



Short Communication

Within-person relationship between religiosity and life satisfaction: A 20-year study

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ABSTRACT

Cross-sectional and longitudinal studies have documented positive associations between religiosity and well-being. This study sought to reinvestigate the temporal relationship between religiosity and life satisfaction, utilizing the random-intercept cross-lagged panel model, which partitions the variance into between- and within-person components. The data were drawn from a nationally representative survey of American adults ($N = 4167$) collected 3 times during about 2 decades. Consistent with previous cross-sectional studies, a positive but weak association was found between religiosity and life satisfaction at the between-person level. However, within-person estimates (i.e., lagged cross-relations) were not significant, suggesting the absence of (Granger) causal relationships between religiosity and life satisfaction in this sample.

Empirical studies and meta-analyses have generally found a positive association between religiosity and various aspects of well-being, including psychological adjustment (Ano & Vasconcelles, 2005), low depression (Gauthier et al., 2006; Greenfield et al., 2009), and low anxiety (Forouhari et al., 2019). Garssen et al.'s (2021) review of previous meta-analyses of the relationships between religiosity and mental health showed that the effect sizes range between $r = 0.03$ and $r = 0.41$. However, as Garssen et al. point out, the previous meta-analyses have included a mixture of cross-sectional and longitudinal studies. Garssen et al. conducted the first meta-analysis of the longitudinal studies on the relationship between religiosity and various aspects of well-being (e.g., quality of life, distress, and life satisfaction), and found that the effect sizes ranged between $r = 0.07$ and $r = 0.10$.

Life satisfaction (LS) is defined as the evaluation of the quality of one's life in general or various domains of life, which is an important element of mental well-being (Pavot & Diener, 2008). Hackney and Sanders' (2003) meta-analysis showed that the correlations between various aspects of religiosity and LS ranged between 0.10 and 0.14. Consistently, the correlation for LS in Garssen et al.'s (2021) meta-analysis of longitudinal studies was 0.10. Therefore, the correlations between religiosity and LS in previous cross-sectional and longitudinal studies generally range between 0.10 and 0.14, indicating a weak but positive association.

Previous longitudinal studies on the relationship between religiosity

and LS have relied mainly on statistical techniques that do not partition the observed variance in the variables into between- and within-person sources, and thus their results cannot be an unambiguous basis for causal inferences between two variables¹ (Hamaker et al., 2015). For example, within and between-person sources of variance are not distinguished in the traditional cross-lagged panel model (CLPM) that is commonly used with panel data (Mulder & Hamaker, 2020).

To address this limitation, and expand this line of research, the present study used the Random-Intercept Cross-Lagged Panel Model (RI-CLPM), an extension of the CLPM that decomposes the variance into within- and between-person components (Hamaker et al., 2015). In the RI-CLPM, after accounting for the trait-like, time-invariant stability of the variables, parameters at the within-person level merely reflect the influences of the state-like time-varying components of the variables. Whereas between-person linkages do not reflect causality (at least during the period of the study), Granger causal inferences can be made based on the cross-lagged temporal relationships at the within-person level (Keijsers, 2016; Mund & Nestler, 2019). The RI-CLPM has not been used in previous longitudinal studies on the relationship between religiosity and LS. Therefore, the present analysis was expected to provide updated and more accurate information on the within-person relationships between religiosity and LS.

This study used a scale of religiosity that measures the salience of religion and religious identity for people, reflecting individuals' general

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¹ In this study, Granger's concept of causal inference is intended not Rubin's concept of causality that requires randomized experiments. Granger causality concerns causal precedence in longitudinal studies, which requires significant lagged cross-relations between two variables as a necessary condition (Granger, 1969).

level of religiosity. The LS scale used in this study captures both general LS and satisfaction with important life domains, functioning as an indicator of general subjective well-being. In addition, the measurement occasions are about a decade apart. Therefore, the purpose of this study was to investigate the long-term relationships between religiosity and LS, measured as two general concepts.

1. Methods

1.1. Participants

The sample is from the Midlife in the United States project (MIDUS; midus.wisc.edu). Data from Wave 1 (collected during 1995–1996), Wave 2 (2004–2006), and Wave 3 (2013–2014) were used. Participants that participated in less than two waves of data collection were excluded (final $N = 4167$, 54.9% females, mean age = 47.14 at Wave 1, $SD = 12.375$). No other participant was excluded from the analysis.

1.2. Measures

1.2.1. Life satisfaction

LS was assessed using five items capturing satisfaction with overall life, work, health, relationship with spouse/partner, and relationship with children. Each item was coded from 0 = *the worst possible* to 10 = *the best possible*.

1.2.2. Religiosity

Six items were used to measure religiosity, which are presented in the supplementary material. Respondents indicated how well the items describe them, on a scale from 1 = *very* to 4 = *not at all* (reverse-coded).

1.2.3. Demographic variables

The baseline age (i.e., centered age at Wave 1), the squared age, and gender were included as time-invariant predictors of observed time-variant variables at Waves 2 and 3.

Internal consistencies are reported in [Table 1](#).

1.3. Statistical analysis

All models of the study were estimated with observed variables and robust maximum likelihood (MLR) in *Mplus* 8.4. Missing data were handled using Full Information Maximum Likelihood. A cutoff of 0.95 for the comparative fit index (CFI), 0.06 for the root mean square error of approximation (RMSEA), and 0.08 for the standard root mean square residual (SRMR) were considered as indicative of good fit (e.g., [Kline, 2015](#)). The paths between state variables were held equal across time points.

2. Results

The model provided an acceptable fit to the data ($\chi^2 = 84.220$, $df = 5$, $RMSEA = 0.062$, $CFI = 0.991$, $SRMR = 0.047$). The intercept variances (0.670 and 0.405, for LS and religiosity, respectively) were significant ($p < .001$), suggesting that there are individual differences in

Table 1
Reliabilities and R squares.

	Alpha	R ²
Life satisfaction		
W1	0.66	–
W2	0.66	0.048
W3	0.64	0.048
Religiosity		
W1	0.89	–
W2	0.89	0.191
W3	0.90	0.270

the person-level means of the variables. The R^2 estimates for all models are reported in [Table 1](#). The regression coefficients are presented in [Table 2](#). The autoregressive paths were significant, indicating that after ruling out the stable components of the variables, and adjusting for the effects of demographic variables, each state variable predicts its future state. None of the cross-lagged effects were significant, suggesting that religiosity and LS are unrelated at the within-person level. Synchronous correlations between the state components of the variables within each time point were all non-significant ([Table 2](#)). The correlation between the stable components of religiosity and LS was positive and significant ($r = 0.168$, $p < .001$), whereas the synchronous within-person correlation between religiosity and LS was non-significant (Wave 1, $r = 0.043$, $p = .265$).

3. Post hoc analysis

The 6-item religiosity scale used in the MIDUS includes two items that tap into general religiosity (e.g., religious salience), and four items that measure more social aspects of religiosity (e.g., religion as a source of social identity). To examine the possibility that these two dimensions of religiosity have differential relationships with LS over time, two separate cross-lagged models were tested. In one analysis, religiosity was measured only with the two general religiosity items and, in the other, religiosity was measured with the four social identity items. The results are presented in Tables S1–S4, in the supplementary material. As can be seen, the results of both analyses were similar to the main results, and none of the cross-lagged effects were significant.

4. Discussion

Auto-regressive effects were significant, suggesting that there are carry-over effects across the measurement points. In other words, deviations from one’s expected score of religiosity or LS are likely to lead to deviations in the same variables over time. The within-person carry-over effect was stronger for religiosity than LS, which means greater within-person temporal stability for religiosity as reflected also in the R^2 estimates ([Table 1](#)). There was a weak positive correlation between the two random intercepts ($r = 0.168$), showing that religious people have slightly higher levels of LS in general. This is in line with the results of previous cross-sectional studies (e.g., [Gauthier et al., 2006](#)) and meta-analyses ([Hackney & Sanders, 2003](#)). But the correlation between the stable components of religiosity and LS does not speak to directionality, for which the lagged cross-relations between religiosity and LS should be examined ([Hamaker et al., 2015](#)). The results showed that none of the cross-lagged effects were significant, suggesting that deviations from an individual’s expected level of a variable were not followed by deviations in the other variable at the subsequent time point. In other words, within-person fluctuations in a variable do not lead to within-person fluctuations in the other variable on the next measurement occasion. In sum, although a positive relationship has been found between religiosity and LS in the previous longitudinal studies ([Garssen et al., 2021](#)), the present results suggest a lack of within-person associations. Hence, the present results did not yield any evidence of Granger causality between religiosity and LS.

This study utilized a large national sample and included data collected over two decades, which increases the level of confidence in the results. As can be established, the present study is the first to look at the within-person associations between religiosity and LS using the RI-CLPM that partitions the variance into stable and time-varying components. Thus, inferences about temporal relationships can be more reliably made based on the present results. The present results suggest that some (or much) of the shared variance between religiosity and well-being documented in previous studies is attributable to the time-invariant sources of variance, and is not temporal. The present study illustrated the great potential of the RI-CLPM in advancing this line of research.

Table 2
Random-intercept cross-lagged model results.

Predictor	Outcome	Unstandardized coefficient	p	Confidence interval		Standardized coefficient
				Lower	Upper	
Autoregressive						
LS1	LS2	0.227	0.000	0.107	0.346	0.220
LS2	LS3					0.218
Rel1	Rel2	0.512	0.000	0.430	0.595	0.438
Rel2	Rel3					0.519
Cross-lagged						
Rel1	LS2	-0.026	0.766	-0.195	0.143	-0.011
Rel2	LS3					-0.013
LS1	Rel2	-0.016	0.274	-0.044	0.012	-0.029
LS2	Rel3					-0.030
Covariance						
	Between					
LS1	Rel1	0.016	0.263	-0.012	0.045	0.043
LS2	Rel2	0.007	0.627	-0.022	0.036	0.018
LS3	Rel3	-0.004	0.740	-0.027	0.019	-0.010
Trait LS	Trait Rel	0.087	0.000	0.050	0.124	0.168

Note. LS = life satisfaction. Rel = religiosity.

However, the different results obtained in the present study can also be partially explained in light of other characteristics of the study. For example, the study looked exclusively at the long-term relationship between religiosity and LS, with a lag length of about 10 years. It should be borne in mind that studies with shorter lag lengths may return different results. Religiosity and LS may have stronger or weaker within-person associations with shorter lags (e.g., one month or year). In addition, the study measured well-being and religiosity as general concepts. Various components of religiosity (e.g., religious attendance, religious coping, private religiosity, and spirituality) may have differential relationships with various components of well-being as confirmed by meta-analytic results (e.g., Anó & Vasconcelles, 2005). The study used a general population sample from the USA. Studies with other sample characteristics may result in different effect sizes. For example, religiosity may be more strongly related to well-being in certain groups of patients (Jim et al., 2015). The USA is a moderately religious country (Joshanloo & Gebauer, 2020). The results may be different in more religious (such as Middle Eastern) or more secular (e.g., such as Nordic) countries (Lavrić & Flere, 2008), given the importance of person-environment fit for human functioning (Namini et al., 2010). Thus, future studies need to expand the present findings by using various lag lengths, culturally and demographically diverse samples, and multidimensional measures of well-being and religiosity.

CRedit authorship contribution statement

Mohsen Joshanloo: Formal analysis, Conceptualization, Writing – original draft, Writing – review & editing.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.paid.2021.110933>.

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