan 2012	An		D	94	NP	ASR	NHR	MC	M	15-25	12	4
Homan 2013	An,Av	R	D,W	104	NP	ASR	NHR	RN	F	15-25	12	4
Homan 2014a	An,Av	S	D,W	188	NP	ASR	NHR	RN	Mx	26-50	15	4
Homan 2014b	An,Av		D	186	NP	ASR	HR	MC	F	15-25	11	4
Houser 2013	An,Av	N,R		251	NP	ASR	NHR	MC	Mx	15-25	12	4
Jankowski 2014	An	S		211	NP	ASR	NHR	CO	Mx	26-50	12	5
Kelley 2012	As	R,S	D,W	93	SLP	ASR	NHR	MC	F	26-50	13	5
Kézdy 2013	An,Av,P,N	S	D	215	NP	ASR	NHR	MC	Mx	26-50	11	5

Table 2 (Continued).

Study name	God representation	Dispositional	Adjustmental	Sample size	Respondent Status	Measurement	Religiosity	Religion	Sex	Age	Quality study	Quality God Rep Measure
Kirkpatrick 1990,1992	As,P,N	R	W	147	NP	ASR	NHR	RN	F	26-50	13	5
Kirkpatrick 1998	P,N	R		1126	NP	ASR	NHR	MC	Mx	15-25	13	5
Knabb 2014a	As,An,Av,P	R	D	138	NP	ASR	NHR	MC	Mx	26-50	15	5
Knabb 2014b Fs	An,Av,P		W	58	NP	ASR	NHR	MC	F	26-50	14	5
Knabb 2014b Ms	An,Av,P		W	58	NP	ASR	NHR	MC	M	26-50	14	5
Knabb 2014c	An,Av	N	D	179	NP	ASR	NHR	MC	Mx	15-25	12	5
Krause 2009	P	S		537	NP	ASR	NHR	RN	Mx	>50	13	1
Krause 2015	P	S		985	NP	ASR	NHR	RN	Mx	>50	14	1
Krumrei 2013	P,N		D	208	NP	ASR	NHR	JW	Mx	26-50	14	5
Lewis-Hall 2006	An	S	D,W	181	NP	ASR	NHR	EB	Mx	26-50	13	5
Limke 2011	An,AV	S		173	NP	ASR	NHR	RN	Mx	15-25	11	4
Mattis 2003	P	N		149	NP	ASR	NHR	RN	Mx	26-50	12	3
McDonald 2005	An,Av	R		101	NP	ASR	NHR	MC	Mx	15-25	9	4
Mendonca 2007	P,N	N	D,W	321	NP	ASR	NHR	MC	Mx	26-50	11	5
Miner 2009	As	N		116	NP	ASR	NHR	RN	Mx	26-50	13	3
Miner 2013,2014	An,AV,P		D	225	NP	ASR	HR	MC	Mx	26-50	13	3
Namini 2009	As		D	50	NP	ASR	NHR	EB	Mx	26-50	11	3
O'Grady 2012	An,N		W	108	SLP	ASR	NHR	RN	Mx	26-50	12	5
Prout 2012	An,Av		W	46	MHP	PSN	NHR	MC	Mx	26-50	12	4
Reiner 2010	An,Av	R	D	276	NP	ASR	NHR	EB	Mx	15-25	13	4
Reinert 2005	An,AV,N	R,S		75	NP	ASR	NHR	MC	M	15-25	14	5
Reinert 2009	An,P,N	R		150	NP	ASR	NHR	RN	Mx	15-25	12	4
Reinert 2012	An,P,N	R,S		305	NP	ASR	NHR	RN	Mx	15-25	14	4
Rouse 2012 study1	As	N,S		345	NP	ASR	NHR	CO	Mx	15-25	13	4
Miner 2009	As	N		116	NP	ASR	NHR	RN	Mx	26-50	13	3
Miner 2013,2014	An,AV,P		D	225	NP	ASR	HR	MC	Mx	26-50	13	3

Table 2 (Continued).

Study name	God representation	Dispositional	Adjustmental	Sample size	Respondent Status	Measurement	Religiosity	Religion	Sex	Age	Quality study	Quality God Rep Measure
Namini 2009	As		D	50	NP	ASR	NHR	EB	Mx	26-50	11	3
O'Grady 2012	An,N		W	108	SLP	ASR	NHR	RN	Mx	26-50	12	5
Prout 2012	An,Av		W	46	MHP	PSN	NHR	MC	Mx	26-50	12	4
Reiner 2010	An,Av	R	D	276	NP	ASR	NHR	EB	Mx	15-25	13	4
Reinert 2005	An,AV,N	R,S		75	NP	ASR	NHR	MC	M	15-25	14	5
Reinert 2009	An,P,N	R		150	NP	ASR	NHR	RN	Mx	15-25	12	4
Reinert 2012	An,P,N	R,S		305	NP	ASR	NHR	RN	Mx	15-25	14	4
Rouse 2012 study1	As	N,S		345	NP	ASR	NHR	CO	Mx	15-25	13	4
Rouse 2012 study2	As	N,S		70	NP	ASR	NHR	MC	Mx	15-25	13	4
Rowatt 2002	An,Av	N	D,W	323	NP	ASR	NHR	MC	Mx	26-50	10	3
Sandage 2010a	An,N		D	181	NP	ASR	NHR	MC	Mx	26-50	12	5
Sandage 2010b	An	R	D,W	213	NP	ASR	NHR	CO	Mx	26-50	12	5
Sandage 2013	An	R		139	NP	ASR	NHR	MC	Mx	26-50	13	5
Schaap-Jonker 2002	P,N,C		D	46	MHP	ASR	NHR	MC	Mx	26-50	10	3
Schaefer 1991	P,N,C	N		161	NP	ASR	NHR	RN	Mx	15-25	14	5
Schieman 2006	C	S		1167	NP	ASR	NHR	RN	Mx	>50	15	3
Schreiber 2011,2012	C		D,W	129	SLP	ASR	NHR	MC	F	>50	15	3
Schwab 1990	P,N	N	D	149	NP	ASR	NHR	MC	Mx	26-50	12	3
Siev 2011	P,N		D	147	MHP	ASR	NHR	CO	Mx	26-50	14	5
Sim 2011	As	N,R,S	D	106	NP	ASR	NHR	CO	Mx	15-25	14	6
Simpson 2008	P	R		298	NP	ASR	HR	MC	Mx	26-50	12	5
Steenwyk 2010	P,N	N	W	254	NP	ASR	HR	MC	Mx	15-25	15	4
Strawn 2008	P	N		204	NP	ASR	NHR	MC	Mx	26-50	12	3
Sutton 2014	An,Av	N		389	NP	ASR	NHR	MC	Mx	15-25	13	4
TenElshof 2000	P	R		216	NP	ASR	HR	MC	Mx	15-25	13	5
Tisdale 1997	P	R,S		99	MHP	ASR	NHR	EB	Mx	26-50	10	4

Table 2 (Continued).

Study name	God representation	Dispositional	Adjustmental	Sample size	Respondent Status	Measurement	Religiosity	Religion	Sex	Age	Quality study	Quality God Rep Measure
Tran 2012	P,N		D	449	MHP	ASR	NHR	RN	M	>50	16	1
Wei 2012	As,Av		D,W	183	NP	ASR	NHR	EB	Mx	26-50	13	3
Witzig 2013	N	N	D,W	302	NP	ASR	NHR	EB	Mx	26-50	15	5
Wood 2010 study2	N	N	D	93	NP	ASR	NHR	RN	Mx	15-25	12	3
Wood 2010 study3	N		D,W	109	NP	ASR	NHR	MC	Mx	15-25	12	3
Wood 2010 study4	N	N	D	304	NP	ASR	NHR	CO	Mx	15-25	12	3
Wood 2010 study5	N	N		162	NP	ASR	NHR	RN	Mx	15-25	12	5
Yi 2014	P		D,W	295	NP	ASR	NHR	MC	Mx	26-50	14	3
Zahl 2012	An,Av,P,N	R,S	W	415	NP	ASR	NHR	MC	Mx	15-25	12	4

Note.

God representations:
As = Secure attachment to God
An = Anxious attachment to God
Av = Avoidant attachment to God
P = Positive God representations dimension
N = Negative God representations dimension
C = God control

Disposition measure:
N = Neuroticism
R = Relationship with others
S= Self-concept

Adjustment measure:
D = Distress
WB= Well-being

Sex:
M = Males (>80%)
F = Females (>80%)
Mx = Mixed sex

Religion:
OC = Orthodox Christian
OC = Orthodox Christian
MC = Mainstream or mixed Christian
EB = Evangelical/Baptist
CO = Christian/other religions
JW = Jewish
RN = Religious/non-religious

Respondent Status:
NP = Non-patient
SLP = Serious Life Problems
MHP = Mental Health Patient

Religiosity:
HR = Highly religious
NHR = Not highly religious

Measurement:
ASR = All self-report
PSN = Psychol. variable not self-report
PSGN = both not self-report

Quality of God representation instruments:
5 = All valid/reliable
4 = Mix of valid/reliable and moderately valid/ reliable
3 = Only moderately valid/reliable
2 = Mix of moderately and weakly valid/ reliable
1 = Only weakly valid/reliable or unknown

Table 3. *Study and Subgroup Characteristics*

Study characteristics	Number of studies	Number of effect sizes	Sec ATG x disp	Sec ATG x adj	Anx ATG x disp	Anx ATG x adj	Avd ATG x disp	Avd ATG x adj	Pos GR x disp	Pos GR x adj	Neg GR x disp	Neg GR x adj	God Cntr x disp	God Cntr x adj
Context/respondent status														
-No problems	106	291	10	9	36	**27**	19	21	36	**26**	31	**23**	11	2
-Serious life problems	11	44		2		**5**		2		**5**	2	**4**	2	3
-Mental health problems	6	13	1	1		**1**		1	1	**4**		**4**		1
Method of measurement														
-Only self-report	117	322	10	12	36	31	19	23	36	34	31	31	11	6
-State and/or trait otherwise than self-report	5	12	1			2		1	3	1	2		1	
-God representation and trait or state otherwise than self-report	1	4							1				1	
Religiosity														
-Highly religious	14	32			1	**5**	1	3	**6**	3	2	3	2	
-Not highly relig./unknown	109	316	11	12	35	**28**	18	21	**34**	32	31	28	11	6
Denomination														
-Orthodox Christian	3	9			**1**	**1**	**1**	1	2	1				
-Mainstream or mixed Christian	66	207	6	6	**19**	**18**	**12**	**13**	**24**	**25**	**18**	**21**	9	5
-Evangelic/Baptist	9	25		2	**2**	**5**	**1**	**5**	**1**		**1**	**1**		
-Mixed Christian/ other religions	10	25	2	1	**3**	**2**		**1**	**1**	**2**	**3**	**2**	1	1
-Jewish	2	5			**1**		**1**		**1**	**1**		**1**		
-Mixed religious/ not religious	33	77	3	3	**10**	**7**	**4**	**4**	**11**	**6**	**11**	**6**	3	

Table 3 (Continued).

Study characteristics	Number of studies	Number of effect sizes	Sec ATG x disp	Sec ATG x adj	Anx ATG x disp	Anx ATG x adj	Avd ATG x disp	Avd ATG x adj	Pos GR x disp	Pos GR x adj	Neg GR x disp	Neg GR x adj	God Cntr x disp	God Cntr x adj
Sex														
-(>80%) male	8	28			1	**2**	1	**1**	**3**	**5**	3	3	1	1
-(>80%) female	13	48	2	2	1	**7**	1	**6**	**4**	**5**	3	3	1	2
-Mixed	102	272	9	10	34	**24**	17	**17**	**33**	**25**	27	25	11	3
Mean age														
-15-24 years	55	143	**5**	**5**	**21**	**12**	**13**	**9**	**18**	**7**	**17**	**8**	**6**	4
-25-50 years	56	166	**6**	**5**	**15**	**18**	**6**	**15**	**16**	**21**	**13**	**17**	**4**	2
-> 50 years	12	39		**1**		**3**			**6**	**7**	**3**	**6**	**3**	
Study Quality														
-High (>14 points)	18	68												
-Moderate (11-14 points)	92	264												
-Low (< 11 points)	14	43												
Quality of God representation measures														
-All measures valid/reliable	53	260	4	3	**15**	**13**	**4**	**5**	**19**	**17**	**18**	**14**	9	4
-Mix of valid/reliable and moderately valid/reliable measures	34		3	3	**14**	**17**	**12**	**16**	**10**	**7**	**8**	**7**	2	
-Only moderately valid/reliable measures	32	75		3	**7**	**3**	**3**	**3**	**8**	**10**	**6**	**9**	1	
-Mix of measures with moderate and weak or unknown validity/reliability	1		3						**1**				1	2
-Weak or unknown validity/reliability	3	13	1	1					**2**	**1**	**1**	**1**		

Table 3 (Continued).

Note. Rows of boldfaced numbers have at least two categories with at least four studies for the specific characteristic. Sec ATG = Secure attachment to God dimension; Anx ATG = Anxious attachment to God dimension; Avd ATG = Avoidant attachment to God dimension; Pos GR = Positive God representations dimension; Neg GR = Negative God representations dimension; God Cntr = God control dimension; disp = dispositional measures; adj = adjustmental measures.

Calculations of effect sizes on three levels. We calculated effect sizes on three levels of varying abstraction. On the first level, we examined the associations of undifferentiated God representations with respectively undifferentiated adjustmental and undifferentiated dispositional aspects. For calculating effect sizes on this level, multiple correlations per individual study were averaged, to meet the statistical assumption of independence required for meta-analysis. In doing so, we followed standard meta-analytic procedures (Horvath & Symonds, 1991; Martin, Garske, & Davis, 2000).

On the second level, we examined the associations between the six dimensions of God representations and undifferentiated adjustmental measures and the associations between the six dimensions of God representations and undifferentiated dispositional measures, 12 (6 x 2) effect sizes in total.

On the third level, we examined associations between each dimension of God representations and the subdomains of the adjustmental aspects (well-being and distress) and associations between each dimension of God representations and the subdomains of the dispositional aspects (self-concept, relationships with others and neuroticism), 30 effect sizes in total.

For determining the significance of the effect sizes, we lowered the usual 5% level of significance to 0.1% ($p = .001$) because we calculated 42 (12 + 30) separate effect sizes. This correction was aimed at diminishing the risk of type I errors ('false positives') given the large number of separate tests.

The random-effects model. Calculations of effect sizes were based on the random-effects model, because we expected the true effect size to vary between studies due to varying measures, used within very different populations under various circumstances. This has its effect on the weight assigned to each individual study as a function of the within-study variance.

Heterogeneity Analysis

Heterogeneity was examined by inspecting several aspects of the aggregated effect sizes, using forest plots. Differences in effect sizes between individual studies were examined for the presence of heterogeneity using the Q_B statistic, and the I^2-value, which is a measure for the proportion of the total variance that can be addressed to these real differences. For an interpretation of I^2, the Cochrane website offers the following rules of thumb: 0%–40%: might not be important; 30–60%: may represent *moderate* heterogeneity; 50%–90%: may represent *substantial* heterogeneity; 75%–100%: *considerable* heterogeneity. We considered I^2-values of 50% and higher as an important indication for the need to examine sources of heterogeneity. However, it should be emphasized that this measure is a relative measure, giving no indication of the absolute magnitude of the heterogeneity, which is better represented by the T-value. This is the standard deviation of the aggregated effect size, which is in the same

scale as the chosen measure for all effect sizes: the correlation coefficient (Borenstein et al., 2005). Therefore we considered the heterogeneity of effect sizes with $T < 0.10$, regardless of the I^2-value, also as not substantial.

Examining Sources of Heterogeneity

On both levels of analysis, we used subgroup analyses and meta-regression analyses to examine potential sources of heterogeneity, thereby simultaneously testing our hypotheses.

Subgroup analyses. Our hypotheses are about differences in aggregated effect sizes, caused by differences between dimensions of God representation or caused by differences between subdomains of adjustment or disposition measures (lower level). These differences were examined by subgroup analyses based on the fixed-effects model, as this is the common approach (Cuijpers, 2016).

When examining these differences between subgroups for explaining heterogeneity, studies that had outcomes for both subgroups were excluded, to avoid violating the assumption of independence. This often led to the exclusion of many available effect sizes. Only for a few subgroup analyses, if independent comparisons were impossible, we used all available effect sizes, treating them as independent.

Moderator analyses. For examining the possible effects of moderator variables, meta-regression analyses were conducted on the two highest levels. With these analyses, the influence of three continuous variables (year and quality of study and quality of God representation measures) and of six categorical variables (respondent status, method of measurement, religiosity, religion/denomination, sex, and age) were established.

We included categorical variables for analyses if a variable had at least two categories with four or more studies for the subgroup. This broad approach was chosen to be able to detect potential differences in a majority of the small subgroups.

Publication Bias

In meta-analyses there is always the risk of overestimating the strength of the combined effect size because of the well-known "file-drawer effect" (Thornton & Lee, 2000), implying that non-significant findings, which are more likely in small studies, are less likely to be published. Therefore it is important to check if small studies with relatively small effect sizes are underrepresented in meta-analyses. A useful method for examining this is looking at the funnel plot. An indication for publication bias are 'missing' studies at the lower-left corner of the plot. These 'missing' studies are the (smaller) studies with lower standard errors and with lower effect sizes. A more quantitative approach to checking publication bias is by simulating a meta-analysis that corrects for potentially missing effect sizes by making the funnel plot symmetrical and

comparing the simulated with the observed results. This is done with Duval and Tweedie's (2000) trim and fill analysis. We conducted these trim and fill analyses on all three levels.

To test the robustness of the found effect sizes, we did Orwin's (1983) fail-safe analyses on the first level. With these analyses, we calculated how many studies with a correlation of $r = 0$ would be needed to lower the found effect size to $r = .10$, the usually found association between religiosity and well-being/mental health. On the third level, we also examined the robustness of the significant effect sizes of the associations of specific God representations with well-being and distress with $r > .20$, because they are based on much smaller numbers of studies.

Results

Summary of Study Characteristics and Results of Meta-Analysis

Table 3 summarizes the distribution of studies/samples and separate effect sizes across the categories of the moderator variables of all the studies in this meta-analysis. The distributions of studies across the 12 subgroups used in subsequent analyses are shown as well. Table 4 shows the results of the meta-analysis on all three levels of analysis.

Analyses on Level 1

The effect size of the association between undifferentiated God representations and undifferentiated adjustmental aspects of psychological functioning was highly significant, $r = .196$, and approximated the expected effect size of $r = .20$, as stated in hypothesis 1. We compared this result with a new computation in CMA of Bergin's (1983) studies, which yielded a nonsignificant effect size of $r = .072$. A test of the difference between the two effect sizes was significant, $Q = 5.481$, $p = .019$. Comparing our results with those of Hackney and Sanders (2003), their overall effect size of $r = .10$, *CI 95%* [.10, .11] differed significantly from our average effect size, as the not overlapping confidence intervals indicated. At last we compared our results with the meta-analytical outcome of Smith et al. (2003), who found a random-effects weighted average effect size of $r = -.096$, *CI 95%* [-.011, -.08]. Converted to positive values, this $r = .096$, *CI 95%* [.08, .11] differed significantly from our $r = .196$, indicated by the clearly not overlapping confidence intervals.

The association between undifferentiated God representations and undifferentiated dispositional aspects was also highly significant, $r = .242$, as expected by hypothesis 2.

The substantial or considerable heterogeneity of both effect sizes asks for further examination. At the next level, we aim at finding sources of heterogeneity in the

Table 4. *Characteristics of Effect Sizes at Three Levels of Analysis*

God representations dimension	Adj. or Disp. dimension	*k*	*r*	*p* [a]	*Q*	*p* [b]	I^2	*T*	DT	95% CI	95% PI
God represent. (un-dif.)	Adj. (undif.)	73	.196**	<.00001	248.539	< .00001	71	.103	19 L/7 LB	[.167, .224]	[.085, .281]
Sec ATG	Adj. (undif.)	11	.189**	<.00001	40.096	.00002	75	.115	3 L/2 LB	[.232, .379]	[-.084, .436]
	Wellb	5	.274**	<.00001	2.533	.63877	0	<.001	0	[.208, .339]	[.165, .377]
	Distr	8	.168	.00200	37.681	< .00001	38	.133	0	[.062, .270]	[-.182, .480]
Anx ATG	Adj. (undif.)	33	.263**	<.00001	132.790	< .00001	76	.115	5 L/1 LB	[.219, .307]	[.030, .469]
	Wellb	16	.211**	<.00001	50.703	.00001	70	.123	3 L/2 LB	[.140, .282]	[-.061, .456]
	Distr	24	.301**	<.00001	104.106	< .00001	78	.112	2 L/0 LB	[.252, .348]	[.070, .500]
Avd ATG	Adj. (undif.)	24	.099**	.00001	223.554	.00076	55	.076	3 L/2 LB	[.056, .142]	[-.065, .258]
	Wellb	13	.135	.00152	39.875	.00008	70	.125	3 L/2 LB	[.052, .217]	[-.154, .403]
	Distr	16	.092**	<.00007	29.298	.01472	49	.063	1 L/0 LB	[.047, .137]	[-.051, .231]
Pos GR	Adj. (undif.)	35	.194**	<.00001	174.696	< .00001	81	.129	4 L/3 LB	[.144, .242]	[-.072, .434]
	Wellb	12	.301**	<.00001	24.758	.00989	56	.078	1 LB	[.243, .357]	[.124, .460]
	Distr	29	.168**	<.00001	135.455	< .00001	79	.121	0	[.116, .218]	[-.085, .400]
Neg GR	Adj. (undif.)	31	.218**	<.00001	154.270	< .00001	81	.125	8 L/3 LB	[.168, .269]	[-.040, .449]
	Wellb	9	.193**	.00009	32.080	.00009	75	.124	0	[.097, .285]	[-.122, .472]
	Distr	26	.245**	<.00001	152.035	< .00001	84	.136	0	[.187, .301]	[-.038, .491]
God Cntr	Adj. (undif.)	6	.068	.12679	5.322	.37784	6	.028	1 R	[.019, .154]	[-.077, .210]
	Wellb	3	.133	.19459	4.627	.09893	57	.133	1 R	[-.068, .323]	[-.964, .979]
	Distr	5	.039	.44215	5.003	.28696	20	.051	2 R	[-.060, .137]	[-.187, .260]

Table 4 (Continued).

God represent. (undif.)	Disp. (undif.)	87	.242**	<.00001	555.092	< .00001	85	.155	0	[.207, .277]	[-.063, .507]
Sec ATG	Disp (undif.)	11	.307**	<.00001	29.686	.00096	66	.109	1 R	[.232, .379]	[.053, .524]
	Rwo	6	.297**	.00001	16.415	.00575	70	.139	1 R	[.170, .415]	[-.124, .628]
	Self	5	.350**	.00020	30.959	< .00001	87	.201	0	[.172, .507]	[-.333, .793]
	Neur	6	.289**	<.00001	7.704	.17332	35	.052	0	[.222, .354]	[.120, .443]
Anx ATG	Disp. (undif.)	36	.307**	<.00001	300.000	< .00001	88	.187	7 R	[.245, .366]	[-.069, .606]
	Rwo	23	.245**	<.00001	68.896	< .00001	68	.106	3 R	[.193, .296}	[.023, .444]
	Self	10	.390**	<.00001	105.776	< .00001	91	.230	1 R	[.255, .510}	[-.146, .749]
	Neur	6	.393**	.00003	97.624	< .00001	95	.237	2 R	[.216, .544]	[-.290, .810]
Avd ATG	Disp. (undif.)	19	.159**	<.00001	45.069	.00041	60	.080	2 R	[.112, .206]	[-.016, .325]
	Rwo	10	.168**	<.00001	20.314	.01607	56	.078	1 R	[.102, .233]	[-.028, .351]
	Self	6	.081	.04842	8.482	.13161	41	.064	2 L/ 1 LB	[.001, .161]	[-.128, .284]
	Neur	6	.200**	.00007	25.303	.00012	80	.111	0	[.102, .293]	[-.136, .494]
Pos GR	Disp. (undif.)	40	.224**	<.00001	285.070	< .00001	86	.165	9 R	[.169, .278]	[-.112, .514]
	Rwo	17	.212**	<.00001	99.588	< .00001	84	.150	3 R	[.133, .287]	[-.116, .498]
	Self	19	.263**	<.00001	133.623	< .00001	87	.162	3 R	[.185, .337]	[-.083, .552]
	Neur	14	.168**	.00020	49.702	< .00001	74	.141	4 L/2 LB	[.080, .253]	[-.152, .456]
Neg GR	Disp. (undif.)	33	.198**	<.00001	187.587	< .00001	83	.149	0	[.141, .253]	[-.110, .471]
	Rwo	14	.183**	<.00001	47.859	.00001	73	.010	0	[.120, .245]	[-.043, .391]
	Self	8	.145	.06408	55.834	< .00001	87	.203	0	[-.009, .292]	[-.368, .590]
	Neur	14	.236**	.00002	91.738	< .00001	86	.188	1 L/0 LB	[.130, .337]	[-.184, .583]
God Cntr	Disp. (undif.)	13	.084	.04054	43.627	.00002	72	.116	1 L	[.004, .163]	[-.185, .341]
	Rwo	3	.072	.12834	1.265	.53133	0	<.001	0	[-.023, .166]	[-.499, .599]
	Self	7	.050	.36974	31.305	.00002	57	.125	0	[-.060, .160]	[-.293, .382]
	Neur	7	.185**	<.00001	5.816	.44412	20	<.001	2 R	[.109, .259]	[.085, .281]

Table 4 (Continued).

Note. p^{a} = *p*-value of significance test of *r*; p^{b} = *p*-value of significance test of *Q*, DT= Duval and Tweedie's trim and fill analysis; PI= Prediction interval; L= 'missing' studies at left side of mean; LB= 'missing' studies at left side with *SE* > 0.10, Sec ATG = Secure attachment to God dimension, Anx ATG = Anxious attachment to God dimension, Avd ATG = Avoidant attachment to God dimension; Pos GR = Positive God representations dimension, Neg GR = Negative God representations dimension, God Cntr = God control dimension. Adj. = Adjustmental; Disp. = Dispositional, Undif.= undifferentiated, Wellb= Wellbeing; Distr= distress; Rwo= Relationships with others; Self= Self-concept; Neur= Neuroticism.

** p < .0001

differences between the various God representation dimensions in the strength of associations with adjustmental and dispositional measures.

Analyses on Level 2

Associations of differentiated God representation measures with undifferentiated adjustmental aspects. Five out of six dimensions of God representations had highly significant associations with undifferentiated adjustmen-tal aspects of psychological functioning (well-being/distress). Anxious attachment to God and negative God representation, with effect sizes of respectively $r = .263$, and $r = .218$, had the strongest associations with well-being/distress, in accordance with hypothesis 1, which expected effect sizes > .20. The highly significant associations of positive God representation, $r = .194$, and secure attachment, $r = .189$, with well-being/distress were just below the expected strength. The highly significant association of avoidant attachment, $r = .099$, and the not significant association of God control, $r = .068$, with well-being/distress were much lower. From the significant associations with well-being/distress, the heterogeneity for the association with avoidant attachment to God — according to I^2 — was substantial, but the standard deviation of the effect size was low ($T = .076$), indicating that differences between effect sizes of individual studies were relatively small. The heterogeneity of the significant effect sizes for the associations between the other God representation measures and well-being/distress was still considerable, asking for further analyses for its potential sources. The omnibus test for subgroup analysis (see Table 5) detected no significant differences between the effect

Table 5. *Differences Between God Representation Dimensions in Strength of Association With Adjustmental Aspects*

	Dependent				Independent			
God representation dimensions	*k*	*r*	Q_B	*p*	*k*	*r*	Q_B	*p*
Combined measures	49	.182	9.390	.094	-	-	36.491	**< .001**
Secure attachment to God	6	.120			13	.211		
Anxious attachment to God	4	.293			41	.263		
Avoidant attachment to God	-	-			29	.109		
Positive God representations dimension	7	.201			41	.208		
Negative God representations dimension	6	.184			35	.232		
God Control	1	.201			8	.071		

Note. Boldfaced *p*-values < .05

sizes of the six subgroups of God representation measures. Because there were no studies that used only avoidant attachment to God measures in combination with adjustmental aspects, we could not test these differences by treating the effect sizes as dependent. Therefore we did this subgroup analysis again, treating all available 167 effect sizes as independent. Now the omnibus test yielded highly significant differences between effect sizes, and results of post hoc analyses showed that the associations of God Control and avoidant attachment to God with undifferentiated adjustmental aspects (well-being/distress) were significantly lower than the associations of the other God representation measures with well-being/distress.

Associations of differentiated God representation measures with undifferentiated dispositional aspects. Nearly all effect sizes of the associations between the dimensions of God representations and undifferentiated dispositional aspects were significant, as expected (hypothesis 2). Only the association between God Control and dispositional aspects was not significant. The associations of secure and anxious attachment to God with dispositional aspects had the strongest effect sizes, r = .307 and r = .307, respectively, followed by positive God representation and negative God representations, that had effect sizes of respectively r = .224, and r = .198, for their associations with dispositional aspects. The weakest associations with dispositional aspects were found for the God representation dimensions avoidant attachment to God, r = .159, and God Control, r = .084.

Heterogeneity, based on I^2, was substantial for the association of dispositional aspects with secure attachment to God, and it was considerable for the association with the other five God representation measures. Only the effect size of the association of dispositional aspects with avoidant attachment to God had a low standard deviation (T = .080), indicating that differences between effect sizes of individual effect studies were relatively small. Sources of potential heterogeneity must be examined for the association of the other God representation dimensions with dispositional aspects.

Subgroup analyses. The omnibus test for subgroup analysis (see Table 6) detected no significant differences between the effect sizes of the six subgroups in their associations with undifferentiated dispositional aspects. To examine the potential difference between avoidant attachment to God versus other God representation dimensions in their associations with dispositional aspects, we used all 181 effect sizes in a new subgroup analysis by treating them as independent. Results of post hoc analyses showed that the association between God control and undifferentiated dispositional aspects was significantly lower than the associations of the secure and anxious attachment to God dimensions and of the positive God representations dimension with undifferentiated dispositional aspects. The associations of the negative God representations dimension and of avoidant attachment to God with the undifferentiated dispositional aspects were significantly lower than the associations of secure and anxious attachment to God with the undifferentiated dispositional aspects.

Table 6. *Differences Between God Representation Dimensions in Strength of Association with Dispositional Aspects*

	Dependent				Independent			
God representation dimensions	*k*	*r*	Q_B	*p*	*k*	*r*	Q_B	*p*
Combined measures	47	.214	5.780	.328	-	-	34.281	**< .001**
Secure attachment to God	7	.298			17	.309		
Anxious attachment to God	9	.258			39	.306		
Avoidant attachment to God	-	-			22	.160		
Positive God representations dimension	14	.293			50	.220		
Negative God representations dimension	8	.276			36	.196		
God Control	2	.117			17	.095		

Note. Boldfaced *p*-values < .05

Analyses on Level 3

Associations between differentiated God representations and differentiated adjustmental aspects.

Associations of God representations dimensions with well-being. Four out of six God representation dimensions were highly significantly associated with well-being. Secure and anxious attachment to God and positive God representations had the strongest associations, with $r > .20$, as expected (hypothesis 1). The negative God representation dimension had an association with well-being less than $r = .20$. The associations of avoidant attachment to God with well-being and of God Control with well-being were non-significant.

Heterogeneity of the significant effect sizes was very low for the association of well-being with secure attachment, according to I^2 and T. For the association with positive God representations it was substantial, but T was smaller than 0.10, indicating that differences between individual effect sizes were relatively small. For the associations of well-being with anxious attachment to God, with positive God representations, and with negative God representations, heterogeneity was considerable or substantial.

Associations of God representations dimensions with distress. From the associations of the six God representation dimensions with distress, only the dimensions anxious attachment to God and negative God representations were significantly associated with this adjustmental aspect with $r > .20$, as expected (hypothesis 2). The dimensions avoidant attachment to God and positive God representations were also significantly associated with distress, but here $r < .20$. The associations of secure attachment to God and God Control with distress were non-significant.

Heterogeneity of the significant effect sizes was considerable for the associations of anxious attachment to God, negative God representations, and positive God representations with distress. According to I^2, heterogeneity was moderate for the as-sociation between avoidant attachment to God and distress, with $T < 0.10$, indicating that this effect size might be a rather precise estimate.

Subgroup analyses. Results of subgroup analyses (see Table 7) confirmed significant differences in strength of the associations between well-being and distress on the one hand and the positive and negative God representation dimensions on the other. The positive God representation dimension had significantly stronger associations with well-being than with distress; the negative God representation dimension had significantly stronger associations with distress than with well-being. There were no significant differences between well-being and distress regarding their associations with attachment to God measures.

Table 7. *Differences Between Adjustmental Aspects in Strength of Association With the God Representation Dimensions*

Subgroups within God representation dimensions	*k*	*r*	Q_B	*p*
Secure attachment to God				
Adjustment combined	2	.329	4.899	.086
Well-being	3	.244	0.244	
Distress	6	.118		
Anxious attachment to God				
Adjustment combined	7	.289	1.476	.478
Well-being	9	.202		
Distress	17	.279		
Avoidant attachment to God				
Adjustment combined	5	.150	1.672	.433
Well-being	8	.079		
Distress	11	.093		
Positive God representations dimension				
Adjustment combined	6	.280	15.136	**.001**
Well-being	6	.308		
Distress	23	.136		
Negative God representations dimension				
Adjustment combined	4	.346	28.319	**< .001**
Well-being	5	.080		
Distress	22	.165		

Note. Boldfaced p-values < .05

Associations between differentiated God representations and differentiated dispositional aspects

Associations of God representation dimensions with relationships with others. As shown in Table 4, five of the six associations of God representation dimensions with relationships with others were highly significant; only the association of God Control with relationships with others was non-significant.

Heterogeneity of the associations was considerable or substantial. The associations of avoidant attachment to God and of the negative God representation dimension with relationships with others had standard deviations of $T < 0.10$, suggesting valid estimates.

Associations of God representation dimensions with self-concept. Three out of six associations of self-concept with the God representation dimensions were (highly) significant: secure attachment to God, anxious attachment to God and positive God representations. Heterogeneity of the effect sizes of all three significant associations was considerable.

Associations of God representation dimensions with neuroticism. All six God representation dimensions showed significant associations with neuroticism. Heterogeneity of the aggregated effect sizes was low for the association of secure attachment to God and of God control with neuroticism. It was substantial or considerable for the association of positive God representations and anxious attachment to God with neuroticism.

All in all, on the third level all associations were positive, and 73% of the associations were significant at the $p = .001$ level. From these significant associations, 82% still had substantial or considerable heterogeneity, to be examined further with moderator analyses.

Subgroup analyses. For the associations with secure attachment to God and God control, studies with measures of the dispositional dimension did not meet the criterion of at least two categories with at least four studies. For the other four God representation dimensions, none of the differences in strength of associations between dispositional aspects and God representations was significant (see Table 8).

Publication Bias

To check whether small studies with relatively small effect sizes were underrepresented in these meta-analyses, we generated two funnel plots (see Figure 2), based on separate meta-analyses for the associations between undifferentiated God representation measures and undifferentiated state measures and for the associations between undifferentiated God representation measures and undifferentiated trait aspect measures.

Table 8. *Differences Between Dispositional Aspects in Strength of Association with the God Representation Dimensions*

Subgroups within God representation dimensions	*k*	*r*	Q_B	*p*
Anxious attachment to God				
Disposition combined	3	.322	5.276	.153
Relationships with others	20	.251		
Self-concept	8	.395		
Neuroticism	5	.388		
Avoidant attachment to God				
Disposition combined	3	.166	5.768	.123
Relationships with others	7	.200		
Self-concept	4	.068		
Neuroticism	5	.164		
Positive God representations dimension				
Disposition combined	10	.210	1.557	.669
Relationships with others	10	.237		
Self-concept	9	.279		
Neuroticism	11	.182		
Negative God representations dimension				
Disposition combined	3	.174	1.570	.666
Relationships with others	12	.196		
Self-concept	5	.105		
Neuroticism	13	.245		

Note. Boldfaced *p*-values < .05

For the effect sizes of God representations with adjustmental aspects, Duval and Tweedie's trim and fill analysis indicated that there were seventeen 'missing' studies at the left side of the mean. Inspecting the funnel plot showed that these missing studies were distributed equally over the standard error axis, so there was no overrepresentation of 'missing' studies at the lower–left corner of the plot (representing the smaller studies with lower standard errors and with lower effect sizes). According to Orwin's fail-safe analysis, it would take 63 studies with a correlation of $r = 0$ to lower the aggregated effect size (based on 73 studies) to $r = .10$ (the generally found association between religiosity and well-being).

For the effect sizes of God representations with dispositional aspects, based on 87 studies, inspection of the funnel plot and Duval and Tweedie's trim and fill analysis indicated that there were no 'missing' studies at the left side of the mean. It would take 128 studies with a correlation of $r = 0$ to lower the aggregated effect size to $r = .10$.

Therefore, there were no indications of publication bias for the aggregated effect size of undifferentiated God representations with undifferentiated state aspects and with undifferentiated trait aspects, so the estimate of the associations was sufficiently robust.

Because specific God representations on the second and third level of analysis differed in their associations with state and trait aspects from the associations on the first level, we also checked for 'missing' effect sizes at the left side on the second and third level and if positive, looked at their distribution accross the standard error axis.

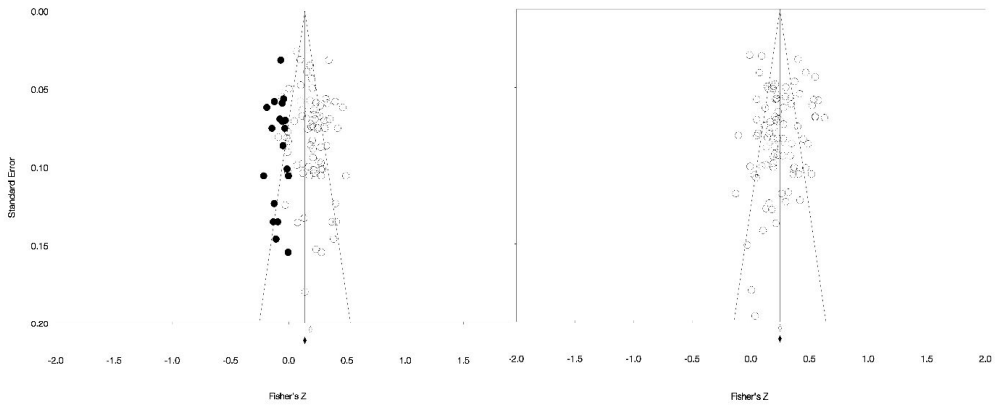

Figure 2. Funnel plots of associations of undifferentiated God representation measures with undifferentiated adjustmental measures (left) and with undifferentiated dispositional measures (right). On the x-axis the strength of effect size in Fisher's *Z*-score. On the y-axis the standard error as an indication of the precision of the studies. The open circles represent observed effect sizes for each study, closed circles represent the 'missing' effect sizes. The open diamond-shaped symbol represents the overall effect size based on observed effect sizes, the black symbol represents the estimated effect size after imputing the 'missing' studies.

Overall, these funnel plots also yielded no indications of publication bias. Only three of the 30 associations on level 3 had a slight underrepresentation of small studies with low effect sizes, with for two of them (the associations of anxious and avoidant attachment to God with well-being) two out of three missing studies with low precision, and for the third (the association between the positive God representation dimension and well-being) only one missing study, placed at the low precision part of the standard error axe (see Table 4).

At last, we did Orwin's fail-safe analyses on the third level to examine the robustness of the significant effect sizes of the associations of specific God representations with well-being and distress with $r > .20$, because they are based on much smaller numbers of studies. We again checked the robustness by calculating how many studies with a correlation of $r = 0$ would be needed to lower the found effect size to $r = .10$. For the association between secure attachment to God and well-being (based on 5 studies) this would take 10 studies; for the association between anxious attachment to God and well-being (based on 16 studies) it would take 19 studies; for the association between anxious attachment to God and distress (based on 24 studies) it would take 48 studies; for the association between the positive God representations dimension and well-being (based on 12 studies) it would take 25 studies; and for the association between the negative God representations dimension and distress (based on 26 studies) it would take 31 studies with $r = 0$ to lower the aggregated correlation to $r < .10$. We consider the results at level three to be sufficiently robust, because also for these associations there were no indications of publication bias.

Moderator Analyses

Moderator analyses were performed to further examine heterogeneity. On the third level, the subgroups were too small to do these analyses. In fact, this was also the case for many combinations on level 2. For reasons of limited space, we report only the results of analyses on level 1. On this level, Religion/denomination and Year of study were the only factors that explained some variation.

Religion/denomination. There was a significant effect of religion/denomination on the association between God representations and adjustmental aspects, explaining 12% of the total between-study variance (see Table 9). Post hoc analyses of the differences revealed that mixed religious/not religious samples showed lower associations between God representations and adjustmental aspects, than the orthodox, evangelical/Baptist and mainstream Christian samples. There was also a significant effect on the association between God representations and dispositional aspects, explaining 9% of the total between-study variance. The association was significantly stronger for Evangelical/Baptist and for mixed Christian/other religions samples than for mainstream Christian and for mixed religious/not religious samples.

Year of study. The effect of the continuous moderator variable year of study on the associations between God representations and dispositional measures (see Table 10) was significant, explaining 9% of the total between-study variance. More recent studies showed stronger associations.

Taken together, most of the substantial or considerable heterogeneity of the effect sizes could not be explained by the selected moderator variables.

Table 9. *Effects of Categorical Moderator Variables*

	Undifferentiated adjustmental aspects						Undifferentiated dispositional aspects					
Categorical moderator variables	*k*	*ES*	Q_B	*df*	*p*	r^2	*k*	*ES*	Q_B	*df*	*p*	r^2
Respondent status												
no problems	57	.203	0.98	2	.614	0	81	.239	1.63	2	.669	0
serious life problems	11	.159					5	.291				
mental health problems	5	.167					1	.347				
Lv2: Anxious attachment to God												
no problems	27	.239	16.05	2	**.000**	28						
Serious life problems	5	.050										
mental health problems	1	.370										
Method of measurement												
Only self-report							82	.249	2.72	2	.257	0
Trait not self-report							4	.099				
God repr. not self-report							1	.131				
Religiosity												
Not highly religious	65	.196	0.01	1	.913	0	77	.239	0.37	1	.544	3
Highly religious	8	.191					10	.264				
Religion/denomination												
orthodox Christian	2	.332	11.18	5	**.048**	12	2	.250	12.47	5	**.029**	9
evang. /Baptist	8	.250					4	.396				
mainstream and mixed Christian	42	.202					45	.231				
mixed Christian/other religions	5	.182					5	.367				
Jewish	1	.297					1	.217				
mix religious/not religious	15	.125					26	.194				
Lv2: Avoidant attachment to God												
orthodox Christian	1	.005	15.10	4	**.005**	61						
evang. /Baptist	5	.112										
mainstream and mixed Christian	13	.131										
mixed Christian/other religions	1	-.145										
Jewish												
mix religious/not religious	4	-.002										
Sex												
Mixed	54	.194	0.08	2	.959	0	77	.244	197	2	.373	0
Female	13	.203					6	.203				
Male	6	.184					6	.116				
Age												
15-25 years	25	.173	4.17	2	.124	0	43	.207	4.71	2	.095	0
26-50 years	39	.224					37	.284				
Older than 50	9	.143					7	.230				
Lv 2: Anxious attachment to God												
15-25 years							21	.260	4.48	1	**.034**	16
26-50 years							15	.372				
Lv 2: Negative God representations												
15-25 years							17	.126	9.28	2	**.010**	30
26-50 years							13	.276				
Older than 50							3	.281				

Note. Lv2 = Analyses on level 2. From the associations on level 2, only those with significant effects are reported. Boldfaced *p*-values < .05.

Table 10. *Effects of Continuous Moderator Variables*

Continuous moderator variables	Undifferentiated adjustmental aspects						Undifferentiated dispositional aspects					
	k	*b*	*SE*	*z*	*p*	r^2 (%)	*k*	*b*	*SE*	*z*	*p*	r^2 (%)
Year of study												
God representations (undifferentiated.)	73	0.0010	0.0032	0.30	.766	0	87	0.0061*	0.0030	2.04	0.04	9
Secure attachment to God	11	-0.0035	0.0064	-0.44	.580	0	11	0.0090	0.0062	1.46	.143	9
Anxious attachment to God	33	0.0147*	0.0073	2.02	.043	8	36	0.0156	0.0069	2.25	.024	9
Avoidant attachment to God	24	0.0044	0.0066	0.66	.511	0	19	-0.0138*	0.0057	-2.44	.015	29
Positive God representation	35	-0.0011	0.0045	-0.24	.811	0	40	0.0032	0.0042	0.78	.437	3
Negative God representation	31	-0.0008	0.0046	-0.17	.867	0	33	0.0057	0.0045	1.27	.206	3
God Control	6	-0.0035	0.0183	-0.19	.847	0	13	-0.0040	0.0069	-0.58	.056	0
Quality of studies												
God representations (undifferentiated.)	73	-0.0028	0.0083	-0.33	.740	0	87	0.0115	0.011	1.04	.296	0
Secure attachment to God	11	-0.0323	0.0268	-1.20	.228	0	11	-0.0027	0.040	-0.07	.947	0
Anxious attachment to God	33	-0.0058	0.0174	-0.33	.739	0	36	0.0385	0.026	1.51	.131	0
Avoidant attachment to God	24	0.0035	0.0177	0.20	.845	0	19	-0.0170	0.019	-0.90	.371	0
Positive God representation	35	-0.0110	0.0115	-0.96	.337	14	40	0.0030	0.016	0.19	.846	0
Negative God representation	31	0.0069	0.0117	0.59	.557	0	33	0.0206	0.014	1.48	.139	0
God Control	6	0.0180	0.0250	0.72	.472	0	13	0.0097	0.018	0.54	.591	0
Quality of God representation measures												
God representations (undifferentiated.)	73	0.0153	0.0084	1.83	.068	15	87	0.0092	0.020	0.87	.385	0
Secure attachment to God	11	-0.0048	0.0259	-0.18	.953	0	11	0.0420	0.026	1.61	.107	7
Anxious attachment to God	33	0.0008	0.0212	0.04	.968	0	36	0.0032	0.023	0.13	.993	0
Avoidant attachment to God	24	-0.0347*	0.0171	-2.04	.042*	32	19	-0.0313	0.020	-1.57	.118	10
Positive God representation	35	0.0255*	0.0119	2.15	.032**	32	40	-0.0030	0.015	-0.21	.838	7
Negative God representation	31	0.0210	0.0126	1.67	.096	26	33	0.0198	0.018	1.13	.257	6
God Control	6	0.0313	0.0232	1.35	.177	10	13	0.0100	0.025	0.40	.689	0

Note: * *p*-values < .05.

Discussion

The main aim of this meta-analysis was to examine associations between various dimensions and aspects of religiosity, in particular, God Representations, and mental health, from the perspective of attachment theory and object-relations theory. The meta analysis was based on 123 studies with one or more associations between God representations and adjustmental or dispositional aspects of psychological functioning, resulting in 348 effect sizes, of in total 29,816 participants. The most important finding is that medium-sized associations were found for the associations between dimensions of God representations and well-being and distress, as well as for the associations between God representations and self-concept, relationships with others and neuroticism. These associations are much stronger than those generally reported in studies adopting unidimensional and behavioral measures of religiousness. Because there were no signs of publication bias and the results, based on Orwin's (1983) fail-safe analyses, were sufficiently robust, the effect sizes reported in the current meta-analysis may be considered as valid estimates of the examined associations.

God Representations and Adjustmental Psychological Functioning

The results of this meta-analysis predominantly confirmed the first hypothesis: the effect sizes for the association between God representations and measures of well-being/distress were in the expected directions, and the aggregated effect size, $r = .20$, had the expected strength. It was also significantly stronger than the meta-analytical outcomes from Bergin (1983); Hackney and Sanders (2003); Smith et al. (2003) for the associations between religiosity and well-being/distress. To our knowledge, this is the first study that demonstrates with a meta-analysis such robust associations of structural aspects of religion with well-being and distress. It indicates that the concept of God representation is an important mediating factor in the association between monotheistic religiosity and well-being/mental health and distress. The results are in line with the notion of many scholars in the religious domain, often referred to as relational spirituality, that the relational character of monotheistic religions, the experienced personal relationship with the divine, is a central factor of those religions (Davis, Hook, & Worthington Jr, 2008; Davis et al., 2018b; Hall, 2007a; Hill & Hall, 2002; Leffel, 2007a, 2007b; Sandage & Williamson, 2010; Simpson et al., 2008; Verhagen & Schreurs, 2018).

Difference between positive and negative God representations in their associations with well-being and distress. The highly significant findings that positive God representations were more strongly associated with well-being than with distress (and vice versa for negative God representations) clearly demonstrates the

complexity of religious/spiritual functioning. Results suggest that they are not just two opposite poles of the same dimension, but should be considered as two different aspects of God representations. Gibson (2008) recognizes this ambiguity with regard to God representations. He emphasized the existence of multiple cognitive schemas for God in one person. These findings also undergird object-relations theory explanations of God representations. This theory made invaluable contributions to the understanding of these phenomena with its concept of integration of good and bad internalized objects. It is considered mature to attribute good as well as bad attributes to the self, to important others and to the relationship with them, and to be able to integrate them in such a way that they can exist together at the same time, to tolerate and to somehow also understand this ambiguity. Apparently, this also applies to God representations.

This notion should have consequences for the operationalization of God representations: besides their content, God representation measures should also assess more structural components as ambiguity, differentiation and integration.

God Representations and Dispositional Psychological Functioning

Results also confirmed the second hypothesis: measures of secure attachment to God and of positive God representations were positively associated with positive self-concept and positive relationships with others, and negatively with neuroticism, whereas measures of insecure attachment to God were negatively associated with positive self-concept and positive relationships with others. The aggregated effect size of $r = .24$ had the expected strength, and we found medium effect sizes for the associations of the dispositional measures with secure and anxious attachment to God.

To the best of our knowledge, this is the first meta-analysis focusing on the associations between God representations and dispositional measures, implying that comparisons with other meta analytic studies on this topic cannot be made. Our findings extend other influential reviews indicating that mental representations of people are associated with psychopathology (Huprich & Greenberg, 2003).

God representations and view of self and others. The results demonstrate that God representations are associated equally strongly with self-concept, the experienced relationships with others, and neuroticism. The findings are in support of the correspondence hypothesis, demonstrating correspondence of God representations not only with the view of self but also with the experienced relationship with others. Many scholars explain the often found association between God representations and self-concept, or —more specifically— self-esteem (Benson & Spilka, 1973; Lawrence, 1997; McDargh, 1983) by hypothesizing that the God representation is merely or predominantly a projection of the the self. In the domain of attachment-theory inspired research of God representations, the emphasis is more on the perception of others, and here the correspondence hypothesis (Granqvist, 1998; McDonald et al., 2005) assumes that an insecure relationship with God corresponds with an insecure

attachment to parents or adults. The observed associations of God representations with neuroticism (as an indication of the capacity for affect regulation) also corroborate theoretical explanations of object-relations and attachment theory, which both stress the central role of internal working models in affect regulation (Fonagy, Gergely, & Jurist, 2004; Kernberg & Caligor, 1996).

Weak associations with God Control

Results also demonstrated that the God control dimension had significantly weaker associations with adjustmental and dispositional aspects than the other God representation dimensions. The only significant association was the positive association between God control and neuroticism. There are several potential explanations for finding hardly any significant associations. First, it may be due to the small statistical power caused by the low number of studies that used this God representation dimension. Second, conceptual confusion about God control may also be a cause: although we aimed at choosing a rather neutral, less affective measure of beliefs about the agency of God, the specific items of questionnaires that measured God control also focussed for example on the protection by a benevolent God, or on the rejection by a judging God. Therefore the items also contained affective aspects. Third, the concept of God control may have different meanings for healthy subjects than for patient and for orthodox and non-orthodox patients. Jonker (2007) found that scores on the Questionnaire God Representations scale perceiving God's actions as ruling/punishing positively related to feelings of anxiety for God, except for non-patient members of the Orthodox-Reformed or Evangelical/Baptist denominations. The Ruling/punishing image of God was also related to positive feelings towards God, but only among non-patients. In a non-clinical sample, Eurelings-Bontekoe et al. (2005) found this particular concept of God to be rather independent of personality and attachment variables. Therefore the ruling/punishing image of God can be viewed as a double-edged sword (Johnson, Li, Cohen, & Okun, 2013). In future research, in operationalizing the God control dimension it might be important to pay more attention in formulations of items to the distinction between the concept of "God as a judge" both as a non-affective, rather doctrinal phenomenon as well as an affect laden God representation. In addition, it is also important to be aware of differences in interpretation of this concept between adherents of various denominations, and between patients and non-patients.

Moderator Analyses

Although subgroup analyses demonstrated some significant differences that enhanced our insight in the associations between God representations and adjustmental and dispositional aspects, they did not contribute much in explaining and reducing

statistical heterogeneity. Moderator analyses for the effect of religiosity, religion/denomination, sex, age, year of study, and quality of study and of God representation measures also could not explain the heterogeneity of most effect sizes. With our broad approach, including all studies that reported associations between God representations and adjustmental or dispositional aspects, this was to be expected. Yet, the heterogeneity of these findings remains to be explained.

Undoubtedly, different measures for similar concepts, and different samples, caused much heterogeneity that could not be incorporated as study-level variables and thus could not be explored. Therefore, although we consider the found effect sizes to be valid and robust, future research should aim to explain the remaining heterogeneity in most of the associations.

Attachment- and object-relations theory, with their emphasis on implicit working models, implies that assessment of God representations should (also) focus on implicit aspects thereof. To note, in nearly half of the studies of this meta-analysis, authors mentioned the use of self-report instruments as a limitation, and half of them thereby pointed at the specific nature of unconscious processes that asked for implicit measurement. However, remarkably, only one study in our meta-analysis used an implicit measure of God representations, and only five studies used other than self-report measures for dispositional or adjustmental aspects. Therefore, the potential important influence of this moderator factor could not be established well.

The notion that the presence of (more severe) psychopathology might moderate the general associations between religion and well-being/mental health or distress, as suggested by the outcomes of meta-analytic studies about the associations between religion and well-being, could also not be established because of a lack of studies that focus on God representations in clinical samples.

Clinical Implications

An important issue is the clinical significance of the statistically significant results of this meta-analysis. The strongest associations in this meta-analysis, the association between the positive God representations dimension and well-being and the association between anxious attachment to God and distress, have medium effect sizes (for both $r = .30$). If God representations on a general level have this association with well-being and distress, it should have clinical implications. Approximately half of the world population has a theistic belief (Hackett, Grim, Stonawski, Skirbekk, & Potančoková, 2012). The World Psychiatric Association officially stated that "A tactful consideration of patients' religious beliefs and practices as well as their spirituality should routinely be considered and will sometimes be an essential component of psychiatric history taking" (Moreira - Almeida, Sharma, van Rensburg, Verhagen, & Cook, 2016). Therefore it is important in clinical intakes to systematically address religion and to pay attention to God representations among patients with a theistic belief. If this is

done by self-report questionnaires, results of this meta-analysis indicate that it is important to use questionnaires that treat secure and insecure attachment to God and positive and negative God representations as separate dimensions. Otherwise potential negative God representations, associated with mental health problems, might be overlooked and neglected.

Of course, the relevance of this distinction is dependent on the course of therapeutic treatment. In line with popular trends as positive psychology and solution-focused therapy, the focus in therapy may lie on strengthening a positive God representation, thereby avoiding focusing on negative God representations. However, in a discussion of various modern spiritual approaches to mental health, Leffel (2007a, 2007b) warns for 'simple spirituality' that seems to assume that just focusing on positive feelings and positive thinking will make the negative emotions go away, while ignoring the implicit nature of representations. In his view, deep and lasting spiritual (and resulting personality) transformations are possible by focusing on disclosure and integration of negative emotions, directed at changes in the affective implicit and procedural structures of personality. This should be related to a focus on character change and the development of virtues; not on well-being or happiness, instrumentally fostered by religion or spirituality. Our results suggest the importance of focusing in therapy on negative as well as positive God representations.

While there is some strong (meta-analytic) evidence that taking patients' cultural/religious background into account significantly enhances therapeutic effects (Bouwhuis-van Keulen, Koelen, Eurelings-Bontekoe, Glas, & Hoekstra-Oomen, 2017; Smith, Bartz, & Scott Richards, 2007), not much research has yet been done into therapeutic interventions aimed at changing clients' God representations. There is scarce evidence that negative God representations may be changed by (religious) therapeutic interventions (Thomas, Moriarty, Davis, & Anderson, 2011; Tisdale et al., 1997) and that changes in God representations are accompanied by changes in well-being, view of self, or view of others (Currier et al., 2017; Kerlin, 2017; Kim, Chen, & Brachfeld, 2018; Monroe & Jankowski, 2016; Murray-Swank, 2003; Tisdale et al., 1997).

Limitations

This meta-analysis has several limitations that need to be mentioned when interpreting the results. First, an important limitation, implied by the choice for God representation measures, is our reduction of religion/spirituality to theistic religions. Though in our search we looked at samples from all theistic religions, our final selection contained only two samples with predominantly other than Christian (namely Jewish) subjects. This does not mean that our results are based only on adherents of Christian religions: the study contains 10 samples with a mix of Christian subjects and subjects that adhere to other religions, and 33 samples are a mix of religious and non-

religious subjects. Therefore it should be kept in mind that other than Christian religions are underrepresented in this study, which in turn limits the generalizability of the results. A second limitation is the quality of the included studies. Results are based on observational data of predominantly cross-sectional studies, which precludes any conclusions about the direction of the found associations. Third, this meta-analysis is based on published articles only. Although we found no indications of publication bias in our selection of studies, analyses are not based on all potentially available data. Fourth, in this meta-analysis much of the considerable or substantial heterogeneity of the effect sizes could not be explained, meaning that there is still much variation of true effect sizes. Fifth, a limitation is that we categorized the different measures of God representations into six dimensions, thereby ignoring more subtle differences. For example, we did not distinguish more specific negative God representations such as feeling anxious or being mad at God or seeing God as distant, while it seems reasonable that these differences are associated with different personality traits. There is some evidence that these differences are distinctively associated with types of religious struggle (Exline, Grubbs, & Homolka, 2015). Sixth, it must be noted that part of the association between God representations and adjustmental aspects may be the result of a specific same-method effect; the linguistic similarities in God representation items and adjustment-measure items as anger, fear, frustration, etc. More research is needed in this area to clarify these issues. Seventh, a limitation of this meta-analysis is the low number of studies with clinical samples, with samples with subjects with serious life problems, and with implicit measures.

Future Research

A meta-analysis with analyses only at study-level variables is not a suitable method for testing pathways between the variables of a model. As a consequence, we cannot give conclusive answers about the nature of the examined relations. Nevertheless, results of this meta-analysis suggest that there may be some direct influence of God representations on well-being and distress that is relatively independent of religious denomination, respondent status (serious life problems or mental health problems), sex or age. It is unclear, however, whether and to what extent God representations impact psychological functioning through an experienced 'real' relationship with the God object that may also alter the self-concept, rather than through a mere projection of the self.

Further, to examine causal relationships between God representations and adjustmental aspects and the mediating role of dispositional aspects, is it important to conduct longitudinal studies, ideally examining development from early childhood to adulthood. A major advance would be if meta-analyses could be conducted by synthesizing the available data on respondent level, to be able to examine the pathways and the best fitting model to explain the complex interrelations between the different

variables. We recommend the development of systems to be able to aggregate data on this level, and we welcome the development of a scientific culture that makes this possible.

Theoretically, it is assumed that implicit aspects of God representations, especially for subjects that suffer from external stressors such as serious life problems, or from internal stressors such as personality problems, have an important influence on their psychological functioning. This meta-analysis demonstrated two important gaps in this respect. First, there is a lack of studies that examine associations between God representations and well-being/mental health for subjects that suffer from mental health or serious life problems. Future research should take this into account by examining these associations for samples with various mental health problems (under which particularly personality disorders) and samples of subjects undergoing various serious life problems. Second, there are hardly any studies that measure associations of implicit God representations with well-being/mental health. It is unknown if and to what extent discrepancies exist between scores on explicit and implicit measures of God representations, and if these discrepancies differ between healthy and pathological or otherwise seriously stressed subjects. Hall and Fujikawa (2013) assume that different attachment styles are related to specific discrepancies between explicit and implicit God representation measures. We subscribe their statement that advances in the field of God representation research are dependent on the development of implicit God representation measures to examine these discrepancies. Therefore future research should take this into account by examining and comparing explicit and implicit God representations and their associations with adjustmental and dispositional aspects in both clinical and non-clinical samples.

A first step is the development of a reliable and valid instrument for measuring implicit God representations. This meta-analysis is part of a project in which such an implicit measure has been developed and is being validated in both a non-clinical and a clinical sample (Stulp, Glas, & Eurelings-Bontekoe, 2020; Stulp, Koelen, Glas, & Eurelings-Bontekoe, 2019).

Conclusions

This meta-analysis has clearly demonstrated the importance of God representations for research on the association between religiosity and well-being/mental health, at least for adherents of a theistic religion. We demonstrated that narrowing down the general concept of religiosity to specific measures of God representations resulted in stronger associations with well-being and mental health than previously reported. We also demonstrated that object relations and attachment theory may be fruitful approaches in potentially explaining the mechanisms behind this association.

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