J Relig Health (2019) 58:41–52
https://doi.org/10.1007/s10943-017-0460-7

ORIGINAL PAPER

Both Intrinsic and Extrinsic Religious Orientation are Positively Associated with Attitudes Toward Cleanliness: Exploring Multiple Routes from Godliness to Cleanliness

Leib Litman[1,2] · Jonathan Robinson[2,3] · Sarah L. Weinberger-Litman[4] · Ron Finkelstein[2]

Published online: 24 August 2017

Abstract In the present study, we explore how intrinsic and extrinsic religious orientations are associated with cleanliness attitudes. We find that reported importance of religion is associated with increased cleanliness concerns and interest in cleanliness. Attitudes toward cleanliness were also associated with both intrinsic religious orientation and extrinsic religious orientation. Together, religiosity and religious orientation account for 14.7% of cleanliness attitudes and remained significant in the presence of personality, socioeconomic status, age, education, obsessive–compulsive attitudes toward cleanliness, and other covariates. These results show that religiosity is associated with cleanliness via multiple routes. We suggest that intrinsic religious orientation leads to increased interest in cleanliness due to the link between physical and spiritual purity. Extrinsic religious orientation may be linked with cleanliness because of the secondary benefits, including health and the facilitation in communal cohesiveness, that cleanliness rituals offer. The implications of these findings for the relationship between religion and health are discussed.

Keywords Religiosity · Intrinsic religions orientation · Extrinsic religious orientation · Cleanliness · Public health

Introduction

Physical and spiritual cleanliness are closely linked in many religious traditions. Indeed, physical purity is often a co-requisite for spiritual purity. For example, ritual washing is an important component of religious practice in Hinduism (Flood 1996) and Judaism (Frank

✉ Leib Litman
leib.litman@touro.edu

[1] Department of Psychology, Lander College, 75-31 150th Street, Flushing, NY 11367, USA

[2] Touro College and University System Health, New York Medical College, New York, NY, USA

[3] Department of Computer Science, Lander College, New York, NY, USA

[4] Department of Psychology, Marymount Manhattan College, New York, NY, USA

and Wollheim 1986). In these religious traditions, impurities, especially those related to bodily fluids, must be cleansed prior to performing any religious ritual. Similar cleanliness rituals are found in Islam, where hands, elbows, feet, and head must be washed before prayer or handling of the Koran (Buyukcelebi 2003). In Christianity, water is symbolically linked with spiritual purity, as is evident in the ritual of baptism.

Over the last several decades, a consistent link has been established between religiosity and health. At the broadest level of health, numerous studies have shown that religious people live longer (Kark et al. 1996; Hummer et al. 1999; Schnall et al. 2010; Bartkowski et al. 2010; McCullough and Willoughby 2009; McCullough et al. 2005a, b), and that religiosity impacts general health as well as specific physical and psychological health outcomes (Huijts and Kraaykamp 2011). Religiosity also affects specific health-related outcomes. For example, religious people tend to have healthier immune systems and have lower hospitalization rates (Williams and Sternthal 2007; Van der Geest 2005; Holt and McClure 2006; Koenig 2013). In a recent study (Zini et al. 2012), religiosity was shown to be a significant predictor of better periodontal health.

A number of mediating mechanisms such as social support, psychological well-being, and specific health-related behaviors have been proposed to explain the association between religiosity and positive health (see Huijts and Kraaykamp 2011; Uchino 2006; Kroenke et al. 2006). More work needs to be done, however, to identify other possible mediators that may impact on improved health outcomes among religious individuals. One health-related behavior that has received little attention as a possible mediator of the association between religiosity and health is cleanliness and hygiene.

Research examining the possible relationship between religiosity and cleanliness is limited. A number of recent studies have begun to examine this relationship, revealing that both religiosity and cleanliness appear to be cognitively linked with representations of personal purity (see Speltini, and Passini 2014a, b). For example, Preston and Ritter (2012a, b) used a word-stem completion task to prime religious concepts. They found that religious primes enhance the desirability of cleaning products. Cleanliness primes were also found to enhance the value of religious beliefs, suggesting the presence of a symbolic link between religiosity and cleanliness.

Good hygiene and cleanliness are critical for overall health and longevity. Hygiene has been described as one of the foundations of overall health (Fewtrell et al. 2005). Globally, close to 2.4 million deaths have been linked with a lack of basic hygiene. Worldwide, numerous diseases such as diarrhea, and infections such as intestinal helminthiases, giardiasis, schistosomiasis, and trachoma, have been linked with a lack of basic hygiene and cleanliness. While many of these diseases predominate in developing countries, hygiene and cleanliness are also associated with health outcomes in European countries and the USA. Hygiene and cleanliness in the home are particularly relevant for the spread of food-borne illness. The CDC reports that over 9 million people suffer from food-borne illness per year in the USA, over one thousand of which result in death (Scallan et al. 2011).

Cleanliness may thus be one of the factors that explain the association between physical health and religiosity. However, at present, studies have not examined whether higher levels of religiosity are predictive of increased interest in cleanliness, or increased levels of engagement in cleanliness-related behaviors.

In the present study, we examine the link between religiosity and cleanliness. Specifically, we examine whether differences in levels of religiosity predict attitudes about the importance of cleanliness. Further, we examine whether attitudes toward cleanliness are associated with different types of religious orientations. It has been well established that different types of religious orientation are associated with differential outcomes on a

variety of psychological and social outcomes (Allport and Ross 1967; Kirkpatrick and Hood 1990). An intrinsic religious orientation relates to how important an individual perceives religion to be in their life (Kirkpatrick and Hood 1990), and on the spirituality-centered focus of one's religious practice (Laurencelle et al. 2002). Intrinsically religious individuals put a greater emphasis on religion as a vehicle for establishing a spiritual connection with God (Allport and Ross 1967).

An extrinsic religious orientation, on the other hand, is associated with an emphasis on secondary benefits of religion. For example, extrinsically religious individuals may be motivated to engage in religious activities in order to establish or maintain social friendships and relationships (Neill and Kahn 1999). Within the religious orientation framework, religious individuals may have different motivations for engaging in religious activities such as attendance at religious services. Whereas the primary purpose of prayer for an intrinsically religious individual is to establish a spiritual connection with God, extrinsically religious individuals are more likely to attend services for the social benefits that such services have to offer.

Hypothesized Relationship Between Religious Orientation and Cleanliness

While certain religious rituals focus on washing and cleanliness, the focus on cleanliness is usually a proxy for spiritual purity rather than hygiene per se. However, there may be different motivations for cleanliness among religious individuals, and these motivations may map onto intrinsic and extrinsic religious orientations.

The hallmark of an intrinsic religious orientation is a motivation to be religious for religion's spiritual benefit, as opposed to religion's secondary benefits, such as physical cleanliness. Thus, the framework that we develop here suggests that intrinsically religious individuals would be highly motivated to engage in washing practices even if such practices did not provide a cleanliness benefit, and indeed, even if such practices were detrimental to physical cleanliness. Extrinsically religious individuals, on the other hand, would be expected to be interested in religious practices primarily because of their secondary benefits. In the case of washing rituals, those secondary benefits are cleanliness and hygiene. Thus, both intrinsic and extrinsic religious orientations should be positively associated with an interest in cleanliness.

Therefore, we hypothesize that although being a result of different underlying motivations, both intrinsic and extrinsic orientation will be positively associated with an interest in cleanliness and attitudes toward cleanliness. Furthermore, individuals who are both intrinsically and extrinsically oriented toward religion may be expected to be maximally interested in cleanliness because those separate motivations may be mutually reinforcing. We thus additionally hypothesize that individuals who are high on both intrinsic and extrinsic religious orientations will have higher interest in cleanliness compared to those who are primarily intrinsic or extrinsic but not both.

Method

Participants

Four hundred and five participants were recruited from the Amazon Mechanical Turk (MTurk) platform. Participants were recruited from TurkPrime.com which has a pool of

over 30,000 MTurk workers who had previously indicated their level of religiosity. Specifically, in previous studies, workers had been asked questions pertaining to their religiosity including how important religion is to them. Our goal for this study was to include a roughly similar proportion of highly religious, moderately religious, and non-religious individuals in the sample. To achieve this goal, we included 135 participants who had indicated that religion was "the center of my entire life," or "very important to me," 135 people who indicated that religion is either "moderately important to me," or that "religion is not important to me at all, although I consider myself to be religious." A third group of 135 participants indicated that they were not at all religious. Email invitations had been sent anonymously using worker IDs to individuals who had fit these criteria, and each subgroup was kept open until 135 participants from that group completed the study. This process was handled using TurkPrime software (Litman et al. 2017). All participants were paid $1 for completing the task, which took 13 minutes on average.

Two respondents did not fully complete the online questionnaire and were excluded from the analyses. The resulting sample consisted of 403 participants (52.6% male) with a mean age of 35.04 (SD = 12.2). African-American participants constituted 5.7% of the sample. The distribution of other variables is presented in Table 1.

Measures

Religious Orientation

Religious orientation was measured using the Religious Orientation Scale (Allport and Ross 1967) which measures intrinsic and extrinsic orientation. The Intrinsic Religious Orientation (IRO) subscale consists of questions such as "I try hard to carry my religion over into all my other dealings in life.", and "Quite often I have been keenly aware of the presence of God or the divine being." The Extrinsic Religious Orientation (ERO) subscale consists of questions such as "It doesn't matter so much what I believe so long as I lead a moral life," "A primary reason for my interest in religion is that my place of worship is a

Table 1 Demographic characteristics and distribution of key variables

	N (%)
Importance of religion	
Center of my entire life	51 (12.7)
Very important	98 (24.3)
Moderately important	73 (18.1)
Not important at all, although I am religious	40 (9.9)
I am not religious	141 (35)
Fourfold typology	
High intrinsic only	90 (22.3)
High extrinsic only	62 (15.4)
High on both	124 (30.8)
Low on both	127 (31.5)
Family status	
Single and no children	183 (45.4)
Single or married with children	220 (54.6)

congenial social activity," "What religion offers me most is comfort when sorrows and misfortune strike," and "The primary purpose of prayer is to gain relief and protection."

Religiosity

Religiosity was assessed with the following question "How important is religion to you?" Response options included "center of my entire life," "very important," "moderately important," "not at all important, although I am religious," and "I am not religious'."

Novel Cleanliness and Grooming Scale

General cleanliness was assessed using the Cleanliness and Grooming Attitude scale (Williams and Turkheimer 2007). This scale consists of 12 items and response options include 0 = not at all through 4 = very much.Items on this scale include: "I would hate to wear the same clothes two days in a row," and "I can't stand to be in my home if it's messy."

Neuroticism and Conscientiousness

Participants filled out the neuroticism and extroversion Big Five Inventory (BFI) subscales. The BFI consists of 44 short declarative statements such as "Is talkative." Participants were given five response options ranging from strongly agree to strongly disagree and were asked to rate the extent to which each statement applies to them. The BFI measures the five major personality traits (OCEAN) and contains an approximately equal number of items that measure each of the five traits. Approximately half of the items for each trait are reverse coded (John et al. 2008). Because cleanliness and hygiene are correlated with the personality traits of conscientiousness and neuroticism (Harris 2005), we use these traits as additional covariates in the model, since these traits have also been linked to religiosity (Taylor and MacDonald 1999).

Padua Inventory Contamination Scale

In addition to being associated with cleanliness, religiosity has been shown in some studies to also be associated with obsessive–compulsive tendencies and contamination concerns (Abramowitz et al. 2004). Contamination concerns were assessed using ten Padua Inventory Contamination Scale (Sanavio 1988) items, as used in Williams and Turkheimer (2007). These Likert items provide 0 = not at all through 4 = very much response options. Items on this scale include: "I feel my hands are dirty when I touch money," and "I sometimes have to wash or clean myself simply because I think I may be dirty or contaminated." We utilize the approach developed by Williams and Turkheimer (2007), using the Padua Contamination Scale as a covariate in our analysis, so as to examine the link between religiosity and cleanliness in the absence of pathological contamination concerns.

Demographic Questions

Participants were asked additional about characteristics that were thought to covary with cleanliness and/or religiosity including political orientation, age, annual and household income, ethnicity, gender, and household composition. The political orientation question

asked whether participants identify as very conservative, conservative, moderate, liberal, and very liberal. Participants indicated their income by selecting from a list of incomes in ten-thousand-dollar increments. Household composition options included single without children, single with children, married without children, married with children, life partner without children, and life partner with children.

Family structure was included as a covariate in the model. Specifically, a two-level variable was created with single participants with no children in one group, and married individuals or single parents with children in the second group. It was hypothesized that those who are married and/or have children will be more likely to have more cleanliness interests, and that individuals with families may also be more likely to have higher levels of religiosity (Bufford and Gern 2005; Mahoney et al. 2001).

Multiple studies found that African-Americans have higher interest in cleanliness compared to White Americans (Williams and Turkheimer 2007; Williams et al. 2008, 2012a, b, 2013). African-Americans also have higher religiosity levels (Watlington and Murphy 2006). Ethnicity was thus added as an additional covariate.

Statistical Analyses

An OLS stepwise regression-based approach was taken to examine the contribution of intrinsic and extrinsic orientation to cleanliness attitudes. First, a one-step OLS regression was run to examine the extent to which religiosity variables contributed to cleanliness attitudes. In this model, importance of religion, intrinsic orientation, and extrinsic orientation were entered as predictors and cleanliness attitudes as the outcome variable.

Once the overall contribution of religiosity (including importance of religion and religious orientations) to cleanliness was established with the first regression, the next analysis aimed at addressing the following three questions: (1) Does religiosity remain significant after controlling for covariates? (2) Does the contribution of religious orientation remain significant once overall religiosity is taken into account?, and (3) Do intrinsic and extrinsic orientations make unique contributions to cleanliness attitudes, independent of each other?

These three questions were addressed using a two-step stepwise regression. All covariates were entered in step one, including age, gender, political orientation, contamination concerns, neuroticism, conscientiousness, age, household income, and family composition. The step-one R^2 is interpreted as the variance in cleanliness attitudes that is explained by the covariates in the model. Religiosity variables, including importance of religion, intrinsic orientation, and extrinsic orientation, were entered in step two. Additionally, an interaction term between intrinsic and extrinsic religious orientations was added to the model to examine possible moderation effects.

The step-two R^2 is interpreted as the contribution of religiosity and both religious orientations to cleanliness attitudes above and beyond the covariates in the model. Additionally, in step two, the separate parameters and significance tests for importance of religion, intrinsic orientation, and extrinsic orientation predictors indicate whether these orientations make separate contributions to cleanliness attitudes independent of each other.

In addition to the continuous measures of intrinsic and extrinsic religious orientation examined in the above regression analyses, an analysis of the relationship between the fourfold typology (Allport and Ross 1967) and cleanliness was conducted with a one-way ANOVA. In the original model proposed by Allport and Ross (1967), intrinsic and extrinsic orientations were treated as orthogonal axes, resulting in four religious orientation types 1) high intrinsic and high extrinsic 2) low intrinsic and low extrinsic 3) high intrinsic and low extrinsic, and 4) low intrinsic and high extrinsic. High and low are defined as

binary values where high is a value that is above the mean for a given sample and low is defined as a value that is at or below the mean for a given sample. Specifically, we were interested in a comparing individuals who are high on both intrinsic and extrinsic religious orientations relative to those who are high on only the intrinsic or the extrinsic orientations. As mentioned previously, it was expected that those individuals that are high on both intrinsic and extrinsic RO would have the highest levels of cleanliness motivation.

Results

Table 2 presents correlations between all continuous predictor variables, outcome variables, and covariates. The first regression included (a) importance of religion (b) intrinsic orientation, and (c) extrinsic orientation as predictors, with cleanliness as the outcome variable. This model did not have any covariates. The full model accounted for 14.5% of cleanliness, F (9, 397) = 33.2, $p < .001$. Table 3 presents parameters for each of the predictor variables, in the Model 1 panel.

The results of the two-step OLS regression model are presented in Table 3, Model 2 panel. The covariates in step one accounted for 44.8% of the variance in cleanliness attitudes F (3, 402) = 20.3, $p < .001$. Significant predictors of cleanliness included annual income, contamination concerns, neuroticism, conscientiousness, ethnicity, and family composition. Age, gender, and education were not significant predictors of cleanliness.

In step two, importance of religion, intrinsic orientation, and extrinsic orientation were added to the model. The R^2 change was significant, with the two-level variables accounting for an additional 3% of the total variance in cleanliness attitudes, F change (3, 385) = 7.1, $p < .001$. Specifically, importance of religion and religious orientation accounted for 5.25% of the variance that was not accounted for by the covariates alone. The full two-step model accounted for 47.7% of cleanliness attitudes variance. Both intrinsic and extrinsic religious orientations were significant predictors of cleanliness attitudes after controlling for the covariates in step one. Importance of religion was marginally significant.

One-way ANOVA revealed that the fourfold typology of religious orientation was a significant predictor of cleanliness outcomes F (3, 384) = 9.3, $p < .001$. Post hoc comparisons with Sidak corrections showed that the high intrinsic/high extrinsic individuals had higher cleanliness motivation scores than the three other groups (all p's $< .001$).

Discussion

In this study, we examined the association between religiosity, including religious orientation, and attitudes toward cleanliness. Religiosity variables accounted for 14.5% of the variance in attitudes toward cleanliness. Consistent with our hypothesis, both the extrinsic and the intrinsic religious orientations were significant predictors of cleanliness attitudes even after controlling for multiple covariates previously shown to correlate with both cleanliness and religiosity, or for which we believed there was a compelling reason to expect that they may be correlated with both religiosity and cleanliness. These included age, gender, political orientation, education, income, family structure, neuroticism, conscientiousness, and obsessive–compulsive attitudes toward cleanliness. Because of the wide-ranging set of covariates included in the model, we believe that these results provide

Table 2 Correlations among all continuous variables

Measure	1	2	3	4	5	6	7	8	9	10	11
1. Intrinsic orientation	–	.309**	.876**	.289**	.177**	−.028	.217**	.294	.413	.008	−.002
2. Extrinsic orientation		–	.337**	.301**	−.225	.019	.071	.023	.074	.019	−.028
3. Importance of religion			–	.264**	.220**	−.069**	.225**	.270	.389**	−.010	−.028
4. Cleanliness				–	.573**	.172**	.197**	.065	.203**	−.101*	−.018
5. Contamination					–	.164**	.006	−.039	.168**	−.129**	.084
6. Neuroticism						–	−.456	−.171	−.033	−.069	−.120*
7. Conscientiousness							–	.235**	.177**	.060	.184**
8. Age								–	.142*	.069	.033
9. Political orientation									–	−.024	.130**
10. Education										–	.178**
11. Household income											–

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

Table 3 Regression models: Model 1 (left panel) shows model coefficients for religion-related variables without covariates; Model 2 shows model coefficients with covariates entered in the model

	Model 1 Y = cleanliness scale				Model 2 Y = cleanliness scale			
X	B	Beta	(SE)	p	B	Beta	(SE)	p
Intrinsic	.09	.232	.038	.017	.078	.201	.031	.012
Extrinsic	.155	.235	.033	<.001	.090	.138	.026	.001
Importance	.006	.019	.227	.848	.051	.154	.026	.054
Contamination					.285	.488	.023	<.001
Neuroticism					.108	206	.023	<.001
Conscientiousness					.171	.250	.030	<.001
Age					.000	−.005	.334	.9
Gender					−.008	−.008	.039	.841
Education					−.007	−.019	.014	.615
Family					.122	.126	.041	.003
Race					.239	.115	.08	.003
Income					−.017	−.117	.006	.004
Political orientation					.024	.054	.018	.2

the first evidence that religiosity is a unique predictor of an increased interest in cleanliness concerns.

Our results showed that both intrinsic and extrinsic orientations are positively associated with an interest in cleanliness. Importantly, both religious orientations significantly predicted interest in cleanliness even when overall importance of religion was included as a covariate in the model. This suggests that levels of religiosity alone were not driving this effect. Rather the underlying motivations for religious practice are an important factor in the relationship between religiosity and an increased interest in cleanliness.

These results are consistent with previous findings which link religiosity and cleanliness. In these studies, religious cognitions were shown to be associated with cleanliness-related cognitions (Ignatow 2009; Sum 2013). Our findings extend these results by revealing that it is not merely level of religiosity, but intrinsic and extrinsic religious orientations which drive the association with cleanliness. Specifically, what determines whether a religious individual will place greater emphasis and importance on cleanliness is their orientation toward their religious practice and their motivation for being religious.

These findings suggest the presence of multiple mechanisms that may be driving the association between religiosity and cleanliness. Here we develop a religious orientation-orientated framework within which to view the relationship between religion and cleanliness. Within this framework, both intrinsic and extrinsic religious orientations can enhance an individual's interest in cleanliness. For an intrinsically religious individual, cleanliness is expected to be strongly linked with ritual purity. Studies show that activating cleanliness thoughts has the automatic effect of activating thoughts of ritual purity (Xu et al. 2014; Lizardo 2012), indicating that cleanliness and ritual purity are strongly linked concepts. The model that we develop here would predict that such priming effects would be observed to be stronger for intrinsically religious individuals compared to extrinsically religious individuals. This is because intrinsically religious individuals would be more

likely to value washing rituals for their spiritual purification aspects. Extrinsically religious individuals, on the other hand, may be less likely to value washing rituals for their spiritual aspects. Nevertheless, increased levels of extrinsic religious orientation would likewise be expected to positively correlate with an increased interest in cleanliness, because washing rituals offer a clear secondary benefit of increased cleanliness and hygiene.

Much research indicates that many people are motivated by both intrinsic and extrinsic factors simultaneously (Cohen et al. 2005; Flere and Lavrič 2007). Because both intrinsic and extrinsic religious orientations act as separate motivations for increased cleanliness, it may be expected that individuals who are both intrinsically and extrinsically motivated would have the highest levels of interest in cleanliness, as these individuals would be interested in both spiritual and cleanliness benefits of washing rituals. Our analyses confirmed this hypothesis, indicating that participants who were high on both intrinsic and extrinsic religious orientation had higher interest in cleanliness than those who were high on intrinsic or extrinsic orientations alone.

While the present study does not examine health outcomes directly, we suggest that cleanliness may be one of the mediators of the link between religiosity and health. If that prediction is borne out in future studies, religious individuals may be expected to suffer less from illnesses that are associated with a lack of hygiene, including infectious diseases and food-borne illnesses. Future studies should thus explore the link between religiosity and actual cleanliness behaviors (rather than attitudes toward cleanliness) and should examine the possible connection between religiosity and health more directly in order to examine whether the enhanced interest in cleanliness found in this study translates into actual health benefits.

Future studies should also further explore how various aspects of religious orientation may be linked with cleanliness concerns. For example, social support is one known mediator of the effect of religious practice on health outcomes (Karademas 2006; Tomaka et al. 2006). A lack of cleanliness may be detrimental to forming social relationships, especially within family-oriented comminutes where community members may perceive a lack of cleanliness and hygiene as a threat to their family's health. Thus, extrinsically religious individuals may have an increased interest in cleanliness in order to facilitate social relationships within their religious community. Differences in attitudes toward cleanliness between intrinsically and extrinsically motivated individuals should also be explored more closely in future studies.

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Human and Animal Rights This article does not contain any studies with animals performed by any of the authors.

Informed Consent Informed consent was obtained from all individual participants included in the study.

References

Abramowitz, J. S., Deacon, B. J., Woods, C. M., & Tolin, D. (2004). Association between Protestant religiosity and obsessive–compulsive symptoms and cognitions. *Depression and Anxiety*. doi:10.1002/da.20021.

Allport, G. W., & Ross, J. M. (1967). Personal religious orientation and prejudice. *Journal of Personality and Social Psychology, 5*(4), 432–443. doi:10.1037/h0021212.

Bartkowski, J. P., Pearce, L., Alwin, D., Felson, J., Regnerus, M., King, V., et al. (2010). *Religion, families, and health: Population-based research in the United States*. Rutgers University Press.
Bufford, J. D., & Gern, J. E. (2005). The hygiene hypothesis revisited. *Immunology and Allergy Clinics of North America*. doi:10.1016/j.iac.2005.03.005.
Buyukcelebi, I. (2003). *Living in the shade of Islam: A comprehensive reference of theory and practice*. Clifton, NJ: Tughra Books.
Cohen, A. B., Hall, D. E., Koenig, H. G., & Meador, K. G. (2005). Social versus individual motivation: Implications for normative definitions of religious orientation. *Personality and Social Psychology Review*, *9*(1), 48–61.
Fewtrell, L., Kaufmann, R. B., Kay, D., Enanoria, W., Haller, L., & Colford, J. M. (2005). Water, sanitation, and hygiene interventions to reduce diarrhoea in less developed countries: a systematic review and meta-analysis. *The Lancet Infectious Diseases, 5*(1), 42–52. doi:10.1016/S1473-3099(04)01253-8.
Flere, S., & Lavrič, M. (2008). Is intrinsic religious orientation a culturally specific American Protestant concept? The fusion of intrinsic and extrinsic religious orientation among non-Protestants. *European Journal of Social Psychology, 38*(3), 521–530. doi:10.1002/ejsp.437.
Flood, G. D. (1996). *An introduction to Hinduism*. Cambridge: Cambridge University Press.
Frank, R. S., & Wollheim, W. (1986). *The book of Jewish books: A reader's guide to Judaism*. New York: Harper & Row.
Harris, P. B. (2005). Is cleanliness next to godliness?: The role of housekeeping in impression formation. *Environment and Behavior*. doi:10.1177/0013916504266803.
Holt, C. L., & McClure, S. M. (2006). Perceptions of the religion–health connection among African American church members. *Qualitative Health Research, 16*(2), 268–281. doi:10.1177/1049732305275634.
Huijts, T., & Kraaykamp, G. (2011). Religious involvement, religious context, and self-assessed health in Europe. *Journal of Health and Social Behavior, 52*(1), 91–106. doi:10.1177/0022146510394950.
Hummer, R. A., Rogers, R. G., Nam, C. B., & Ellison, C. G. (1999). Religious Involvement and U.S. Adult. *Mortality*. doi:10.2307/2648114.
Ignatow, G. (2009). Culture and embodied cognition: Moral discourses in internet support groups for overeaters. *Social Forces, 88*(2), 643–670. doi:10.1353/sof.0.0262.
John, O. P., Robins, R. W., & Pervin, L. A. (2008). *Handbook of personality: Theory and research* (3rd ed.). New York: Guilford.
Karademas, E. C. (2006). Self-efficacy, social support and well-being: The mediating role of optimism. *Personality and Individual Differences, 40*(6), 1281–1290. doi:10.1016/j.paid.2005.10.019.
Kark, J. D., Shemi, G., Friedlander, Y., Martin, O., Manor, O., & Blondheim, S. H. (1996). Does religious observance promote health? Mortality in secular versus religious Kibbutzim in Israel. *American Journal of Public Health, 86*(3), 341–346. doi:10.2105/AJPH.86.3.341.
Kirkpatrick, L. A., & Hood, R. W., Jr. (1990). Intrinsic–extrinsic religious orientation: The boon or bane of contemporary psychology of religion? *Journal for the Scientific Study of Religion, 29*, 442–462.
Koenig, H. (2013). *Is religion good for your health?: The effects of religion on physical and mental health*. Retrieved from http://books.google.co.uk/books?hl=en&lr=&id=HS-4AQAAQBAJ&oi=fnd&pg=PP1&dq=coping,+stress+and+physical+health&ots=rw3zaW4Fvp&sig=SxR749lMJddPh85mEMDXONVDqM8.
Kroenke, C. H., Kubzansky, L. D., Schernhammer, E. S., Holmes, M. D., & Kawachi, I. (2006). Social networks, social support, and survival after breast cancer diagnosis. *Journal of Clinical Oncology, 24*(7), 1105–1111. doi:10.1200/JCO.2005.04.2846.
Laurencelle, R. M., Abell, S. C., & Schwartz, D. J. (2002). The relation between intrinsic religious faith and psychological well-being. *International Journal for the Psychology of Religion*. doi:10.1207/S15327582IJPR1202_03.
Litman, L., Robinson, J., & Abberbock, T. (2017). TurkPrime.com: A versatile crowdsourcing data acquisition platform for the behavioral sciences. *Behavior Research Methods, 49*(2), 433–442.
Lizardo, O. (2012). The conceptual bases of metaphors of dirt and cleanliness in moral and non-moral reasoning. *Cognitive Linguistics, 23*(2), 367–393. doi:10.1515/cog-2012-0011.
Mahoney, A., Pargament, K. I., Tarakeshwar, N., & Swank, A. B. (2001). Religion in the home in the 1980s and 1990s: A meta-analytic review and conceptual analysis of links between religion, marriage, and parenting. *Journal of Family Psychology, 15*(4), 559–596. doi:10.1037/1941-1022.S.1.63.
McCullough, M. E., Bono, G., & Root, L. M. (2005a). Religion and forgiveness. In R. F. Paloutzian & C. L. Park (Eds.), *Handbook of the psychology of religion and spirituality* (pp. 394–411). New York: Guilford Press.

McCullough, M. E., Enders, C. K., Brion, S. L., & Jain, A. R. (2005b). The varieties of religious development in adulthood: A longitudinal investigation of religion and rational choice. *Journal of Personality and Social Psychology*, *89*(1), 78.

McCullough, M. E., & Willoughby, B. L. (2009). Religion, self-regulation, and self-control: Associations, explanations, and implications. *Psychological Bulletin*, *135*(1), 69.

Neill, C. M., & Kahn, A. S. (1999). The role of personal spirituality and religious social activity on the life satisfaction of older widowed women. *Sex Roles, 40*(3–4), 319–329. doi:10.1023/A:1018811324286.

Preston, J. L., & Ritter, R. S. (2012). Cleanliness and godliness: Mutual association between two kinds of personal purity. *Journal of Experimental Social Psychology, 48*(6), 1365–1368.

Sanavio, E. (1988). Obsessions and compulsions: The Padua Inventory. *Behaviour Research and Therapy*, *26*(2), 169–177.

Scallan, E., Hoekstra, R. M., Angulo, F. J., Tauxe, R. V., Widdowson, M. A., Roy, S. L., et al. (2011). Foodborne illness acquired in the United States—major pathogens. *Emerging Infectious Diseases, 17*(1), 7.

Schnall, E., Wassertheil-Smoller, S., Swencionis, C., Zemon, V., Tinker, L., O'Sullivan, M. J., et al. (2010). The relationship between religion and cardiovascular outcomes and all-cause mortality in the Women's Health Initiative Observational Study. *Psychology & Health, 25*(2), 249–263. doi:10.1080/08870440802311322.

Speltini, G., & Passini, S. (2014). Cleanliness/dirtiness, purity/impurity as social and psychological issues. *Culture & Psychology, 20*(2), 203–219.

Sum, L. M. (2013). Effect of physical cleanliness and cognitive cleanliness on moral judgment.

Taylor, A., & MacDonald, D. A. (1999). Religion and the five factor model of personality: An exploratory investigation using a Canadian university sample. *Personality and Individual Differences, 27*(6), 1243–1259. doi:10.1016/S0191-8869(99)00068-9.

Tomaka, J., Thompson, S., & Palacios, R. (2006). The relation of social isolation, loneliness, and social support to disease outcomes among the elderly. *Journal of Aging and Health, 18*(3), 359–384. doi:10.1177/0898264305280993.

Uchino, B. N. (2006). Social support and health: A review of physiological processes potentially underlying links to disease outcomes. *Journal of Behavioral Medicine*. doi:10.1007/s10865-006-9056-5.

Van der Geest, S. (2005). "Sacraments" in the hospital: Exploring the magic and religion of recovery. *Anthropology & Medicine*. doi:10.1080/13648470500139957.

Watlington, C. G., & Murphy, C. M. (2006). The roles of religion and spirituality among African American survivors of domestic violence. *Journal of Clinical Psychology, 62*(7), 837–857. doi:10.1002/jclp.20268.

Williams, M. T., Abramowitz, J. S., & Olatunji, B. O. (2012a). The relationship between contamination cognitions, anxiety, and disgust in two ethnic groups. *Journal of Behavior Therapy and Experimental Psychiatry, 43*(1), 632–637.

Williams, M., Davis, D. M., Thibodeau, M. A., & Bach, N. (2013). Psychometric properties of the obsessive–compulsive inventory revised in African Americans with and without obsessive–compulsive disorder. *Journal of Obsessive–Compulsive and Related Disorders, 2*(4), 399–405.

Williams, M. T., Gooden, A. M., & Davis, D. (2012b). African Americans, European Americans, and pathological stereotypes: An African-centered perspective. *Psychology of Culture*.

Williams, D. R., & Sternthal, M. J. (2007). Spirituality, religion and health: Evidence and research directions. *Medical Journal of Australia*, *186*(10), S47.

Williams, M. T., & Turkheimer, E. (2007). Identification and explanation of racial differences on contamination measures. *Behaviour Research and Therapy, 45*(12), 3041–3050.

Williams, M. T., Turkheimer, E., Magee, E., & Guterbock, T. (2008). The effects of race and racial priming on self-report of contamination anxiety. *Personality and Individual Differences, 44*(3), 746–757.

Xu, H., Bègue, L., & Bushman, B. J. (2014). Washing the guilt away: Effects of personal versus vicarious cleansing on guilty feelings and prosocial behavior. *Frontiers in Human Neuroscience, 8*(February), 97. doi:10.3389/fnhum.2014.00097.

Zini, A., Sgan-Cohen, H. D., & Marcenes, W. (2012). Is religiosity related to periodontal health among the adult Jewish population in Jerusalem? *Journal of Periodontal Research, 47*(4), 418–425. doi:10.1111/j.1600-0765.2011.01447.x.