

Health Impact of Jewish Religious Observance in the USA: Findings from the 2000–01 National Jewish Population Survey

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Abstract Using data from the 2000–01 National Jewish Population Survey (NJPS) ($N = 5,148$), effects of eight religious measures were investigated in relation to two health outcomes, standard single-item indicators of self-rated health and presence of an activity-limiting health condition. Seven of the religious measures were associated bivariately with one or both health indicators. Through two-step OLS regression of each health indicator onto all of the religious measures, adjusting for age and other sociodemographic correlates, two measures of synagogue involvement remained statistically significant. Follow-up analysis revealed a net health impact of religious observance primarily limited to Orthodox and Conservative Jews.

Keywords Religion · Health · Judaism · Survey

Introduction

By now, three decades of concerted efforts at empirical research have succeeded in accumulating results of thousands of studies of religious correlates or determinants of health (Koenig et al. 2011). The considerable diversity in study populations throughout this research has long been noted (Levin 1994), with positive findings present regardless of age, gender, race/ethnicity, social class, study design, or the religious measures or health outcome indicators used in respective investigations. This research is also, for the most part, multi-religious and multi-denominational. As first reviewed in this journal a quarter century ago (Levin and Schiller 1987), this literature includes numerous studies of Christians from most denominations and communions, including Roman Catholics, Latter-Day Saints, Seventh-day Adventists, and of adherents of other faiths, including Hindus, Buddhists, Muslims, new-agers, and even Parsis. However, aside from a few small clusters of focused epidemiologic studies many decades ago (studies of uterine and cervical cancer in

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the 1930s through 1950s and of colitis and enteritis in the 1950s and 1960s), there has been little in the way of programmatic population-based health research on Jews, especially in the USA.

Interest in the broader subject of interconnections between Judaism and health reflects longstanding traditions of rabbinic and scholarly work (see Cutter 2007, 2011; Freeman and Abrams 1999; Levin and Prince 2010). This includes centuries of rabbinic writing on medical *halakhah* (Jewish law) (e.g., Jakobovits 1959; Rosner 2001); decades of *r'shuvot* (rabbinic *responsa*), and other rabbinic (e.g., Dorff 1998) and secular academic (e.g., Zoloth 1999) writing on bioethics; at least 20 years of health policy advocacy and community organizing by rabbinic and denominational bodies (e.g., Union for Reform Judaism 2007); almost 30 years of Jewish health care chaplaincy and organized efforts in pastoral education (e.g., Friedman 2005), especially for the aged (e.g., Friedman 2008); about 30 years of contemporary writing at the interface of spirituality, healing, and wellness, such as works emphasizing personal growth and self-actualization (e.g., Cooper 1997; Hoffman 1981), Jewish psychology and meditation (e.g., Kaplan 1985), and *kabbalistic* (esoteric/mystical Jewish) perspectives on health and healing (e.g., Gelberman 2000); and a burgeoning Jewish healing movement of the past couple of decades, encompassing community and congregational programming focused on myriad issues in personal and community health and well-being (e.g., Prince 2009). All of this work has converged in the mission of the Kalsman Institute on Judaism and Health, an academic center located at Hebrew Union College-Jewish Institute of Religion.

Yet, despite a wellspring of interest, programmatic research along the lines of the larger religion and health field has not been forthcoming. This is not to say that there have not been excellent empirical studies. Since 1990, study results have documented the health and well-being of Jews, in the USA and Israel, including findings from social, behavioral, epidemiologic, clinical, ethnographic, and health services research. Mental health studies date back further, highlighted by the famous Midtown Manhattan Study of the 1960s (Srole and Langner 1962). This research, with few exceptions, has been characterized by one-off studies, narrowly focused on specific subjects such as the association between a particular exposure or independent variable and a particular medical or well-being-related outcome in samples enabling subgroup analyses of Jewish respondents or Jewish-gentile comparisons. There is nothing wrong with this, of course, but more fundamental questions about the health status of Jews, much less about the Jewish religion's influence on this status, have gone mostly unaddressed.

Interest in Judaism and health has emerged quite rapidly in comparison to rise of the larger field of religion and health research. Yet, unlike the larger field, Judaism and health studies are mostly not characterized by population-based health research. The principal reason is simple: there never has been a national Jewish health census or survey—nothing comparable to a National Health Interview Survey or National Health and Nutrition Examination Survey for the Jewish population in the USA. Existing national health surveys, based on proportionally representative probability samples, simply do not contain enough Jewish respondents to enable exploration of specific relationships among study variables, much less elicitation of stable population rates for health outcome indicators. The Israel National Health Survey, conducted in 2002 as a part of the multinational World Mental Health Survey Initiative, covers the population of Israel only, not the diaspora (see Kessler 2007; Levinson et al. 2007). Likewise, the World Values Survey contains an Israeli sample, from 2001, but items assessing health were excluded from the Israeli survey.

Within the USA, dozens of studies of local Jewish communities have been undertaken over the past quarter century (see Sheskin 2005), including community surveys of large

Jewish population centers such as New York, Los Angeles, and Philadelphia. These would make excellent resources for religion and health research, but, of course, they cannot provide national estimates. Moreover, health is one of the least typically included domains in these surveys and, regardless, questionnaire items are not necessarily comparable across these studies. The best of these community studies, from the perspective of providing health data, is the Chicago survey, but it is small and limited in scope, containing only 201 adult respondents sampled from a single neighborhood (Benjamins et al. 2006).

Thus, even as basic a question as, “How healthy are Jews in the USA?,” has been unanswerable (Levin and Prince 2010), much less, “How does participation in the religious life of the Jewish community impact on the health and well-being of Jews in the USA?” Investigating these questions is not just an academic exercise; it has important consequences for the Jewish population of this country. Results of population-based surveys on health, as on many other topics in Jewish life, are crucial for planning communal services and programs, for programmatic and capital decisions involved in social services delivery, and for development of financial resources throughout Jewish communities (Sheskin 2005). Data-based findings on health and its correlates, especially, would be of value to both religious congregations and denominational bodies, and to both national organizations and community agencies.

The most promising avenue for exploring religion–health connections among U.S. Jews is one that, to now, has not been exploited. Over the past four decades, the Jewish Federations of North America (formerly United Jewish Communities) has sponsored a series of three cross-sectional studies known as the National Jewish Population Survey (NJPS), the most recent one conducted from 2000 to 2001. The NJPS was created in order “to collect information on the American Jewish population for communal planning and policymaking purposes and for academic research” (Kotler-Berkowitz 2006, p. 387). Controversy has surrounded the NJPS, mainly related to its population estimates of the size of the U.S. Jewish community (see Kadushin et al. 2005; Klaff and Mott 2005). There have been concerns expressed that the NJPS underrepresents this population, especially the right wing of the Orthodox branch of Judaism. Much of the concern about the NJPS sample involves contentious debate over who is a Jew, which entails negotiation of complex issues related to *halakhah*, rabbinic rulings, and mixed parentage (Kadushin et al. 2005). Not to minimize these issues, but for purposes of the present paper, a serendipitous feature of the NJPS is that the most recent sample included two questions enabling both a rough look at the overall self-assessed health status of American Jews and identification of potential correlates of health from among descriptors of the Jewish population. While the NJPS may provide an inexact estimate of total population size, still “the survey provides valuable data for analyzing interrelationships between variables.... [t]o help local and national leaders understand which factors are associated with which outcomes” (Kadushin et al. 2005, p. 22)—thus, the present paper.

The NJPS was not constructed as a health survey, of course, and the two health outcomes measures included offer only a modest take on the health of Jews in the USA. But they are quite useful for substantive analysis of potential correlates of health, especially as the survey contains numerous single items and scales addressing diverse aspects of religious identity, participation, and experience, along with the pertinent sociodemographic indicators for describing the Jewish population. The most recent NJPS thus provides an excellent opportunity, albeit unanticipated by its developers, to bootstrap a systematic look at the health impact of Jewish religious observance in the USA.

Population–Health Research on Judaism

Of all the areas of scholarship at the interface of Judaism and health, as outlined above, the least systematically developed involves empirical study of the health impact of Jewish religious observance. This is not to say that few health- or medical-related studies have been conducted among Jews; quite the contrary. A PubMed search on the terms “Jews,” “Jewish,” or “Judaism,” at the time of the writing, turns up nearly 25,000 hits, including thousands of empirical studies of one kind or another. But among these are studies largely unrelated to the Jewish religion—for example, biomedical studies conducted in Israel, in vivo or in vitro laboratory experiments or genetic studies undertaken with ethnically Jewish subjects, and social or behavioral studies comparing Jews and gentiles on health-related life styles, healthcare utilization, rates of morbidity, patient satisfaction, medical decision making, and so on. Far fewer studies have investigated the health impact, in Jewish populations, of actual indicators of Jewish religious identity or participation.

In the earliest comprehensive review of the religion and health field (Levin and Schiller 1987), dozens of published studies dating back to the nineteenth century were cited which documented a relative advantage or disadvantage among Jews for a range of medical outcomes, expressed in terms of both mortality and morbidity (e.g., cumulative incidence) rates. Examples include a seminal article entitled, “Vital Statistics of the Jews,” published by legendary army surgeon Dr. John Shaw Billings in the *North American Review* (Billings 1891), and an unsigned editorial published a few years later in the *British Medical Journal* (Anon. 1905). Billings was among the earliest medical experts to suggest that religious affiliation may be a contributing factor in differential rates of morbidity and mortality among social groups, exemplified by distinctive patterns of morbidity, mortality, and longevity among Jews. The subsequent editorial also noted this trend, specifically in relation to a lower than expected rate of cancer mortality and higher rates due to diseases of the digestive system.

These findings were subsequently borne out and replicated, decades later, through larger scale research and more systematic reviews. A lower relative incidence of uterine and cervical cancer among Jews (and Muslims), for instance, was observed throughout the world (Kennaway 1948); and a higher relative prevalence of ulcerative colitis and regional enteritis among Baltimore Jews was observed and could not be explained by differences in socioeconomic status, marital status, or birthplace (Monk et al. 1969) or in life stress, number of residences, birth order, or psychological factors (Monk et al. 1970). It is easy to recognize now, decades later, that these Jewish epidemiologic distinctives are due in large part to the preventive effects of husbands’ circumcision and to genetic predisposition, respectively, and not to any purely “religious” influence or to the psychological sequelae of such. But this begs the question of what is implied by “religious”: male circumcision is a fulfillment of the *mitzvah* (commandment) of celebrating the Abrahamic *b’rit* (covenant) and thus reflects, at least to a minimal degree, faithfulness to the norms of Jewish religious observance. Such observance, in the case of the cancer studies, however, can be understood to have health implications principally for hygienic reasons related to a primary-preventive action that is protective against cervical dysplasia in Jewish women. If there is indeed a health benefit of practicing Judaism—along the lines of the thousands of religion and health studies in members of other religious groups (see, e.g., Koenig et al. 2011)—then other evidence must be considered.

Evidence of a salutary effect of Jewish identity does exist, but primarily for mental health outcomes and in studies where the focus was not on religious observance. For example, data from the New Haven site of the Epidemiologic Catchment Area Study were

used to examine differences in lifetime prevalence of diagnosed psychiatric disorders among Catholics, Protestants, and Jews (Yeung and Greenwald 1992). Findings showed that while there were no religious differences in overall morbidity, there were significant differences for particular disorders. Jews had higher rates of major depression and dysthymia, and lower rates of alcohol abuse, and were more likely to seek treatment from mental health providers.

Efforts to identify a substantively religious effect on health have been undertaken in Israel, with mixed results. In a study of older retirees (Anson et al. 1990), a single-item self-rating of religiosity (“To what extent do you observe the religious rituals?”) was only weakly associated with well-being measures, or not at all, and not in a positive direction. A small study of residents of a secular and a religious *kibbutz* (commune) (Anson et al. 1991) found that of several religious measures only private prayer had any relation to health or well-being, and in a negative direction, perhaps reflecting a tendency of people with an illness to turn to God for help. While expertly done, both of these studies are over two decades old, both focused mostly on psychological well-being, neither was conducted in the USA, neither involved a sample of respondents from the general population, and neither provided an in-depth examination of Jewish religious observance.

More recently, a study of Jewish Israeli students found that high levels of Jewish religious belief (but not behavior) were positively associated with psychological well-being and protective against psychological distress due to the mediating effect of a construct measuring meaning in life, among secular Jews, and due to the mediation of fear of punishment in the hereafter, among religious Jews (Vilchinsky and Kravetz 2005). A study of urban, middle-aged Israelis found no significant religiosity gradient in reports of chronic morbidity, assessed through the SF-36 instrument, and a generally adverse religious effect on other outcomes (Shmueli 2006). The religious measure, however, was a single-item (ostensibly ordinal) self-rating as “secular,” “partially secular,” “observant” or “traditional,” “religious,” or “orthodox”—religious labels that have highly contexted meanings specific to contemporary Israeli society. These labels are also strongly intertwined in Israel with socioeconomic status, sociodemographic characteristics, cultural norms, and life style behaviors all associated with differential population health risks and disadvantages, so it is not easy to tease out general conclusions here about the health impact of Jewish religious observance.

The best look at this issue, methodologically speaking, is also from an Israeli study, one using a large historical prospective cohort for longitudinal analysis (Kark et al. 1996). Over a 16-year period, members of 11 religious (Orthodox) *kibbutzim* had a lower overall mortality rate than members of 11 matched secular *kibbutzim*, according to Cox proportional hazards models that adjusted for age and the matched design. The investigators noted the congruence of these findings with previous Israeli studies identifying a protective effect of Jewish religious orthodoxy on morbidity due to myocardial infarction (Friedlander et al. 1986; Snyder et al. 1978). They attributed such results to a combination of lower exposure to conventional risk factors among religious Jews (e.g., smoking, alcohol, and drug abuse) and a protective effect due to amelioration of stress. The latter, they suggested, might result from an “overall coherent world view and sense of belonging” (p. 345), a relaxation response elicited by frequent ritual prayer, faith in God and belief in God’s authority, less ambivalence and exposure to stressors via a life style characterized by repetitive ritual behavior, highly stable marriage bonds, and a general sense of well-being heightened by strengthened coping skills and greater social integration due to living in a cohesive religious community.

These studies, collectively, tell us something about the impact of Jewish identity, especially Orthodox identity, on primarily psychological well-being or related outcomes, with the exception of the study of overall mortality. These studies mostly take place in Israel and mostly draw on smaller samples, again with the exception of the mortality study. They also do not directly focus on measures of religiousness, but rather on single items that locate respondents in a dichotomy or along a continuum of religious affiliation. So, despite these fine studies, a putative protective effect on health of Jewish religious observance, in the USA or elsewhere, validated with population-based data, remains an open issue.

The outstanding recent work of Rosmarin and colleagues also has addressed mental health-related sequelae of traditional Jewish observance, but in a series of smaller psychological studies. These investigations have identified higher levels of trust in God (Rosmarin et al. 2009c), beliefs affirming God's benevolence (Rosmarin et al. 2009d), general religiousness and religious practices (Rosmarin et al. 2009a), and gratitude (Rosmarin et al. 2010) as significantly protective against anxiety and depression among Orthodox Jews, and the experience of high levels of spiritual struggles as predictive of poorer physical and mental health in Jews, generally, but of better physical and mental health in the Orthodox (Rosmarin et al. 2009b). On the whole, this is among the very best empirical research available on Judaism and health, and is both provocative and programmatic, but it does not derive from large population-based data sources.

The present study efforts to explore a connection between Judaism and health using data from the most recent NJPS, a large national probability survey of U.S. Jews conducted from 2000 to 2001. Because the dataset contains a substantial variety of religious measures, many of them pertinent to Jewish religious observance, as well as a couple of standard health status measures, the NJPS is thus an ideal resource for initiating a more systematic approach to religion and health research in this population, notwithstanding that this was not the intention of the survey's developers. In these analyses, both single items and newly constructed scales are used that together assess Jewish activities, Jewish religious observance, *shul* (synagogue) membership and attendance, self-rated religiosity and Jewish observance, the importance of religion, and personal prayer outside of *shul*. Each of these measures is examined in relation to both a self-rating of overall health and a more functional indicator of the presence of an activity-limiting health condition. Results are presented for both bivariate and multivariable associations, as well as for multivariable associations adjusting for age and other sociodemographic correlates of both religion and health. Also, statistically significant findings are further examined in subgroup analyses through stratification by Jewish denominational affiliation (Reform, Conservative, Orthodox, Reconstructionist, and secular). This strategy, using these data, represents the best and most systematic possible approach to initiating study of a potential health impact of Jewish religious observance in the USA. It is hoped that results will suggest new more narrowly focused research questions that can be explored in subsequent studies, including further research using the NJPS sample.

Methods

NJPS 2000–01

This paper presents results of analyses using data from the third NJPS, conducted from 2000 to 2001. The first two NJPS studies were conducted in 1971 and 1990. The NJPS is not a multi-wave survey project: the three studies are separate cross-sectional surveys, with

distinct sampling frames, very different working definitions of Jewish identity, and considerable variation in the numbers and contents of constructs included and the wording of respective items. The 2000–01 study consisted of a national multistage, stratified, probability telephone survey of 5,148 adult Jewish households, conducted by RoperASW using a strategy of random digit dialing and oversampling of areas of high Jewish population density screened from a larger initial cohort of over 170,000 households (see Kotler-Berkowitz 2006; Kadushin et al. 2005; Klaff and Mott 2005).

Much of the complexity, and contentiousness, surrounding the 2000–01 NJPS, sample is related to the issue of Jewish identity (see DellaPergola 2005; Kosmin 2005). The 2000–01 survey classifies respondents in three summary categories: Jewish, “Jewishly connected persons” (JCPs), and “persons of Jewish background” (PJBs). The first two categories, combined, define the “core Jewish” category used in the 1990 NJPS. The definitions of these categories are complicated and beyond the scope of the present paper; the interested reader can find detailed information on the Jewish identity classification scheme elsewhere (e.g., Klaff and Mott 2005). A key function of these categories is that they enable researchers the opportunity to construct their own nuanced definitions of Jewishness or Jewish identity, if so desired, such as for studies of overall population dynamics and projections or of patterns of Jewish religious participation. The “who is Jewish” question and efforts to address it in the NJPS thus add greatly to the complexity of the survey, influencing decisions regarding the sampling frame, the questions included, skip patterns, weighting, and so on, and especially how to account for all of this in certain analyses. Serendipitously, PJBs (defined as those individuals with some Jewish background, through birth or raising, who belong to another monotheistic religion or who may not currently consider themselves to be Jewish) were excluded from many of the questions on Jewish religious topics, and thus by necessity excluded from the present analyses. This renders much of the above discussion of Jewish identity moot for the present paper, as it eliminates the decision-making calculus that would be involved in so many other studies that might use this dataset, but it does serve to lower the available sample size for use here ($N = 4,484$).

Measures

Health Indicators

The NJPS contains two measures of health status: a single item assessing *self-rated health* (“Would you say your health, in general, is... ?”; recoded as: 1 = poor, 2 = fair, 3 = good, 4 = excellent) and a single item assessing presence of an *activity-limiting health condition* (“Do you currently have any kind of physical, mental, or other health condition that limits employment, education, or daily activities, and has lasted for at least 6 months?”; recoded, in combination with two other variant items related to household size, as: 0 = no, 1 = yes). The self-rated health item is commonly included in population health surveys, and the version included in the NJPS is the standard form. Single-item measures of disability or activity limitation are less commonly used today in health surveys, but have been included in social surveys dating back to the 1970s. The average level of health status reported by NJPS respondents (as indicated in Table 1) and the distribution of self-rated health in this sample (4.8% poor, 13.0% fair, 40.1% good, 42.1% excellent) have been found to converge with levels found in African Americans and are slightly lower than that of U.S. Whites (Pearson and Geronimus 2010).

Table 1 Descriptive statistics and Pearson correlations for study variables

Study variables	1	2	3	4	5	6	7	8	9	10	11	12	13	Mean	SD
1. Self-rated health														3.19	.84
2. Health condition	-.45***													.11	.32
3. Jewish activities scale	.06***	-.03*												2.60	1.83
4. Jewish observance scale	.08***	-.05**	.55***											4.11	2.42
5. Importance of religion	-.01	.03*	.43***	.47***										2.96	.95
6. Synagogue member	.13***	-.08***	.44***	.62***	.38***									.40	.49
7. Self-rated religiosity	-.01	.03	.40***	.44***	.74***	.36***								2.67	.92
8. Self-rated Jewish observance	.03*	-.01	.45***	.65***	.56***	.49***	.58***							2.44	.94
9. Personal prayer outside <i>shul</i>	-.03*	.04*	.19***	.17***	.37***	.13***	.36***	.24***						.73	.44
10. Synagogue attendance	.10***	-.09***	.44***	.56***	.30***	.51***	.31***	.45***	.13***					.59	.49
11. Age	-.32***	.22***	-.04*	.08***	-.00	-.02	-.06***	-.04**	-.04**	.02				49.34	18.24
12. Female	-.06***	.05**	.05**	.04*	.15***	-.01	.09***	.09***	.14***	.05**	.04**			.56	.50
13. Married	.08***	-.13***	.12***	.19***	.09***	.17***	.08***	.11***	.01	.12***	.10***	-.04**		.51	.50
14. Education	.20***	-.11***	.14***	.05***	-.07***	.06***	-.07***	-.07***	-.05**	.16***	-.03	-.10***	.12***	5.59	1.99

To conserve space, decimal points are deleted

* $P < .05$; ** $P < .01$; *** $P < .001$

Religious Indicators

The NJPS contains scores of individual items with significant religious content. These include assessment of discrete beliefs, attitudes, and values about Judaism, Jews, and Israel that were not a priori expected to be of substantive relevance to the state of one's physical health. Selected religious measures, on the other hand, are very much in keeping with the kinds of indicators of religious identity, behavior, and self-assessment that have been used for decades in studies of the determinants of health. In the present analyses, eight measures are used, two of which are original multiple-item scales developed for use in this paper.

The *Jewish Activities Scale* is a six-item index ($\alpha = .70$) comprising dichotomous variables (recoded as: 0 = no, 1 = yes) assessing Jewish activities conducted with a past-year time referent. These include, "Read a Jewish newspaper, magazine, or other publication," "Listen to a tape, CD, or record because it contained Jewish content," "See a movie or rent a video because it had Jewish content," "Read a book, other than the Bible, because it had Jewish content," "Use the Internet for Jewish-related information," and, "[A]ttend any adult Jewish education classes or any other kind of adult Jewish learning, such as synagogue programs, a book group, a study group at home or work, or a Bible study group, but excluding any college course you may have taken."

The *Jewish Observance Scale* is a nine-item index ($\alpha = .77$) comprising variables using a variety of response categories and coding schemes (all recoded as: 0 = no, 1 = yes), all of which assess indicators of Jewish observance according to various time referents. These include, "How often, if at all, does anyone in your household light Sabbath candles on Friday night?," "Last Passover, did you hold or attend a seder?," "Last Hannukah, how many nights, if any, did you participate in lighting of Hannukah candles, either in or out of your home?," "Do you keep Kosher in your home?," "During the last Yom Kippur, did you personally fast?," "If you ever had a close relative who passed away, other than the funeral, did you observe any of the Jewish mourning or memorial ritual, such as sitting shiva, saying Kaddish or going to synagogue?," "Is there a mezuzah on any door of your home?," "In 1999, did (you)/(anyone in your household) make a monetary contribution to a UJA-Federation campaign?," and, "In 1999, did (you)/(anyone in your household) make a monetary contribution to any Jewish charity or cause, other than the UJA-Federation, such as a synagogue, Jewish school or group supporting Israel? Please do not include dues, memberships, or Israel Bonds."

In addition, six single-item Jewish religious indicators are used. These include *importance of religion* ("How important is religion in your life today?"; recoded as: 1 = not at all important, 2 = not very, 3 = somewhat, 4 = very), *synagogue member* ("[Are you]/[Is anyone in your household] currently a member of a synagogue or temple?"; recoded as: 0 = no, 1 = yes), *self-rated religiosity* ("In general, how religious would you say you are personally?"; recoded as: 1 = not at all religious, 2 = not very, 3 = somewhat, 4 = very), *self-rated Jewish observance* ("In terms of *observance*, that is following the rituals and practices of Judaism, would you say you are...?"; recoded as: 1 = not at all observant, 2 = not very, 3 = somewhat, 4 = very), *personal prayer outside shul* ("Other than attending religious services, do you ever pray using your own words?"; recoded as: 0 = no, 1 = yes), and *synagogue attendance* ("Did you personally attend any type of synagogue, temple, or organized Jewish religious service during the *past year*?"; recoded as: 0 = no, 1 = yes).

In supplementary analyses (described in the Findings section, below), a *Jewish religious denomination* variable was used for stratification. This was created from the more than two dozen response categories used for the survey question, "Thinking about Jewish religious

denominations, do you consider yourself to be...?” For the present paper, the variable categories were Reform ($N = 1,415$, 31.6% of the total sample), Conservative (including the few respondents who reported Conservadox or Traditional; $N = 1,121$, 25.0%), Orthodox (including the few respondents who checked Hasidic/Lubavitch/Satmar or Haredi [Ultra-Orthodox]; $N = 422$, 9.4%), Reconstructionist ($N = 85$, 1.9%), and secular (a combination of respondents reporting the categories of secular, culturally Jewish, Humanistic [Jew], non-practicing Jew, agnostic, atheist, or no religion/none; $N = 267$, 6.0%).

Analyses

The present paper aims to provide the fullest possible perspective on relationships between Jewish religious measures and health outcome indicators. Accordingly, associations between respective independent and dependent variables are presented bivariately, multivariately (accounting for simultaneous effects of all religious indicators), and multivariately adjusting for covariates. All analyses are conducted using SAS version 9.2.

Descriptive statistics and Pearson correlations are computed using the UNIVARIATE and CORR procedures, respectively. A strategy of two-step OLS regression is used to model effects of the eight religious measures on each health outcome variable, using the REG procedure. In Model I, all of the religious measures are entered together. In Model II, the analysis is rerun, adding in measures of covariate factors. This two-step process is conducted separately for self-rated health and activity-limiting health condition.

Four sociodemographic variables are used as covariates in Model II analyses. These include *age* (in years), *gender* (recoded as: 0 = male, 1 = female), *marital status* (recoded as: 0 = not married and living together [combining widowed, divorced, separated, and single/never married], 1 = married and living together), and *education* (highest degree or year of school completed; 17 categories collapsed to 9). Each of these variables has been associated with religious indicators and health-related outcomes in thousands of studies, and is routinely adjusted for in empirical research on the determinants of health, especially age.

Findings

Table 1 contains descriptive statistics and Pearson correlations for all study variables. A few notable findings can be observed. First, out of 28 possible intercorrelations among the eight Jewish religious measures, all 28 are statistically significant, in a positive direction, and most of these are of substantial magnitude. In other words, a higher level of Jewish religious engagement according to any given indicator or scale is associated with greater religious participation or observance according to every other measure. Second, seven of the eight religious measures are significantly associated with one or both of the health indicators. Four of these—the Jewish Activities Scale, the Jewish Observance Scale, synagogue membership, and synagogue attendance—are each associated with better self-rated health and the absence of an activity-limiting health condition. By contrast, personal prayer outside of *shul* is associated with poorer health according to both measures, perhaps because prayer here is being used as a response to a health challenge and a means to petition God for healing. For perhaps the same reason, a higher self-rating of the importance of religion is associated with a health condition. Without the benefit of longitudinal data, however, this interpretation cannot be confirmed.

In prevalence study data, one must be careful in interpreting bivariate findings implicating potential correlates of health indicators, especially measures of the functional domain of health. Identified behavioral correlates of functional health that themselves require a degree of functional health to perform may attain statistical significance, in part, due to methodological artifact rather than fully due to substantive significance. Gerontological research and studies of aging must confront this, especially. This issue was first discussed in earnest in the context of religion and health studies back in the 1980s. Statistically significant, positive associations between certain religious measures, notably those requiring public participation and thus ambulation (e.g., frequent attendance at worship service), may reflect the possibility that measures of public participation in religion are in part proxy measures of functional health itself. Measures of more private religious observances or of subjective religious beliefs or attitudes would not be affected in the same way. This observation has led to use of longitudinal designs to investigate these associations and, where this is not possible, such as in the present study, has encouraged careful adjustment for age. This was an important consideration in the present study, as both health indicators are significantly age-related (although, interestingly, both measures of synagogue involvement, the strongest correlates of health in this study, are not).

Table 2 contains results of two-step OLS regressions of each health indicator onto all eight religious indicators and scales (Model I), and then repeated adding in the four covariates, including age (Model II). Together with the results in Table 1, the approach enables comparison of the impact of each religious measure on each of the two health indicators under three conditions: bivariately, multivariably (in the presence of all other religious measures, but unadjusted for sociodemographic covariates), and multivariably and adjusted (i.e., controlling for effects of the covariates, including age). These results suggest that the impact of synagogue involvement on health, observed in Table 1, is of substantive as well as statistical significance.

For self-rated health, both synagogue membership ($\beta = .09, P < .001$) and synagogue attendance ($\beta = .08, P < .001$) are significant correlates, even after controlling for effects of the other religious measures, which are simultaneously entered. Moreover, the significant effect for synagogue membership remains at the net level (i.e., Model II) ($\beta = .07, P < .001$), after adjusting for age and the other covariates. This effect is thus observed even after controlling for the possibility of age-related declines in physical function, which might limit involvement at synagogue, not a trifling matter given a strong net effect of age on self-rated health ($\beta = -.34, P < .001$) that helped to explain away the significant gross effect of attendance. Keep in mind, as well, that synagogue *membership* is the strongest correlate of all the religious measures and, unlike attendance at services, does not imply regular active public participation. This is mirrored in the significant net effect for the Jewish Observance Scale ($\beta = .10, P < .001$), also a marker of religious commitment but emphasizing private home observances. A few other variables (personal prayer, Jewish activities, and self-rated religiosity) exhibit small inverse net associations with self-rated health, perhaps for reasons identified in the discussion of Table 1 results, above, but these effect sizes are very modest.

For presence of an activity-limiting health condition, much the same picture holds, but less nuanced. The only statistically significant religious measure at both the gross and net levels is synagogue attendance, a higher score on which is associated with better health (Model I: $\beta = -.07, P < .001$; Model II: $\beta = -.05, P < .001$). Synagogue membership is a significant correlate at the gross level ($\beta = -.04, P < .05$), but adjustment for age and the other covariates reduce this to non-significance. The interesting result here, again, is the presence of a modest but significant impact of synagogue involvement on a measure of

Table 2 Multiple regressions of health variables on religious indicators and sociodemographic covariates

	Self-rated health			Activity-limiting health condition						
	Model I		Model II		Model I		Model II			
	<i>b</i>	(SE)	β	(SE)	β	(SE)	β	(SE)		
Jewish activities scale	.01	(.01)	.01	(.01)	-.04	(.00)	-.01	(.00)	.03	
Jewish observance scale	.01	(.01)	.03	(.01)	.03***	(.01)	.10	(.00)	-.01*	-.06
Importance of religion	-.02	(.02)	-.02	(.02)	.01	(.01)	.04	(.01)	.01	.02
Synagogue member	.16***	(.04)	.09	(.03)	.12***	(.03)	.07	(.01)	-.03*	-.02
Self-rated religiosity	-.04	(.02)	-.04	(.02)	-.06**	(.02)	-.06	(.01)	.02	.06
Self-rated Jewish observance	-.03*	(.02)	-.03	(.02)	-.04	(.02)	-.04	(.01)	.00	.01
Personal prayer outside <i>shul</i>	-.07*	(.03)	-.04	(.03)	-.08**	(.03)	-.04	(.01)	.01	.02
Synagogue attendance	.14***	(.04)	.08	(.04)	.06	(.03)	.03	(.01)	-.05***	-.05
Age					-.02***	(.00)	-.34	(.00)	.00***	.24
Female					-.01	(.03)	-.01	(.01)	.01	.02
Married					.13***	(.03)	.08	(.01)	-.07***	-.11
Education					.07***	(.01)	.16	(.00)	-.01***	-.06

* $P < .05$; ** $P < .01$; *** $P < .001$

health, this time a “harder” measure of functional health, net of other salutary features of religiousness as well as accounting for age, which is strongly associated with the health outcome variable, even at the net level ($\beta = .24, P < .001$).

These interesting, robust, and consistent findings for synagogue involvement on health raise an additional question of Jewish demography that also can be addressed here: is the apparent health-related salience of affiliation with the life of a *shul* a function of the type of *shul*? That is, are these significant net associations of synagogue membership and attendance on self-rated health and of attendance on the presence of an activity-limiting health condition specific to a particular branch of Judaism, or are they more universal? Accordingly, these analyses were rerun, stratifying on a five-category measure of Jewish denomination (Reform, Conservative, Orthodox, Reconstructionist, and secular). Results (not reported in the table) revealed considerable denominational variation.

Neither synagogue variable is a significant correlate of self-rated health for Reform, Reconstructionist, or secular Jews. Among Conservative Jews, synagogue attendance is significant at both the gross ($\beta = .15, P < .001$) and net ($\beta = .08, P < .05$) levels; among Orthodox Jews, synagogue membership is significant at both the gross ($\beta = .20, P < .01$) and net ($\beta = .16, P < .05$) levels. Interestingly, among Reform Jews, there are significant gross ($\beta = .09, P < .05$) and net ($\beta = .16, P < .001$) effects for the Jewish Observance Scale. In sum, if there is a net impact of synagogue involvement on self-rated health, it is apparently most salient in Jews affiliated with more Torah-observant branches of Judaism; if there is any health impact of religion to be had among Reform Jews, it is a consequence only of living a life with greater ritual observance.

For presence of an activity-limiting health condition, once again neither synagogue variable is of any net health consequence for Reform or secular Jews. Among Conservative Jews, synagogue attendance has both gross ($\beta = -.11, P < .01$) and net ($\beta = -.07, P < .05$) effects; among Orthodox Jews, the synagogue variables do not matter, but the Jewish Activities Scale has a significant gross effect ($\beta = -.14, P < .05$), and the Jewish Observance Scale has a significant net effect ($\beta = -.16, P < .05$). The strongest impact of either synagogue variable in any branch of Judaism, interestingly, is for synagogue attendance among Reconstructionists, with very strong gross ($\beta = -.53, P < .001$) and net ($\beta = -.45, P < .01$) effects. In sum, for this functional health variable, as well, if there are benefits to be had from religious involvement, net of the potential confounding effects of age-related health declines, then they are more likely to be observed among more members of more generally observant branches of Judaism and are less likely, if at all present, among more liberal or secular Jews.

Discussion

The most interesting finding from these analyses is the importance of synagogue participation for health, but primarily for those Jews who, presumably, value traditional forms of Jewish observance. Like most empirical findings on the subject of religion and health, the interpretation is more nuanced: results are not identical for both health variables, effect sizes are mostly modest, and health benefits would seem to accrue to Conservative as well as Orthodox Jews (and, in one instance, to Reconstructionists). But, caveats aside, these results seem clear that for more liberal or unaffiliated Jews, the practice of religion, especially as defined by participation in synagogue life, does not exhibit the same beneficial salience for physical well-being that it does among Jews who are members of more observant branches of Judaism.

What is it about Conservative and Orthodox Judaism that would produce these results? Or, rather, what is it about the most liberal and secular Jews that would make sense of an absence of an instrumental function of religion for health among them? In the studies of Rosmarin and colleagues and in the studies of Israeli *kibbutzim*, cited earlier, the significant divide was between Orthodox and non-Orthodox Jews, but that is precisely how data were stratified, a priori, and how analyses were conducted; all liberal branches of Judaism were grouped together, along with non-affiliated Jews. In so doing, perhaps some additional variation was lost.

What, then, do Conservative and Orthodox Jews share that would help to make sense of these findings. For one, there is a mutual affirmation of one's *shul* as a place to fulfill communal covenantal obligations grounded in ritual practices; there are particular *mitzvot* that must be observed, at regular intervals, and that can only occur in the presence of a *minyan* (10-person/man quorum) at synagogue. Moreover, the sanctity of the *shul* and the congregation, as well as the spiritual fate of congregants in the world to come, if you will, depends in no small part on these covenantal obligations being fulfilled. Granted, the nature of how certain *mitzvot* are performed, even defined, varies between Conservative and Orthodox Jews—but this is a theological issue. Yes, Conservative Jews differ from the Orthodox on their understanding of and approach to *halakhah*, yet, they are not explicitly post-*halakhic* in the way that the other liberal branches are; Jewish law is interpreted differently and more leniently, some would say, by the rabbis, but in that revised form is nonetheless binding. In other words, both Conservative and Orthodox Jews, ideally, share a buy-in to a religious ethos that makes divinely sanctioned demands on behavior and that sanctifies (and insists on) expressions of piety for both personal and communal ends.

So, despite very significant theological disagreement, there may be a genuine psychosocial convergence among individual Conservative and Orthodox Jews that would help to make sense of a heightened sense of well-being fostered by participation in the life of a synagogue. This is not to say that religious involvement is not a salient force for well-being among Reform Jews, but, in this study, the synagogue variables had no impact. Rather, for Reform Jews, it was greater personal observance that mattered most: the higher the scores on the Jewish Observance Scale, the better one's health.

Until a national Jewish health census or survey is conducted in the USA, or a world Jewish health survey undertaken, these present analyses suggest a fruitful way to bootstrap a means of estimating the contributions of religious observance to health in other Jewish samples of national scope, including in Israel and the non-U.S. diaspora. For example, these analyses could be replicated in the Gallup World Poll's Israel sample, which includes measures of physical health and psychological well-being, as well as in the Israel National Health Survey and the many U.S. Jewish community surveys conducted over the past 20 years. The present findings also underscore the importance of stratifying by Jewish movement (i.e., denomination) in empirical analyses of the well-being of Jews. Only after examining the few modest findings from the overall sample in this way were the most interesting observations able to be made. But, still, the question remains: what do these findings mean?

From the earliest reviews of the religion and health field (Levin and Schiller 1987), a distinct health advantage was observed among adherents to religions or communions that make strict behavioral demands. These included Latter-Day Saints, Seventh-day Adventists, and regular communicants in the Roman Catholic Church, and as well as clergy of all faiths. One of the ways that religious involvement impacts on health is through the kind of religious belief system that requires a buy-in or commitment strong enough to lead to

changes in health-related behavior—and, of course, through a religion that makes such demands in the first place. This explanation has been invoked to help to explain the significant health advantage, epidemiologically speaking, for Latter-day Saints and Adventists especially in relation to cancer morbidity (Gardner et al. 1995). As has been noted by sociologists (e.g., Stark and Bainbridge 1987), as well, aside from any advantage in motivating and sanctioning healthy behavior, religions that make high demands on members do better than low-demand religions as conduits for values and beliefs. These, in turn, may influence health status through myriad channels: encouraging health-directed behavior, preventive healthcare use, medical compliance, and receptivity to health-promotive messages, as well as providing worldviews that engender hope in the future (including the next life), assist in coping with serious life challenges, and give meaning and context to the vicissitudes of life and make them more enduring (see George et al. 2002; Idler 1987; Levin 1996; Levin and Vanderpool 1987). If so, then it is not surprising to observe population-wide benefits of religious participation for well-being, whether psychological or even physical.

These influences need not be present for every member of these cohorts (e.g., religious Jews) in a given sample for a population-wide effect to be observed. In epidemiologic context, we are dealing with population-wide averages. So in that sense we can indeed conclude that for Orthodox Jews, generally, who are more likely to be orthoprax in terms of commitment to a Torah-observant life style than Jews in the other denominational categories, participation in synagogue life—whether through active involvement in *davening* (prayer) or simply through affiliating with a *shul*—has observable implications for health. Accordingly, significant implications are also observable for Conservative and Reconstructionist Jews, but are lower in magnitude, in keeping with their lesser orthopraxy, on average, than Orthodox Jews. Similarly, for Reform and secular Jews, groups which endorse—again, on average—less formal, ritual observance still, Jewish participation does not have much to say about physical well-being, although, as noted, for Reform Jews who are more ritually engaged there is an incremental benefit over and above less observant members.

The NJPS has been critiqued for underrepresenting the right wing of Orthodoxy—not necessarily by intent, but by dint of difficulties in accessing that population for inclusion in a sampling frame. If so, then this methodological artifact might account for the similarities between Conservative and Orthodox Jews, as the latter are overwhelmingly Modern Orthodox in this sample, and thus closer in levels of observance, and socioeconomically and culturally, to more traditionally observant Conservative Jews. Were a broader spectrum of Orthodoxy better represented, we might have found more of a divergence between Conservative and Orthodox Jews in the instrumental effects of religious observance for well-being, while still maintaining the gulf between both groups and the other branches of Judaism. Were mental health variables available in this dataset, then an effort also could have been made to replicate some of the findings of Rosmarin and colleagues regarding the distinctive well-being profile of Orthodox Jews. Instead, only the two physical health variables were included, which limited the scope of these analyses, although the national sampling frame was a very welcome benefit. Nor does the NJPS contain measures of health behaviors as are commonplace in large-scale health surveys; thus, there is no way to use these data to validate the mechanisms by which religion and health are connected in this sample, as speculated above. These are the kinds of trade-offs that one encounters in conducting research on Judaism and health and are among the considerations that argue for a comprehensive health survey of the entire Jewish population.

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