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Psychology of Religion and Spirituality

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Sixty Years of Studying the Sacred: Auditing and Advancing the Psychology of Religion and Spirituality

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Objective: This bibliometric study audits three key psychology of religion/spirituality (R/S) journals and draws on results to advance the psychology of R/S field broadly. ***Method:*** We identified all English-language articles published in *Archive for the Psychology of Religion* (*APR*; 1962–2022, $k = 370$), *International Journal for the Psychology of Religion* (*IJPR*; 1991–2022, $k = 845$), and *Psychology of Religion and Spirituality* (*PRS*; 2008–2022, $k = 587$) through March 1, 2022. For those 1,802 articles, we coded article features, citation counts, and utilized open science practices. ***Results:*** Collectively, 63% were empirical articles (37% nonempirical). The median sample size (average *N*-pact factor) was 263 and median citation count was 1 in PsycINFO and 11 in Google Scholar. Among the 1,509 empirical studies, 90% used a quantitative-only analytic method (6% qualitative-only, 4% mixed-methods), 76% utilized a cross-sectional design (14% experimental, 10% longitudinal or longitudinal/experimental), 43% recruited student samples (52% community-adult, 6% clinical, 9% youth-inclusive samples), and 57% were conducted solely in the United States (36% elsewhere, 7% internationally). Power analyses indicated the average psychology of R/S study was higher powered than the average study in premier social–personality, clinical psychology, and sport–exercise psychology journals. Like many journals, these psychology of R/S journals demonstrated recently accelerating utilization of most open science practices (preregistration, open data, and open materials) but not open access publishing. ***Conclusion:*** The psychology of R/S field is poised to make significant scientific and societal contributions, especially as it embraces open science practices; increased geographical, cultural, and methodological diversity; and enhanced scientific quality and rigor.

Keywords: bibliometric analysis, religion, spirituality, open science, metascience

Supplemental materials: https://doi.org/10.1037/rel0000485.supp

Socrates famously asserted "the unexamined life is not worth living," and in the milieu of psychology's current credibility and replicability crisis (Hughes, 2018; Nosek et al., 2022), one could aver "the unexamined field is not worth advancing." The aim of this bibliometric study is to audit English-language articles published between 1962 and 2022 in three key psychology of religion/spirituality (R/S) journals, identifying patterns of research features and open science practices, as well as promising areas for field advancement. Following the strategy of an initial foray into this comparative venture (Ladd et al., 2019), we focus on three journals with historic and contemporary relevance for this field—*Archive for the Psychology of Religion* (*APR*; the field's oldest journal, published since 1914), *International Journal for the Psychology of Religion* (*IJPR*; a premier European-based journal, published since 1991), and *Psychology of Religion and Spirituality* (*PRS*; a premier U.S.-based journal, published since 2008).[1] Although there are other journals in the psychology of R/S field (e.g., *Journal of Religion and Health* and *Journal for the Scientific Study of Religion*), these three journals offer a helpful gauge for evaluating the field's metascientific foundations, due to their historical importance, contemporary impact, and persistent focus on the discipline of psychology. They also are of interest because they are early adopters of open science practices (e.g., preregistration, badging systems, and registered reports) and are participating in the current Open Science of Religion Initiative, funded by the John Templeton Foundation (2022).

The Tale of Three Journals

The use of psychological principles to explore R/S belief and practice in a journal format has not followed a linear pathway; its

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The data and materials for this study are available on the Open Science framework: https://osf.io/xse4v/.

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[1] Four members of the authorship team (EBD, JPL, MVE, and KLL) serve on the editorial boards of these journals.

path is more akin to a hallway of mirrors. Early efforts had strong but not monolithic theological ties. As many social contexts became more secularized, psychologists increasingly reimagined their roles as more investigative and scientifically oriented. Given *APR*'s long history, its pages reveal this gamut of perspectives, albeit with a clear European emphasis on theoretical development throughout. *IJPR* and *PRS* experienced less intellectual fluctuation because their more recent origins planted them firmly in the contemporary psychology discipline. This combination of the long-lived, European-oriented perspective of *APR*, global psychological perspective of *IJPR*, and U.S.-oriented psychological perspective of *PRS* offers three distinct vantage points from which to view and audit the psychology of R/S field as a whole.

Archive for the Psychology of Religion

First published in 1914 in Germany, the *Archiv für Religionspsychologie* (*Archive for the Psychology of Religion*) is the official publication of the International Association for the Psychology of Religion. The founding editor of *APR* was German scholar Wilhelm Stählin (1883–1975). *APR*'s initial publication was promptly interrupted by World War I. *APR* briefly reappeared in the late 1920s and then became more regular as an annual in the 1960s (Belzen, 2016). In 2019, *APR* joined the SAGE publishing company, increasing its global circulation and adjusting its formal classification to the domain of psychology. *APR* now has three issues per year, featuring three primary types of work: theory (major reviews, conceptual development), research (theory testing, reports), and pedagogy (tutorials concerning methods and/or theory, historical notes). Its 2021 Journal Citation Reports 2-year impact factor was 1.429.

International Journal for the Psychology of Religion

The *IJPR* was founded in 1991 by three scholars: Laurence B. Brown (in New Zealand), H. Newton Malony (in the U.S.), and Ralph W. Hood, Jr. (also in the U.S.). It was originally published by Lawrence Erlbaum and now is published by Taylor and Francis. *IJPR* articles cover a variety of topics, including theory, psychometric scale development and validation, religious development, conversion, religious experience, religion and mental health, religious attitudes, and experimental approaches to religion. *IJPR* publishes research reports, registered reports, commentaries, book reviews, and statements addressing articles published in previous issues. Annually, it publishes four online issues and one printed format volume. Its 2021 2-year impact factor was 2.880.

Psychology of Religion and Spirituality

First published in 2008, *PRS* is the official journal of Division 36 (Society for the Psychology of Religion and Spirituality) of the American Psychological Association (APA). The APA Publications Office developed the idea for the journal and ultimately helped create it, approaching APA Division 36 leaders in 2006 to explore the possibility of cosponsoring APA's first journal focused on the psychology of R/S (McMinn et al., 2009; Piedmont, 2009, 2013). Since its creation and championing by Founding Editor Ralph Piedmont, *PRS* has had two guiding values—scientific rigor and "diversity … of ideas, methodologies, and content … [in order] to ensure [it] represents the entire breadth and scope of the field" (Piedmont, 2009, p. 1). *PRS* publishes four issues per year, both in online and print format. Its 2021 2-year impact factor was 3.673.

Growth Trends in the Three Journals

Growth trends in each of these journals' number of issues, articles, and pages published per year are presented in Supplemental Table S1. Since its inception in 1991, *IJPR* has held quite steady in annually publishing four issues (*Mdn* = 4), 24–32 articles (*Mdn* = 27), and 275–325 pages (*Mdn* = 294). Since the early 2000s, *APR* has also generally published 2–3 issues (*Mdn* = 3), 14–21 articles (*Mdn* = 17), and 250–375 pages (*Mdn* = 343) per year. *PRS* has consistently produced four issues per year but has increased dramatically in how many articles and pages it publishes, rising from an annual median of 25 articles and 319 pages during its early years (2008–2014) to its present annual median of 47 articles and 473 pages since 2015.

Scope of the Present Bibliometric Study

With this historical context in mind, we now transition to the present bibliometric study. According to Donthu et al. (2021), the bibliometric methodological approach involves "the application of quantitative techniques (i.e., bibliometric analysis—e.g., citation analysis) on bibliometric data (e.g., units of publication and citation)" (p. 286), and its goal is to "summarize large quantities of bibliometric data to present the state of the intellectual structure and emerging trends of a research topic or field" (p. 287). Such an analysis of a few keystone psychology of R/S journals can offer a perspective on the field and its evolving trajectories. Hence, the aim of this bibliometric analysis is to identify the characteristics, citations, and trends in the psychology of R/S field to date, both within and across the selected journals: *APR*, *IJPR*, and *PRS*.

Bibliometric Analytic Approach and Search Strategy

Like previous bibliometric studies in psychology (Fraley & Vazire, 2014; Kozlowski et al., 2017; Reardon et al., 2019), we set out to use as objective quantitative methods as possible to minimize subjectivity and potential bias. We also strove to follow scholarly precedent from these prior bibliometric studies to guide how we conducted, interpreted, and presented analyses.

We began our analysis by seeking to identify all English-language articles ever published in *PRS* (since 2008), *IJPR* (since 1991), and *APR* (since 1914; *APR* had German- and French-language contributions until recently, with its first English-language article appearing in 1962). We started by conducting three separate searches on the APA PsycINFO database between February 14 and March 1, 2022. We respectively used the following search terms, prefaced by *SO (Source) Publication Name*: SO "*Psychology of Religion and Spirituality*," SO "*International Journal for the Psychology of Religion*," and SO "*Archive for the Psychology of Religion*." We then used the search parameter *Publication* to ensure all identified records were from that particular journal. This search strategy revealed 588 records for *PRS* and 697 for *IJPR* but only 262 for *APR*. Therefore, for *APR*, we instead searched in the JSTOR database, using the search term "*Archive for the Psychology of Religion*," and this search revealed 402 records. The results of these searches are posted on the Open Science Framework, along

with all the project's other data and materials: https://osf.io/xse4v/ (Davis, 2022).

Next, we attempted to exclude any published material that was not a distinct and relevant element in the published corpus. Thus, we excluded any errata (*PRS*: 1; *IJPR*: 5; *APR*: 1), front matter (*PRS* and *IJPR*: 0; *APR*: 30), or back matter (*PRS* and *IJPR*: 0; *APR*: 25).

Finally, we sought to identify all English-language articles published in these journals. Hence, we went to each journal's official webpage and visually browsed all published issues, cross-referencing them with the PsycINFO/JSTOR lists we had procured. We identified no additional articles for *PRS* but an additional 153 articles for *IJPR* and 24 for *APR*.

Thus, in total we identified 587 articles for *PRS*, 845 for *IJPR*, and 370 for *APR*. This was the corpus of psychology of R/S articles we proceeded to code and analyze.

Article Coding

For these 1,802 articles, the first, second, and third author (EBD, EKL, and EJH) manually coded the article features (article type, sample size, study analytic method, study design, sample type, and study location), citation counts (in PsycINFO and Google Scholar), and open science practices (preregistration, open sharing of data or materials, and open access). We also identified the standardized keywords that the APA PsycINFO database used to indicate the key topical subjects of each article. The detailed coding criteria are described in Supplemental Table S2, and results of the coding process are presented in Excel and SPSS format at https://osf.io/xse4v/ (Davis, 2022).

The third author (EJH; an undergraduate psychology student) only coded the citation counts, which were verified by the second author (EKL; a masters' in clinical mental health counseling student). The second author also coded the article features and open science practices after extensive training with the first author (EBD; a professor of psychology with expertise in the psychology of R/S and in open science practices). Within a short time, the second and first author achieved over 80% agreement in coding and settled any discrepancies by reaching consensus. The first author also meticulously reexamined the coding for all studies, making any necessary corrections to enhance the internal validity of the audit.

Results

Article Features

Across the corpus, 1,130 (62.71%) of the 1,802 articles were empirical (i.e., studies that involved collection of data on or from human participants; 885 [49.11%] single-study, 234 [12.99%] multistudy, and 11 [0.61%] meta-analyses), and 672 articles (37.29%) were nonempirical (154 [8.55%] theoretical articles, 140 [7.77%] editorials, 126 [6.99%] commentaries/replies, 56 [3.11%] systematic reviews, and 196 [10.88%] book reviews; see Table 1). *PRS* contained the highest percentage of empirical articles (87.73%, $k = 515$ out of 587 total articles in *PRS*), most of which were single-study articles (66.95%, $k = 393$). *IJPR* had the highest percentage of nonempirical articles (51.83%, $k = 438$ out of 845 total articles in *IJPR*), most of which were either commentaries/replies (12.66%, $k = 107$) or book reviews (22.37%, $k = 189$).

Only 37 (2.05%) of the corpus's articles were freely available to the public, following the open access model pioneered in 2002 by the Budapest Open Access Initiative (Johnson, 2005). Open access articles were most common in *APR* (6.22%, $k = 23$ out of 370 total articles in *APR*), perhaps largely because its publisher (SAGE) provides automatic, free open access distribution depending on the first author's country of residence.

Citation Counts

We examined citation counts in two premier scholarly databases—APA PsycINFO and Google Scholar (see Table 2). Across the corpus, articles were cited in PsycINFO a mean of 7.62 times ($SD = 22.80$), median of 1 time, and mode of 0 times (range = 0–597). Articles were cited in Google Scholar a mean of 36.10 times

Table 1
English-Language Articles Published in PRS (2008–2022), IJPR (1991–2022), and APR (1962–2022)

	PRS ($k = 587$)		*IJPR* ($k = 845$)		*APR* ($k = 370$)		Across journals ($k = 1,802$)	
Article feature	*k*	%	*k*	%	*k*	%	*k*	%
Article type								
Empirical articles	515	87.73	407	48.17	208	56.22	1,130	62.71
Single-study articles	*393*	*66.95*	*315*	*37.28*	*177*	*47.84*	*885*	*49.11*
Multistudy articles	*117*	*19.93*	*88*	*10.41*	*29*	*7.84*	*234*	*12.99*
Meta-analyses	*5*	*0.85*	*4*	*0.47*	*2*	*0.54*	*11*	*0.61*
Nonempirical articles	72	12.27	438	51.83	162	43.78	672	37.29
Theoretical	*38*	*6.47*	*58*	*6.86*	*58*	*15.68*	*154*	*8.55*
Editorial	*21*	*3.58*	*66*	*7.81*	*53*	*14.32*	*140*	*7.77*
Commentary/reply	*3*	*0.51*	*107*	*12.66*	*16*	*4.32*	*126*	*6.99*
Systematic reviews	*10*	*1.70*	*18*	*2.13*	*28*	*7.57*	*56*	*3.11*
Book reviews	*0*	*0.00*	*189*	*22.37*	*7*	*1.89*	*196*	*10.88*
Open access articles	7	1.19	7	0.83	23	6.22	37	2.05

Note. *PRS* = *Psychology of Religion and Spirituality*; *IJPR* = *International Journal for the Psychology of Religion*; *APR* = *Archive for the Psychology of Religion*. All figures are based on search results up through March 1, 2022. Nonitalicized rows indicate figures for major categories in the table, whereas italicized rows indicate figures for subcategories of those major categories. Totals of percentages are not 100 for every feature because of rounding.

Table 2
Mean and Median Citation Counts and Sample Size for Articles in PRS (2008–2022), IJPR (1991–2022), and APR (1962–2022)

Article feature	*PRS*	*IJPR*	*APR*	Across journals
Citation counts (all articles)	$k = 587$	$k = 845$	$k = 370$	$k = 1{,}802$
Times cited in PsycINFO				
M[a]	7.60	10.04	0.02	7.62
SD	14.46	29.61	0.16	22.80
Mdn	2.00	1.00	0.00	1.00
Mode	0.00	0.00	0.00	0.00
Range[a]	0–151	0–597	0–2	0–597
Times cited in Google Scholar				
M[a]	42.36	41.94	12.85	36.10
SD	160.75	116.52	22.24	122.50
Mdn	15.00	10.00	7.00	11.00
Mode	0.00	0.00	0.00	0.00
Range[a]	0–3,532	0–1,873	0–302	0–3,532
Sample size (empirical studies only)	$k = 724$	$k = 535$	$k = 250$	$k = 1{,}509$
Mean	1,761.29	2,689.60	945.36	1,955.36
SD	13,275.04	26,105.30	5,560.56	18,204.39
Trimmed mean[b]	395.20	359.86	344.90	374.32
SD	326.76	317.48	307.64	320.84
Median (average *N*-pact Factor)	277.00	233.00	247.50	263.00
Range	7–308,828	1–472,688	1–85,072	1–472,688

Note. *PRS* = *Psychology of Religion and Spirituality*; *IJPR* = *International Journal for the Psychology of Religion*; *APR* = *Archive for the Psychology of Religion*. All figures are based on search results up through March 1, 2022. Totals of percentages are not 100 for every feature because of rounding.
[a] The 2008 introductory issue of *PRS* was mostly comprised of six highly cited, reprinted articles (e.g., Hill & Pargament, 2003; Mahoney et al., 2001). Excluding those articles from the present audit's citation-count averages did not change any of the medians or modes, but it yielded the following means, standard deviations, and ranges. For the corpus, the mean PsycINFO citation count remained at 7.62 ($SD = 22.83$; range = 0–597), but the mean Google Scholar citation count declined to 32.79 ($SD = 86.09$; range = 0–1,873). Likewise, for *PRS* specifically, the mean PsycINFO citation count remained at 7.60 ($SD = 14.52$; range = 0–151), but the mean Google Scholar citation count declined to 32.19 ($SD = 49.82$; range = 0–410). [b] Based on scholarly precedent (Fraley & Vazire, 2014; Reardon et al., 2019), a trimmed mean was also calculated, using trimmed data in which all empirical studies with sample sizes of 1,000 or more were recoded as having a sample size of 999.

($SD = 122.50$), median of 11 times, and mode of 0 times (range = 0–3,532). For an explanation on these disparities, see Supplemental Table S2's description of how each database calculates its counts. Citation averages were similar for *PRS*[2] (PsycINFO: $M = 7.60$, $SD = 14.46$, $Mdn = 2$, mode = 0; Google Scholar: $M = 42.36$, $SD = 160.75$, $Mdn = 15$, mode = 0) and *IJPR* (PsycINFO: $M = 10.04$, $SD = 29.61$, $Mdn = 1$, mode = 0; Google Scholar: $M = 41.94$, $SD = 116.52$, $Mdn = 10$, mode = 0) but lower for *APR* (PsycINFO: $M = 0.02$, $SD = 0.16$, $Mdn = 0$, mode = 0; Google Scholar: $M = 12.85$, $SD = 22.24$, $Mdn = 7$, mode = 0).

Empirical Studies

Study Methodology

Next, we analyzed only studies that were empirical (see Table 3). Because several of these articles involved multiple studies, there were more coded empirical studies than distinct articles. Specifically, there were 724 empirical studies (515 distinct articles) in *PRS*; 535 (407 distinct articles) in *IJPR*; 250 (208 distinct articles) in *APR*; and 1,509 altogether (1,130 distinct articles).

Across the corpus, 89.60% of the empirical studies used a quantitative-only analytic method ($k = 1{,}352$), 6.16% ($k = 93$) used a qualitative-only method, and 4.24% ($k = 64$) used a mixed-methods approach. Qualitative and mixed-methods studies were more commonly published in *APR* (13.20% of *APR* articles) than in either *IJPR* (3.36%) or *PRS* (5.80%). The same was true of mixed-methods studies (9.20% in *APR* vs. 3.55% and 3.04% in *IJPR* and *PRS*, respectively). Both in *IJPR* and *PRS*, over 90% of empirical studies used a quantitative-only analytic method.

Study Design

Most empirical studies (76.41%) were cross-sectional. This figure ranged from 73.27% in *IJPR* to 86.80% in *APR* (it was 75.14% in PRS). In all three journals, the next most common design was experimental (i.e., involved data collection at a single point in time and either random assignment of participants to distinct groups [experimental] or the manipulation of at least one independent variable [quasi-experimental]), which was used in 13.65% of studies overall (6.80% in *APR*, 12.71% in *PRS*, and 18.13% in *IJPR*). Longitudinal or longitudinal-and-experimental designs were used in 9.94% of studies overall and were most common in PRS (10.64%).

[2] See the note on Table 2, regarding the introductory issue of *PRS* and how excluding that issue's six reprinted articles affected the means, standard deviations, and ranges of the citation counts for the corpus and for *PRS*.

Table 3
Features of Empirical Studies Published in PRS (2008–2022), IJPR (1991–2022), and APR (1962–2022)

Study feature	*PRS* (k = 724)		*IJPR* (k = 535)		*APR* (k = 250)		Across journals (k = 1,509)	
	k	%	*k*	%	*k*	%	*k*	%
Study analytic method								
Quantitative only	660	91.16	498	93.08	194	77.60	1,352	89.60
Qualitative only	42	5.80	18	3.36	33	13.20	93	6.16
Mixed methods	22	3.04	19	3.55	23	9.20	64	4.24
Study design								
Cross-sectional	544	75.14	392	73.27	217	86.80	1,153	76.41
Longitudinal	77	10.64	40	7.48	16	6.40	133	8.81
Longitudinal and experimental	11	1.52	6	1.12	0	0.00	17	1.13
Experimental	92	12.71	97	18.13	17	6.80	206	13.65
Study location								
U.S.-only	519	71.69	273	51.03	71	28.40	863	57.19
In a single non-U.S. country	165	22.79	225	42.06	154	61.60	544	36.05
Internationally (2+ countries)	40	5.52	37	6.92	25	10.00	102	6.76
Study sample								
Student sample	302	41.71	258	48.22	94	37.60	654	43.34
Community adult sample	361	49.86	280	52.34	142	56.80	783	51.89
Online crowdsourced	*199*	*27.49*	*93*	*17.38*	*26*	*10.40*	*318*	*21.07*
Clinical sample	37	5.11	34	6.36	20	8.00	91	6.03
Youth-inclusive sample	62	8.56	45	8.41	34	13.60	141	9.34
Open science practices								
Preregistration	30	4.14	8	1.50	1	0.40	39	2.58
Open data	108	14.92	54	10.09	13	5.20	175	11.60
Open materials	159	21.96	206	38.50	76	30.40	441	29.22

Note. *PRS* = *Psychology of Religion and Spirituality*; *IJPR* = *International Journal for the Psychology of Religion*; *APR* = *Archive for the Psychology of Religion*. All figures are based on search results up through March 1, 2022. The italicized row indicates a subcategory of the "community adult sample" category. Totals of percentages are not 100 for every feature because of rounding.

Study Location

Most empirical studies (k = 863, 57.19%) were conducted solely in the United States, but this proportion varied considerably across the three journals. *PRS* had the highest proportion of U.S.-only studies (71.69%), *APR* had the lowest (28.40%), and *IJPR* was in between (51.03%). Across the corpus, 6.76% of studies were conducted internationally (in two or more countries), and this percentage was similar in each journal, ranging from 5.52% in *PRS* to 10.00% in *APR*. The remaining empirical studies were conducted in another single country besides the United States.

Most studies were conducted on the continents of North America (k = 930, 61.63%), Europe (k = 265, 17.56%), or Asia (k = 189, 12.52%). Studies conducted intercontinentally (k = 81, 5.37%) or in Australia–Oceania (k = 23, 1.52%), Africa (k = 12, 0.80%), or South America (k = 9, 0.60%) were rare, revealing a major need to advance psychology of R/S research in the Global South (see Supplemental Table S3).

Study Sample

Across the corpus, 43.34% of empirical articles (k = 654) recruited student samples (i.e., a sample recruited from the undergraduate and/or graduate population at a higher education institution), and 51.89% (k = 783) recruited community-adult samples, with 21.07% (k = 318) being online crowdsourced samples (i.e., a sample recruited via a website, online portal, email listserv, or internet-based company such as Qualtrics Panels, Prolific Panels, Mechanical Turk, or Facebook). The proportion of student samples was roughly similar across journals, ranging from 37.60% in *APR* to 48.22% in *IJPR* (*PRS* was 41.71%). Likewise, the proportion of community-adult samples was also roughly equivalent (*PRS*: 49.86%, *IJPR*: 52.34%, and *APR*: 56.80%), although online crowdsourced samples were somewhat more common in *PRS* (27.49%) than in either *IJPR* (17.38%) or *APR* (10.40%). Both across the corpus and in each journal, it was rare for empirical studies to recruit either a clinical sample (i.e., a sample recruited in a clinical setting or based on a shared diagnosis or clinical experience; overall: 6.03%; *PRS*: 5.11%, *IJPR*: 6.36%, *APR*: 8.00%) or a youth-inclusive sample (i.e., a sample that included participants under age 18 years; overall: 9.34%; *PRS*: 8.56%, *IJPR*: 8.41%, *APR*: 13.60%).

Sample Size and Average N*-Pact Factor*

The final methodological feature we analyzed was the average sample size of empirical studies. Across the corpus (see Table 2), the mean sample size was 1,955.36, but with a *SD* of 18,204.39, a trimmed mean was needed. Based on scholarly precedent (Fraley & Vazire, 2014; Reardon et al., 2019), to calculate the trimmed mean, all empirical studies with sample sizes of 1,000 or more were recoded as having a sample size of 999. This resulted in the recoding of 201 (13.32%) of the 1,509 empirical studies. The trimmed mean was 374.32 (SD = 320.84) and was quite similar across journals (*APR:* M = 344.90, SD = 307.64; *IJPR:* M = 359.86, SD = 317.48; *PRS:* M = 395.20, SD = 326.76). Likewise, the overall median sample size (Average *N*-pact factor [NF-A]—defined as the median sample size over a selected multiyear period) was 263.00, and the NF-A was relatively similar across the three journals: 233.00 in *IJPR*, 247.50 in *APR*, and 277.00 in *PRS*.

In addition, because qualitative and mixed-methods studies tend to have lower sample sizes, we calculated the average sample size for these unique study types. Analyzing qualitative and mixed-methods studies collectively, the nontrimmed mean sample size was 217.00 (SD = 545.85), median was 42.00, and mode was 20.00 (range = 1–5,100). The trimmed mean sample size was 163.28 (SD = 258.03), median was 42.00, and mode was 20.00 (range = 1–999).

Next, drawing on scholarly precedent (Fraley & Vazire, 2014; Reardon et al., 2019), we compared the NF-A from the three psychology of R/S journals to the NF-A from groups of psychology journals coded by previous scholars (see Table 4). Specifically, we compared to the NF-A in six social–personality journals coded by Fraley and Vazire (2014), two personality psychology journals coded by Kossmeier et al. (2019), two clinical psychology journals coded by Reardon et al. (2019), and four sport–exercise psychology journals coded by Schweizer and Furley (2016). The NF-A in the psychology-of-R/S journals collectively (263.00) and individually (*PRS*: 277.00, *IJPR*: 233.00, *APR*: 247.50) was higher than all comparable collective and individual NF-A values. Collective NF-A values from the other journal groupings ranged from 92.35 (social–personality journals; Fraley & Vazire, 2014) to 191.00 (personality journals; Kossmeier et al., 2019), and individual NF-A values ranged from 72.80 (*Psychological Science*) to 192.00 (*Journal of Personality and Individual Differences*).

Across all coded journals, we used NF-A values to conduct power analyses comparing the statistical power to detect various population effect sizes (Fraley & Vazire, 2014). Results of these analyses indicated the average empirical study in the audited psychology-of-R/S journals (both collectively and individually) was adequately powered to detect effect sizes of r = .20 or greater. Between 87% and 92% of studies published in the three audited journals had adequate power to detect this size of effect (*PRS*: 92%, *IJPR*: 87%, *APR*: 89%). This degree of statistical power was higher than the power of the typical study in all the comparison journals, most of which did not achieve adequate power until population effect sizes reached r = .30.

Open Science Practices

Open science practices are defined as "practices that promote openness, integrity, and reproducibility in research" (Banks et al., 2019, p. 257). We coded four keynote open science practices: preregistration, open data, open materials, and open access (see Supplemental Table S2 for coding criteria). Across the corpus of psychology of R/S journals, only 39 studies were preregistered (2.58%), and 37 articles were open access (2.05%). Open access was most likely in *APR* (6.22%; vs. 1.19% in *PRS* and 0.83% in *IJPR*), whereas preregistration was most likely in *PRS* (4.14%; vs. 1.50% in *IJPR* and 0.40% in *APR*). Open data were somewhat common across the corpus (k = 175, 11.60%) and were most frequent in *PRS* (14.92%) and least frequent in *APR* (5.20%). Open materials were common across all journals; they were present for 441 studies overall (29.22%) and were most common in *IJPR* (38.50%) and least common in *PRS* (21.96%).

Analysis of Trends

Trends in Open Science Practices

Like prior bibliometric studies (e.g., Hardwicke et al., 2022; Kozlowski et al., 2017), we wanted to analyze various trends in open

Table 4

Statistical Power Analyses Across Journals, Based on NF-A (Median Sample Size) for Selected Journals and Years

Subdiscipline and journal	Years	NF-A	Population effect size (r)				
			.10	.20	.30	.40	.50
Across this study's three coded psychology-of-R/S journals	**1962–2022**	**263.00**	**.37**	**.91**	**.99**	**.99**	**.99**
Psychology of Religion and Spirituality (*PRS*)	2008–2022	277.00	.38	.92	.99	.99	.99
International Journal for the Psychology of Religion (*IJPR*)	1991–2022	233.00	.33	.87	.99	.99	.99
Archive for the Psychology of Religion (*APR*)	1962–2022	247.50	.35	.89	.99	.99	.99
Across the six coded social–personality psychology journals	**2006–2010**	**92.35**	**.16**	**.48**	**.84**	**.98**	**.99**
Journal of Personality (*JP*)	2006–2010	178.10	.26	.77	.98	.99	.99
Journal of Research in Personality (*JRP*)	2006–2010	129.00	.20	.63	.94	.99	.99
Personality and Social Psychology Bulletin (*PSPB*)	2006–2010	94.60	.16	.50	.85	.98	.99
Journal of Personality and Social Psychology (*JPSP*)	2006–2010	90.10	.16	.48	.83	.98	.99
Journal of Experimental Social Psychology (*JESP*)	2006–2010	86.50	.15	.46	.81	.97	.99
Psychological Science (*PS*)	2006–2010	72.80	.13	.40	.74	.95	.99
Across the two coded personality psychology journals	**1980–2017**	**191.00**	**.28**	**.80**	**.99**	**.99**	**.99**
Journal of Individual Differences (*JID*)	1980–2017	185.00	.27	.78	.99	.99	.99
Personality and Individual Differences (*PAID*)	1980–2017	192.00	.28	.80	.99	.99	.99
Across the two coded clinical psychology journals	**2000, 2005, 2010, 2015**	**174.75**	**.26**	**.76**	**.98**	**.99**	**.99**
Journal of Abnormal Psychology (*JAP*)	2000, 2005, 2010, 2015	175.13	.26	.76	.98	.99	.99
Journal of Consulting and Clinical Psychology (*JCCP*)	2000, 2005, 2010, 2015	182.25	.27	.78	.99	.99	.99
Across the four coded sport–exercise psychology journals	**2009–2013**	**114.00**	**.19**	**.57**	**.91**	**.99**	**.99**
International Journal of Sport Psychology (*IJSP*)	2009–2013	75.50	.14	.41	.76	.95	.99
Journal of Applied Sport Psychology (*JASP*)	2009–2013	131.00	.21	.63	.94	.99	.99
Journal of Sport and Exercise Psychology (*JSEP*)	2009–2013	80.50	.14	.44	.79	.96	.99
Psychology of Sport and Exercise (*PSE*)	2009–2013	138.00	.22	.66	.95	.99	.99

Note. R/S = religion/spirituality. Statistical power to detect various population effect sizes across psychology-of-R/S, social, personality, clinical, and sport–exercise psychology journals, based on average N-pact factor (NF-A; median sample size) across selected journals and years. Power was calculated for a two-tailed test at α = .05, using G*Power 3.1.9.7 (test family: Exact; Statistical test: Correlation; Type of power analysis: Compute achieved power given α, sample size, and effect size). As of 2022, the four extant NF-A analyses in psychology were Fraley and Vazire (2014), Kossmeier et al. (2019), Reardon et al. (2019), and Schweizer and Furley (2016).

Table 5

Trends in the Study Characteristics and Open Science Practices in Psychology of Religion/Spirituality Journals Over Time

Study feature	Before 2000	2000–2004	2005–2009	2010–2014	2015–2019	2020–2022
Study analytic method						
Quantitative only	59 (19.09%)	63 (31.66%)	148 (58.27%)	328 (73.38%)	401 (75.38%)	353 (80.23%)
Qualitative only	5 (1.62%)	6 (3.02%)	12 (4.72%)	16 (3.58%)	35 (6.58%)	19 (4.32%)
Mixed methods	7 (2.27%)	4 (2.01%)	6 (2.36%)	13 (2.91%)	16 (3.01%)	18 (4.09%)
Nonempirical	238 (77.02%)	126 (63.32%)	88 (34.65%)	90 (20.13%)	80 (15.04%)	50 (11.36%)
Study design						
Cross-sectional	66 (92.96%)	61 (83.56%)	135 (81.33%)	288 (80.67%)	334 (73.89%)	269 (68.97%)
Longitudinal	4 (5.63%)	5 (6.85%)	14 (8.43%)	28 (7.84%)	40 (8.85%)	42 (10.77%)
Longitudinal and experimental	0 (0.00%)	0 (0.00%)	1 (0.60%)	6 (1.68%)	5 (1.11%)	5 (1.28%)
Experimental	1 (1.41%)	7 (9.59%)	16 (9.64%)	35 (9.80%)	73 (16.15%)	74 (18.97%)
Study location						
U.S.-only	24 (33.80%)	33 (45.21%)	93 (56.02%)	224 (62.75%)	255 (56.42%)	233 (59.74%)
In a single non-U.S. country	41 (57.75%)	34 (46.57%)	56 (33.73%)	117 (32.77%)	178 (39.38%)	119 (30.51%)
International (2+ countries)	6 (8.45%)	6 (8.22%)	17 (10.24%)	16 (4.48%)	19 (4.20%)	38 (9.74%)
Study sample						
Student sample	38 (53.52%)	44 (60.27%)	83 (50.00%)	180 (50.42%)	171 (37.83%)	138 (35.38%)
Community adult sample	35 (49.30%)	31 (42.47%)	72 (43.37%)	152 (42.58%)	259 (57.30%)	234 (60.00%)
Online crowdsourced	0 (0.00%)	0 (0.00%)	8 (4.82%)	39 (10.92%)	114 (25.22%)	157 (40.26%)
Clinical sample	4 (5.63%)	6 (8.22%)	10 (6.02%)	22 (6.16%)	30 (6.64%)	19 (4.87%)
Youth-inclusive sample	13 (18.31%)	10 (13.70%)	20 (12.05%)	32 (8.96%)	33 (7.30%)	33 (8.46%)
Median sample size (NF-A)	192.00	175.00	195.00	238.00	270.50	316.00
Open science practices						
Preregistration	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	4 (0.88%)	35 (8.97%)
Open data	1 (1.41%)	0 (0.00%)	3 (1.81%)	15 (4.20%)	40 (8.85%)	116 (29.74%)
Open materials	17 (23.94%)	9 (12.33%)	52 (31.33%)	76 (21.29%)	116 (25.66%)	171 (43.85%)
Open access	0 (0.00%)	2 (1.01%)	1 (0.39%)	0 (0.00%)	20 (3.76%)	21 (4.77%)

Note. NF-A = average *N*-pact factor (median sample size over a selected multiyear period). The figures in this table are based only on English-language research published in *Psychology of Religion and Spirituality* (*PRS*) from 2008 to 2022, *International Journal for the Psychology of Religion* (*IJPR*) from 1991 to 2022, and *Archive for the Psychology of Religion* (*APR*) from 1962 to 2022.

science practices and study characteristics over time (see Table 5). Here, we only concentrated on the corpus of psychology of R/S studies, and we analyzed trends in mostly 5-year increments (with a "before 2000" category on the low end and a "2020–2022" category on the high end [up through March 1, 2022]). Open materials were common across all periods; their use has been relatively stable over time (typically around 20% to 30%) and has become even more common during the past 3 years (43.85%). In contrast, the use of all other open science practices has been rare until the past 10 years, presumably because the Open Science movement did not penetrate the field of psychology until the early-to-mid-2010s (Nosek & Bar-Anan, 2012; Nosek et al., 2015). Besides open materials, the first open science practice to gain traction in these audited psychology of R/S journals was open data. Open data were rare prior to 2010 (k = 4, 1.29%), grew steadily in popularity during the 2010s (2010–2014: 4.20%; 2015–2019: 8.85%), and became more common recently (2020–2022: 29.74%). The other two coded open science practices—preregistration and open access—have been adopted more slowly. However, since 2020 the use of preregistration has increased substantively, rising from 0.88% during 2015–2019 to 8.97% during 2020–2022. The systematic movement toward open access publication began in the early 2000s, outside the psychology field (Johnson, 2005). Therefore, articles in that publishing format were practically nonexistent before 2015 (k = 3,0.25%) but were a bit more common in the 2015–2019 (3.76%) and 2020–2022 periods (4.77%).

We wanted to learn how these trends in utilized open science practices compared to trends in other areas of psychology (see Table 6). Hence, we located published analyses of trends in psychology journals overall (Hardwicke et al., 2022), in journals from another subfield of psychology (organizational behavior; Tenney et al., 2021), and in one pioneering journal in the Open Science movement in psychology (*Psychological Science*; Bauer, 2022). During the 2010s, the audited psychology-of-R/S journals demonstrated similarly low rates of preregistration as organizational behavior journals (between 0% and 5% in both types of journals) but lower rates than in psychology journals overall (3%) and in the journal *Psychological Science* specifically (which rose from 2% of studies in 2015 to 32% in 2019). However, since 2020, this gap has been closing rapidly. Since the 2010s, psychology-of-R/S journals have consistently demonstrated higher rates of open data and open materials than psychology journals overall and organizational behavior journals specifically. Their use of open data and open materials has typically lagged behind the use of these practices in *Psychological Science*, but in the past few years, this gap has closed rapidly or reversed. For instance, in psychology-of-R/S journals, open data have been used in 46% of studies (vs. 72% in *Psychological Science*) and open materials in 62% of studies (vs. 52%). Nevertheless, psychology-of-R/S journals continue to lag in their use of open access publication (between 3% and 12% in the past 5 years), both relative to psychology journals overall (17%–23%) and the journal *Psychological Science* specifically (12%–32%).

Trends in Study Characteristics

Next, we examined trends in the study characteristics of articles in psychology of R/S journals over time (see Table 5). There was

Table 6
Proportion of Audited Articles That Used Open Science Practices, Relative to Other Journals, 2014–2022

Open science practice	2014	2015	2016	2017	2018	2019	2020	2021	2022
Psychology of R/S journals									
Preregistration	0%	0%	0%	0%	5%	0%	3%	11%	20%
Open data	4%	7%	8%	3%	11%	15%	18%	35%	46%
Open materials	20%	34%	27%	14%	28%	27%	30%	50%	62%
Open access	0%	1%	4%	3%	3%	12%	10%	4%	4%
Psychology journals overall									
Preregistration[a]	——————3%——————								
Open data[a]	——————2%——————								
Open materials[a]	——————14%——————								
Open access[b]	9%	11%	12%	13%	17%	17%	19%	23%	21%
Organizational behavior journals									
Preregistration[c]	0%	0%	0%	0%	2%	5%			
Open data[c]	0%	2%	0%	5%	6%	8%			
Open materials[c]	1%	1%	1%	2%	7%	7%			
Open access[b]	0%	0%	1%	1%	3%	2%	4%	5%	5%
Psychological Science									
Preregistration[d]	0%	2%	3%	13%	25%	32%	40%	42%	36%
Open data[d]	16%	33%	38%	61%	66%	63%	73%	78%	72%
Open materials[d]	15%	24%	30%	48%	48%	48%	54%	57%	52%
Open access[b]	0%	0%	19%	18%	20%	12%	15%	32%	20%

Note. R/S = religion/spirituality. Proportion of audited psychology of religion/spirituality articles that used open science practices, relative to proportions using them in psychology journals overall, organizational behavior journals, and the *Journal Psychological Science*, 2014–2022.
[a] Figures are from Hardwicke et al. (2022), who reported figures collectively for the period 2014 through 2017. [b] Figures were calculated manually in PsycINFO, up through March 1, 2022. [c] Figures are from Tenney et al. (2021), who reported figures for the period 2014 through 2019. [d] Figures are from Bauer (2022), who reported figures through the end of 2021; figures for 2022 were calculated manually in PsycINFO, up through March 1, 2022.

a substantial linear decrease in the frequency with which nonempirical articles were published (77.02% prior to 2000 vs. 11.36% in 2020–2022). Correspondingly, there was a substantial linear increase in the proportion of empirical studies utilizing a quantitative-only analytic method (19.09%–80.23%). The proportion of empirical studies using a qualitative-only or mixed-methods approach held relatively steady over time, usually between 3% and 5% for qualitative-only studies and 2%–4% for mixed-methods studies.

Regarding study design, there was a steady linear decrease in the proportion of empirical studies employing a cross-sectional design, falling from 92.96% in studies before 2000 to 68.97% in studies from 2020 to 2022. The proportion of longitudinal studies held relatively stable, ranging from 5.63% to 10.77%, and the same was true for longitudinal and experimental studies (between 0.00% and 1.68%). There was an increase in the proportion of experimental studies across time (1.41% before 2000 vs. 18.97% in 2020–2022), especially since 2015.

In terms of study location, the proportion of studies conducted internationally (i.e., in 2 or more countries) was generally steady, usually between around 8% and 10%. However, the proportion of studies conducted solely in the United States increased over time (from 33.80% before 2000 to 59.74% in 2020–2022), whereas the proportion conducted in other single countries declined (from 57.75% before 2000 to 30.51% in 2020–2022).

Across the corpus, the proportion of empirical studies with student samples held steady (between roughly 50% and 60%) until 2015, and since then, that proportion has fallen (to 35.38% in 2020–2022). A corresponding pattern characterized the proportion of community-adult samples, which was between 40% and 50% until 2015 and has risen somewhat since then (to 60.00% in 2020–2022). Online crowdsourced adult samples have become increasingly common since 2010 (10.92% in 2010–2014 vs. 40.26% in 2020–2022). In contrast, studies of clinical samples have remained rare across time (ranging from 5.63% to 8.22%), and studies of youth-inclusive samples have fallen steadily from 18.31% before 2000 to only 8.46% in 2020–2022, revealing a major need for more clinical and youth-inclusive research on the psychology of R/S.

The median sample size (NF-A) has increased considerably since 2000. In fact, it has almost doubled from 175.00 in 2000–2004 to 316.00 in 2020–2022.

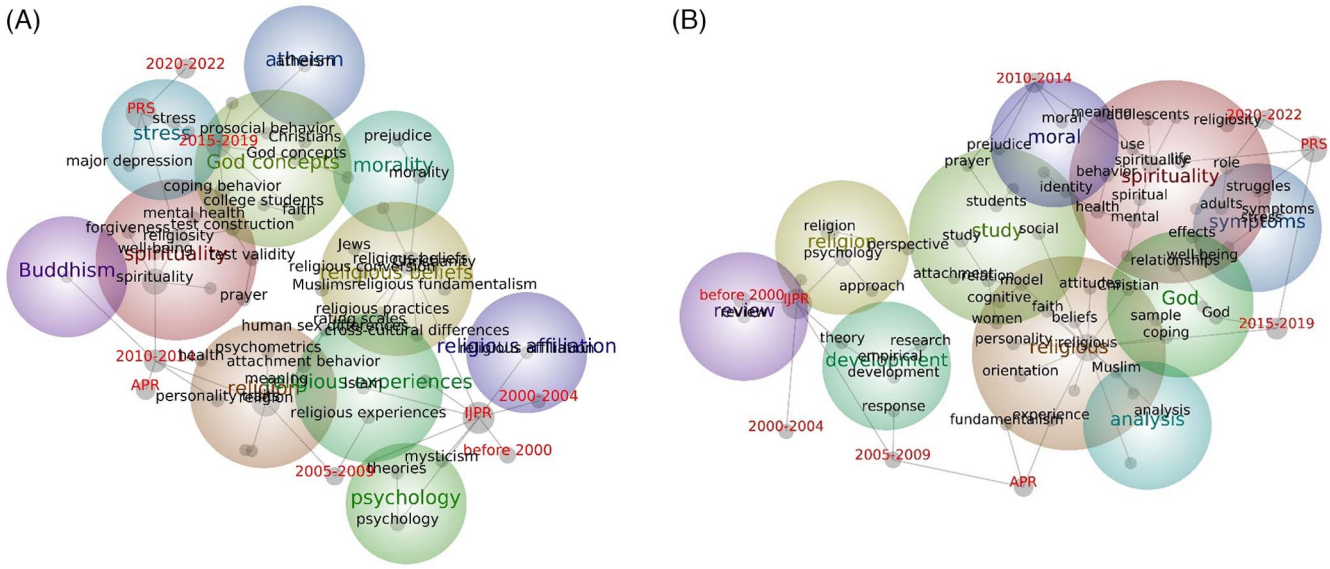
Trends in Article Topics

Last, we sought to analyze trends in article topics. Again, we drew on scholarly precedent from two prior bibliometric analyses—the Kozlowski et al. (2017) analysis of 100 years of articles from the *Journal of Applied Psychology* and the Cretchley et al. (2010) analysis of 40 years of articles from the *Journal of Cross-Cultural Psychology*—and used the program Leximancer. Like Kozlowski et al. (2017), we conducted topical content analyses from two complementary angles: (a) analysis of standardized keywords and (b) analysis of article titles. The standardized keywords are assigned by experts in content-based article coding, thereby providing an external classification of each article's topical content (see Supplemental Table S2, for more details). By comparison, titles are created by article authors and involve authors classifying their article's content in their own words. Evaluating articles' content both from outsider and insider perspectives can yield a robust analysis of topical trends over time and across journals.

Analytic Approach. Leximancer 5.0 is a text-analysis tool that conducts latent semantic analysis. Specifically, it quantitatively analyzes large collections of textual data, identifies sets of lexical terms that frequently co-occur in the same semantic context (block of

Figure 1

Concept Maps of Standardized Keywords and Article Titles



Note. (A) Concept map of standardized keywords. (B) Concept map of article titles. *PRS = Psychology of Religion and Spirituality; IJPR = International Journal for the Psychology of Religion; APR = Archive for the Psychology of Religion.* See the online article for the color version of this figure.

text), and displays highly connected semantic concepts in the form of a two-dimensional concept map. This map visually depicts "the main concepts contained within the text as well as information about how they are related" (Leximancer, 2021, p. 3). Kozlowski et al. (2017) explained these maps: "Highly connected semantic concepts are clustered into higher order *themes* based on the dominant concept node in the cluster. … Connections between and among concepts are represented by links that connect concepts within and between thematic clusters" (p. 246).

Similar to Kozlowski et al. (2017) and Cretchley et al. (2010), we used Leximancer to tag (label) the attributes that might contribute to emergent lower order concepts and higher order themes. We conducted two latent semantic analyses—one of keywords and one of titles—and analyzed them (a) as a corpus (to offer a bird's eye view of the audited journals collectively; see Supplemental Tables S4 and S5), (b) based on tags for each of six time periods (to show trends over time; see Supplemental Table S6 and S7), and (c) based on tags for each of the three journals (to illuminate distinct topical contributions of each journal; see Supplemental Table S8 and S9). The two concept maps are presented in Figure 1. For both maps, we set theme size to 33% (the default) and concept size to 85% (to maximize the ability to see all the emergent concepts presented in Supplemental Tables S5–S9).

Topical Emphases Across the Corpus. *Spirituality* and *religion* (and its variant *religious*) were the strongest topical themes to emerge both from keyword and title analyses. Both analyses revealed other convergent themes such as (a) *God concepts* and *God*, (b) *morality* and *moral*, and (c) *stress* and *symptoms*. Similarities also appeared at the level of lower order concepts. For instance, faith-related concepts (*religion*, *spirituality*, *religiosity*, *religious*, *faith*, *God concepts*, and *God*) and the concept of *psychology* appeared in both lists. So did concepts of *coping*, *well-being*, (*mental*) *health*, (*religious*) *beliefs*, and (*religious*) *experiences*.

Topical Trends Over Time. When looking at tags in Leximancer, results indicate the likelihood a tagged concept (i.e., time period or specific journal) co-occurs with a particular ranked concept. Keyword analysis evidenced that interest in certain concepts persisted across periods (e.g., *personality/personality traits/individual differences* appeared on five of the six period lists), whereas other concepts spiked in interest (e.g., *forgiveness* and *spiritual* were extremely popular during 2010–2014 and *Buddhism* was popular between 2010 and 2019). Other topics have received greater recent interest (e.g., *atheism* and *prosocial behavior* since 2015).

Title analysis revealed more fluctuation in topical interest. Prior to 2010, topical interest in *development*, book reviews, and editorial responses were quite popular, but these topical emphases have subsequently waned. In contrast, there has been increased scholarly attention on *struggles* since 2015, likely driven by the rapidly advancing study of religious/spiritual struggles, which were not a major topical focus prior to the early 2010s (Pargament & Exline, 2022).

Topical Emphases in Particular Journals. Finally, in analyses based on journal tags, some topics emerged as a more common focus in certain psychology of R/S journals than others. For instance, results of title analysis (Supplemental Table S9) indicated articles on *Muslims* and *personality* were especially common in *APR*; articles on *emerging* (adults), *adolescents*, *stress*, *struggles*, and *symptoms* were most frequent in *PRS*; and articles on (book) *reviews*, *theory*, (editorial) *responses*, *attachment*, and *science* were most common in *IJPR*. In addition, *relationships* were more of a topic of interest in *APR* and *PRS* than in *IJPR*, whereas *religious fundamentalism* and (religious) *orientation* appeared more of interest in *IJPR* and *APR* than in *PRS*.

Discussion

This bibliometric analysis involved more than 1,800 articles in three key journals in the psychology-of-R/S field, spanning over 60

years. Examining trends across the three audited journals reveals an interesting synergy. Although each journal publishes a variety of articles in terms of methodologies, samples, and topics, each journal has unique areas of emphasis that contribute to the field's overall strength and vibrance. For instance, the field's oldest journal—*APR*—has published the greatest proportion of qualitative and mixed-method studies, as well as the largest proportion of studies conducted outside the United States. *IJPR* has published the highest proportion of experimental studies and nonempirical articles. *PRS* has published the highest proportion of empirical studies, especially ones using a longitudinal design. Given these and other disparities that the present bibliometric analysis reveals, it seems these three journals are serving different needs for the psychology of R/S subfield. The same is likely true for this subfield's many other specialized journals, such as the *Journal of Empirical Theology*; *Journal of Psychology and Theology*; *Mental Health, Religion, and Culture*; and *Spirituality in Clinical Practice*.

Consistent with broader trends in psychology, publications in the psychology of R/S are increasingly empirical (over 85% of the corpus since 2015 vs. 23% before 2000), experimental (over 16% since 2015 vs. 1% before 2000), and sufficiently powered (a median sample size of 292 since 2015, indicating the average study is sufficiently powered [.93] to detect associations at the $r = .20$ level). On the one hand, these trends reflect the field's broader focus on enhanced methodological rigor (Tsang et al., 2023), empirical robustness (Nosek et al., 2022), and big-data research (Woo et al., 2020). Yet, on the other hand, these trends may suggest the psychology of R/S field is less theory-driven and conceptually robust than it has been historically, which would be consistent with alleged broader trends in mainstream psychology (Burghardt & Bodansky, 2021).

Regardless, many scholars outside the psychology of R/S may be unaware of the field's trend toward desiring increased methodological rigor. Results from a recent survey of nearly 350 social and personality psychologists suggest psychology of R/S researchers are perceived as more subjective and their research as less scientifically rigorous, relative to other subfields (Rios & Roth, 2020). Our findings indicate the psychology of R/S is a rigorous and productive subfield that is developing consistently with other areas of psychological science. Hence, perceptions of the psychology of R/S may be based more on biases than on an objective view of the subfield.

Insofar as biased perceptions of the subfield can be addressed by psychologists of R/S themselves, psychologists of R/S can increasingly value exemplary scientific objectivity, competencies, and rigor in their research. Just like in every other subfield, this would involve the normative use of open science practices (e.g., preregistration, open sharing of data and materials, registered reports, and open access publishing) and more sophisticated theorizing, research design, sampling practices, cultural sensitivities, measurement strategies, and statistical analyses. It would also involve more psychologists of R/S beginning to adhere routinely to the Heilmeier Catechism principles (Heilmeier, 1992) and Journal Article Reporting Standards (Appelbaum et al., 2018; Levitt et al., 2018), and the subfield's journal editors and reviewers would need to begin requiring such adherence. Furthermore, because meaningful contact is such a promising way to reduce biases (Dovidio et al., 2017), psychologists of R/S should increasingly (a) network and collaborate with scholars outside the subfield and discipline; (b) publish and review psychology-of-R/S work in mainstream journals (rather than just in niche R/S journals) and journals in other subfields (e.g., clinical psychology, social–personality psychology, and health psychology) and disciplines (e.g., medicine, psychiatry, religious studies, and sociology); and (c) attend and present at mainstream conferences and conferences in these other subfields and disciplines.

In the meantime, like other subfields, the psychology of R/S has critical methodological deficiencies to address. One of these deficiencies is its potential overreliance on online crowdsourced samples. Such samples are relatively easy to access, and they offer convenient ways to collect data from large, geographically distributed, and demographically diverse samples. Since 2015, 32.19% of the present study's audited empirical studies have utilized online crowdsourced samples, representing over half (54.98%) of the recruited community-adult samples during that period. Access to online samples has contributed mightily to increased sample size and statistical power in the audited empirical studies (e.g., the median sample size of online samples from 2015 to 2022 was 404, compared to 251 for nononline samples). Even so, heavy reliance on online samples may be limiting the validity and generalizability of this subfield's findings (Chandler & Shapiro, 2016), especially given evidence that online samples often differ systematically from the general U.S. adult population, both in terms of religious identity and political leanings (i.e., they are less religious and more politically liberal; Lewis et al., 2015). On a more positive note, our bibliometric analysis suggests the psychology of R/S may be reducing its heavy reliance on student samples (from around half of audited studies before 2015 to around a third since then). In short, one of the subfield's most important needs is diversifying the types and locations of its studied samples.

Similarly, the present bibliometric analysis suggests the psychology of R/S subfield's empirical base is very geographically and culturally limited. Religion and spirituality are globally diverse, culturally rich phenomena, but the field has yet to investigate such complexities adequately. Despite the explicit international focus of two of the three audited journals (*IJPR* and *APR*), nearly 60% of the empirical studies in the corpus were conducted exclusively in the United States, and almost 80% of studies were conducted in North America or Europe (although those continents hold only 17% of the world's population; Worldometer, n.d.). Stated differently, even though the Global South comprises 83% of the world's population, only 15% of the audited psychology-of-R/S studies were conducted in Africa, South America, Oceania, or Asia. There is a vital need for increased psychology of R/S research in the Global South, as well as for more research conducted interculturally, internationally, and intercontinentally (Davis et al., 2023). These abysmal gaps simply cannot persist if the field is to remain viable, because such underrepresentation impairs our subfield's ability to advance scientific knowledge validly, credibly, and robustly. As Tsang et al., 2023 and others have noted, moving beyond simply recruiting Western Educated Industrialized Rich and Democratic (WEIRD) samples is an imperative for advancing psychological science on R/S.

Relatedly, the present study found evidence that the psychology of R/S is also quite limited in its methodological diversity. Even though religion and spirituality are highly complex, multidimensional, and multilevel phenomena, there remains a comparative dearth of qualitative and mixed-methods research exploring these complexities and nuances. Only 10% of the audited empirical studies utilized a qualitative or mixed-methods analytic approach. This situation is by no means unique to the psychology of R/S subfield.

A recent analysis of the entire corpus of empirical articles in psychology found only 11% were qualitative and 3% mixed methods (Tsang et al., 2023). The low rate of qualitative work may be an artifact of educational training, perceived value, or the present audit's English-language restriction. Regardless, qualitative approaches add a unique dimension to the subfield, and without them, science and practice on R/S are weakened. Qualitative and mixed-methods studies hold such great promise for the subfield because most religious/spiritual phenomena are complex, multidimensional, context-sensitive, and culturally embedded, and qualitative and mixed methods can capture these facets better than quantitative-only methods can (Tsang et al., 2023). Although the typical response to such lacunae is passive (i.e., simply wait for articles to arrive), a preferred strategy for change is active, such as by catalyzing increased qualitative and mixed-methods projects via special sections/issues (e.g., Davis & Tisdale, 2016), funding initiatives, and award competitions.[3]

Nonetheless, greater methodological breadth presents its own set of challenges for journal editors and reviewers. To facilitate editorial and peer review, the APA Journal Article Reporting Standards can be useful (https://apastyle.apa.org/jars), with the recognition that these guidelines arose from a particular cultural context that may or may not support a sufficiently wide array of methodologies and writing styles. Hence, it is imperative to recognize that differences in methodology and style are more complex than traditional qualitative–quantitative distinctions suggest.

Open Science Practices

Consistent with broader trends in psychology, researchers publishing in the audited psychology of R/S journals are adopting more open science practices than ever (Hardwicke et al., 2022). Sharing of open data more than tripled in the last 3 years (30%), relative to the previous 5 years (9%), and the use of preregistration increased substantively (1% in 2015–2019 vs. 9% in 2020–2022). The sharing of open materials has also continued to rise (25.66% in 2015–2019 vs. 43.85% in 2020–2022). These trends toward increased use of open science practices are encouraging but must continue until they are normative and are codified in the policies of the subfield's journals, through badging (https://www.cos.io/initiatives/badges) and official adoption of the Level 2 or 3 Transparency and Openness Promotion Guidelines (Nosek et al., 2015, 2022). These Guidelines are "a set of 10 policy standards related to transparency and reproducibility, each with three levels of increasing stringency" (Nosek et al., 2022, p. 737). Examples of Level 2 Guidelines include requiring authors to post their data and materials to a trusted repository, unless an exception is given during article submission. Examples of Level 3 Guidelines include requiring authors to preregister their study and analysis plans and to provide journal access to the links, so that verification can occur during the peer review process (https://topfactor.org/). Although we strongly endorse the Open Science approach, we are aware that the assumptions and parameters for these practices are inherently geared toward certain methods and cultures and tend to preference a distinctive set of questions. Carrying forward the ethos of Open Science to different methods and cultures must therefore be an ongoing effort for the field.

Another lingering challenge in the audited psychology of R/S journals is open access publication. Presumably due to the nature of academic publishing and the high expense of open access fees (which typically range from $3,000 to $4,000 per article), it still is rare for articles in the audited journals to be made publicly available for free. Making the results of science openly available is critical to advancing science and applying science for the public good. Fortunately, there have been significant strides to create more available pathways to open access publication. For example, some countries and publishers have negotiated deals to publish articles as open access if the first author is from a certain country; this is true for *APR* and its publisher SAGE. As an alternative to full open access, some authors are providing preprint versions of their published articles on servers such as PsyArXiv.com. A prime caveat to the open access movement is that "predatory" journals continue offering pay-to-open-publish opportunities that involve little to no substantive peer review. As always, authors must critically examine sources prior to citation because "freely available" and "good science" are of course not necessarily synonymous.

Article Topics

Across the audited corpus, there was a strong topical emphasis on religious deities and representations, morals and morality, religious beliefs and experiences, stress and coping, and health and well-being. This finding is consistent with Leach and Sato's (2013) prior content analysis of *PRS*, suggesting these topics are of perennial interest to scholars in the psychology of R/S subfield.

Indeed, looking across time, some topics saw steady scholarly interest (e.g., *personality*). By comparison, some saw decreased interest (e.g., *development* since 2010), temporary interest (e.g., *forgiveness* in the early 2010s), or recently increased interest (e.g., *atheism*, *spiritual struggles*, and *prosocial behavior* since 2015). Although some topics appear to be of perennial interest, scholarly interest in other topics may fluctuate based on funding opportunities, cultural factors, and scientific trends. To illustrate the latter, the topic of spirituality gained heightened interest in the early 2010s (see Supplemental Figure S7), and this trend coincided with when the APA's Division 36 (the host division of *PRS*) changed its name from the "Psychology of Religion" to the "Society for Psychology of Religion and Spirituality" (Worthington, 2010).

Last, each audited journal has had unique topical emphases, relative to the others. *APR* published the most articles on Islamic psychology and personality-related topics, *IJPR* on theory and attachment-related topics, and *PRS* on developmental and clinically related topics. Without other forms of data, it is infeasible to discern the causes or durations of these patterns. On the one hand, these findings suggest authors may find some journals more topically interested in their research than others. On the other hand, it suggests journals may want to diversify topically in strategic ways. Regardless, scholars who read psychology of R/S articles might want to diversify the journals they are reading, in order to enhance the breadth of scholarship they consume and apply.

[3] These strategies could also be used to catalyze psychology of R/S research in other gap areas that this audit revealed, such as the need for more clinical research, child and adolescent research, and culture-focused research.

Limitations

The primary limitation of this bibliometric analysis is that we only included three psychology of R/S journals, despite the fact there are several other specialty journals that publish research in the psychology of R/S subfield. Furthermore, focusing solely on specialty journals within the subfield excluded psychology of R/S research published in other subfields, in interdisciplinary sources, or in mainstream journals. Including a wider array of journals would have provided a more complete tapestry of features, practices, and topics in the psychology of R/S field.

Another limitation is that, although *APR*'s body of work stretches back to 1914, our search strategy only included English-language articles that began appearing in 1962. This truncation removed several decades of the earliest available information from consideration, simultaneously downplaying the unique concerns and perspectives of the scholars who literally established this field. The result is the absence of evidence regarding the distinctive, theory-heavy European roots of the psychology of R/S, which have influenced subsequent generations of scholars and practitioners across the globe. A more equitable approach for future work would be to obtain accurate translations of such work, thereby representing different cultural viewpoints, instead of marginalizing them due to monolingual restrictions. This limitation extends to the need for future studies to include the psychology of R/S field's non-English journals. The current analysis only audited and referenced English-language sources, and that fact places significant restrictions on this audit's generalizability to the global psychology of R/S field.

Although we coded and analyzed many features of the audited articles, several additional features and practices would have been beneficial to code and analyze. For example, it would be helpful to examine features like article/abstract content, article length, number of authors, author characteristics (e.g., gender, race/ethnicity, nationality, career stage), and funding sponsorship.

In addition, the present study's coding did not capture data relevant to measurement practices (e.g., self-reports, informant-reports, behavioral measures, or qualitative interviews). The lack of these data impedes understanding of how attention to measurement issues may have changed across the decades. Awareness of such developments would offer another means by which to evaluate the evolution of the field generally and each journal specifically. We hope future bibliometric analyses will examine these and other domains. To encourage and support that possibility, our data and methods are available on the Open Science Framework: https://osf.io/xse4v/ (Davis, 2022).

Conclusion

The present bibliometric analysis describes a psychology of R/S that continues to grow, evolve, and thrive. Across 60 years and more than 1,800 articles, work from the three audited journals has addressed questions about people's R/S beliefs, practices, experiences, identities, coping strategies, deidentification, and much more. The past 20 years has seen the psychology of R/S become more empirical, experimental, rigorous, replicable, and transparent. Some of these shifts are widely endorsed as improvements, whereas others are criticized for their lack of cultural breadth and sensitivity. Nevertheless, some of the field's vital next steps include continuing to (a) use and improve open science practices; (b) increase geographical, cultural, and methodological diversity; and (c) enhance scientific and theoretical quality and rigor.

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