

# Religious Differences in Self-Rated Health Among US Jews: Findings from Five Urban Population Surveys

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**Abstract** Research findings on religion and health among Jews are in relatively short supply. While recent studies report on the health of Israelis and the mental health of Jews in the USA, little information exists on the physical health of US Jews, especially from population surveys. In this study, data are analyzed from five urban surveys of Jews conducted since 2000: two surveys from New York ( $N = 4,533$ ;  $N = 5,993$ ) and one apiece from Chicago ( $N = 1,993$ ), Philadelphia ( $N = 1,217$ ), and Boston ( $N = 1,766$ ). A strategy of two-way ANCOVA with interaction was used to test for differences in self-rated health across five categories of Jewish religious affiliation (secular, Reform, Reconstructionist, Conservative, Orthodox) and four categories of synagogue attendance (from never to at least weekly). Findings, adjusted for age and effects of other covariates, reveal that affiliated and synagogue-attending Jews report moderately better health than secular and non-attending Jews.

**Keywords** Self-rated health · Religion · Judaism · Urban · Population survey

## Introduction

By now, decades of research have accumulated on the health impact of religious participation. Most of this work derives from social and epidemiologic studies using data from community and population surveys, and there is also substantial evidence from behavioral and clinical studies. According to recent reviews, the number of published studies now exceeds four thousand, and this body of work has addressed almost every imaginable health or disease outcome, including population rates of overall and cause-specific morbidity and mortality (Koenig et al. 2012). The weight of findings, on the whole, appears salutary, but this general observation masks substantial variation in the patterns and

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magnitude of findings that cannot be conveyed in single published studies and is thus often missed (and misconstrued) in the continuing narrative on this topic.

This constitutes the “what” of a religion–health connection. While there is much that we still do not know—e.g., regarding the “how” or “why” question—it is no longer as controversial as it once was to affirm that dimensions of religious expression may be significant correlates or determinants of measures of health or well-being in some populations, just as they are of selected social, psychological, political, and economic outcomes. However nuanced this finding may be, whatever it may or may not imply, and however reliable and sophisticated the samples and methods used in these studies, the possibility of an overall association between these two domains, religion and health, is now generally accepted among social and health scientists.

Still, there are gaps in what we know about the influence of religious involvement on physical and mental health. These have been detailed elsewhere (Krause 2004), including possible variation in the presence and magnitude of religion–health associations (a) outside of the mostly Christian samples that constitute this literature and (b) across denominations within Christianity and other faith traditions. Cross-religious and intra-denominational comparisons have been rare, perhaps because of discomfort in the possibility that identifying a significant health impact of religious participation in a respective group may encourage misperceptions that health is the province of a specific faith tradition. Alongside the ongoing problem of this work’s confounding in news reports with those relatively few and contentious clinical trials of distant healing prayer—and continued interest in “whose prayers work”—social scientists interested in religion and health research seem inclined to distance themselves from touchy questions which lend themselves to such misinterpretation. Thus, questions related to religious identity—as opposed to religious behavior—have been downplayed in this literature.

For purposes of the present study, the most significant lacuna has been a paucity of studies of Jewish respondents or subjects. There are reasons for this: (a) the relatively small proportion of Jews in the USA, which mitigates against specifically Jewish analyses using data from national population surveys of health or religion or from general social surveys; and (b) the absence of a Jewish version of the US Health Interview Survey or a US version of the Israel National Health Survey or of questions on health in mostly Jewish religious surveys. The end result: most of what we know about the relationship between religion and health, in the USA especially, derives almost entirely from studies of Christians of various affiliations. Due to variations in the social construction of religious expression between Christians and Jews—in what behaviors, beliefs, experiences, and so on count as “religious,” what the normative levels are for these constructs, and what we should expect about their salience for health or well-being—we cannot presume that findings of long-standing from the existing religion and health literature can simply be read onto the US Jewish population without validation. Further, American Jews are characterized by as much religious diversity, for example in affiliation (i.e., denominationally or, in Jewish parlance, by “movement”), as are Christians. Norms of religious expression themselves vary across the Jewish movements and further complicate identifying and describing a putative religion–health connection among Jews in the USA.

For example, degrees of Jewish religious observance that may seem high or strong or normative in comparison with similar kinds of expression among Christians—e.g., weekly synagogue attendance, daily prayer or recitation of blessings—may not even rise to the level of being “observant” or “religious” according to more traditionally religious and Torah-observant Jews. Likewise, important markers of religious observance among Jews, such as *tzedakah* (charitable giving), regardless of one’s participation in institutional

religion and formal worship, may be missed by Christian observers who do not recognize it as a vital *mitzvah* (commandment) and a sign of religious obedience and thus may mis-categorize certain respondents as to their degree of religiousness.

The present study provides an opportunity to investigate Jewish-denominational differences both in a commonly used health indicator and in the association between synagogue attendance and health, in the USA. Because of long-recognized denominational differences in fertility rates, social class, age structure, and, naturally, religious participation (Roof and McKinney 1987; Rosten 1975; Wuthnow 1979), results are age-adjusted and also control for effects of available demographic variables. The aim is to follow up on three streams of recent research (detailed in the next section) that suggest that religiousness, broadly defined, may be impactful on the physical and mental health of Jews. These results are largely from studies of Israeli or European Jews, or from US studies that draw on clinical or community samples. Population-based analysis of these issues among US Jews has been elusive.

### Jewish Observance and Health

Despite a paucity of research investigating Jewish religious observance in relation to physical health indicators in the USA, some studies have examined the broad interface of religion and well-being in Israel and the diaspora. Results of Israeli studies of mental health (Levav et al. 1993, 2008; Lupo and Strous 2011; Ponizovsky et al. 1998; Vilchinsky and Kravetz 2005; Wang et al. 2008), psychological well-being (Amit 2010; Anson et al. 1990; Francis et al. 2004; Lazar and Bjorck 2008; Shkolnik et al. 2001; Shmotkin 1990; Van Praag et al. 2010), health status (Anson et al. 1991; Shmueli 1999, 2006; Shmueli and Tamir 2007), and longevity (Kark et al. 1996; Kraut et al. 2004; Litwin 2007) are not entirely consistent, but do point to a generally salutary, if nuanced, effect of religious observance among Jewish respondents.

Similarly, a US study, analyzing 30 years of data from the General Social Survey, found that Jews who more frequently attended synagogue were happier than those who did not (Stark and Maier 2008). European findings, mostly from the studies of Loewenthal and colleagues on depression and anxiety among Orthodox Jews in the UK (Loewenthal et al. 1995, 1997a, b, 1998, 2000), have reached the same conclusion, but with less consensus.

While both covariance-structure (Anson et al. 1990) and Cox proportional hazards (Kark et al. 1996) modeling have been used in this literature, samples tend to be small, drawn through non-probability methods, and analyses are fairly basic. Such comments should not be taken as criticisms: many of these studies are outstanding and provocative and provide the only window into these issues in this population given the limited availability of data sources.

Besides this work, over the past few years two programs of systematic research have explored the mental and physical health impact of Jewish religious observance more directly. Rosmarin and colleagues have been instrumental in identifying the influence of Jewish religious observance, especially among Orthodox and Torah-observant Jews in the USA, on mental health and functioning and overall psychological well-being. Through a series of clinical, community, and online studies, constructs such as general religiousness (Rosmarin et al. 2009a), traditional Jewish religious beliefs (Rosmarin et al. 2009d), trust in God (Krumrei et al. 2013; Rosmarin et al. 2009c), gratitude (Rosmarin et al. 2010), intrinsic religiosity (Pirutinsky et al. 2011a), spiritual struggle (Rosmarin et al. 2009b), and religious coping (Pirutinsky et al. 2011b, 2012) were associated with higher levels of physical and mental health, especially less depression and anxiety.

Another series of studies has entailed secondary analysis of large, population-based national or multinational global surveys of Israelis or of diaspora Jews present in sufficient numbers to enable their study. This project has identified Jewish religious predictors of various physical and mental health outcomes in mostly Israeli samples from multinational probability survey programs: the World Values Survey (Levin 2012b); the Gallup World Poll (Levin 2011b); the Survey of Health, Ageing and Retirement in Europe (Levin 2012a, 2013a); the European Social Survey (Levin 2013b); International Social Survey Programme (Levin 2014); and the Israel Social Survey (Levin 2013c). One US analysis was conducted, using data from the 2000–2001 National Jewish Population Survey (NJPS), and found that synagogue membership and attendance were associated with better health (Levin 2011a). These latter results complement an earlier published analysis using the NJPS, in which higher levels of Jewish ritual behavior were also associated with better health (Eberstein and Heyman 2010).

In these studies, one issue keeps reappearing: the possibility that health, broadly conceived, may vary in a “dose–response” gradient across categories of Jewish affiliation or identity. In the USA, this would mean better health, on average, across the major Jewish movements, moving from “left” to “right,” in terms of commitment to *halachah* (Jewish law): Reform, Reconstructionist, Conservative, and Orthodox. Other categories exist (e.g., secular or humanistic Jews; varieties of Orthodoxy), but these are the main branches that would be considered “denominations” if Christian. In Israel, this issue is constructed in terms of Jewish religious identity, using an official classification scheme of *hiloni* (secular), *masorti* (traditional), *dati* (religious), and *haredi*. These categories do not imply exactly what they might in the USA, and recently *masorti* has been split in two, reflecting religious participation. This topic is more nuanced than can be unpacked here. Since the present study focuses only on the USA, the interested reader is referred elsewhere for more information (Friedman 1987; Pfeffer 2010).

A religious gradient has appeared in several studies (Levav et al. 2008; Levin 2011a, b, 2013c; Rosmarin et al. 2009d; Shkolnik et al. 2001; Van Praag et al. 2010; Vilchinsky and Kravetz 2005), whereby Jews classifying themselves further to the right in religious identity or affiliation also rate themselves as physically or mentally healthier, on average. But counter-evidence exists, both null findings (Loewenthal et al. 1997a) and evidence of greater morbidity among more religious Jews for certain outcomes (Kark et al. 1996; Kraut et al. 2004; Shmueli 2006, 2007). Three caveats: (a) where present, these are not perfect gradients—more like trends; (b) gradients are mostly in absolute levels of health outcomes, not in associations between religious observance and health; and (c) gradients are mostly not observed in probability samples [with exceptions (Levin 2011a, b, 2013c)], so it is unclear whether they are functions of the sampling distributions and sample settings or of an underlying population-wide phenomenon. These prior results only hint at something that has not been consistently validated as substantive in large, population-based samples.

By now, existing national and global Jewish population samples have been mostly tapped, and almost all of this research has focused on Israeli Jews. The NJPS is the only population sample of national scope available for research on this topic among US Jews. The present study enables expansion of this work using population data from key Jewish American urban communities. These studies are part of an ongoing program of community-based population surveys conducted by, in conjunction with, or sponsored by the various local Jewish Federations (see “Methods” section). Helpfully, each of these studies assesses health status by way of the same single-item health indicator present, in some form, in almost all population health studies. They also all assess Jewish religious affiliation, in its various categories, as well as attendance at synagogue services. Granted, there

are many more sophisticated ways to assess Jewish religious observance, and this has been done throughout the studies cited above. But the opportunity here to examine this issue in multiple, large probability samples using a common set of religious and health indicators in several US urban communities enables a level of replication that outweighs any limitations in variable selection.

### Study Aim and Hypotheses

The aim of this study is to examine religious differences in self-rated health among US Jews in five large urban population samples, side by side. These surveys conducted in major Jewish communities in the USA since 2000 enable estimation of health status across Jewish movements and by synagogue attendance, net of sociodemographic characteristics. This study presents an opportunity, first, to confirm a religion–health association among US Jews and, second, to validate denominational and attendance gradients in this association.

The health indicator used here is a single-item self-rating of global or overall health, also referred to as subjective health. This measure is routinely included in large population health surveys and is commonly included in other surveys when limited resources prevent more sophisticated health assessment. As a result, considerable research has validated this measure as an overall gauge of health status. Usually configured as a single question (e.g., “Overall, how would you rate your health?”) with at least four response categories (poor, fair, good, excellent), this item is a significant correlate or predictor of objective health status, physical functioning, less symptomatology, mental health, psychological well-being, longevity, and use of health services (Idler 2008). As one might anticipate, hardly any of this research has been conducted among Jews, although recent studies using this measure have identified religious correlates in the USA (Levin 2011a) and Israel (Levin 2012a).

In this study, it is hypothesized that synagogue attendance is positively associated with health, keeping with prior findings in non-Jewish populations. It is also hypothesized that self-ratings of health increase as one moves “rightward” across the spectrum of Jewish religious affiliation, from secular to Orthodox Judaism, consistent with some of the previous studies among Jews, noted above. Will these gradients give the appearance of actual dose–response curves, as the term is used in epidemiology—an incremental increase in an outcome (i.e., health) with each response category of the exposure variable (i.e., affiliation or attendance)? In other words, the more traditional one’s Jewish affiliation and the more frequent one’s worship at *shul* (synagogue), will the better one rate one’s health? Previous research does not provide enough information to go on here, but theoretical work suggests this may be so.

It has been suggested that religions and denominations that make high demands on adherents (a.k.a. “high-tension” religions) produce greater brand loyalty, so to speak, and engender greater long-term benefits in psychosocial functioning and well-being (Stark and Bainbridge 1987). Likewise, low-demand, or low-tension, religions have opposite effects. The present study is not the place to debate this theory, whose implications and nuances far exceed what can be validated in a single study of the health of Jews, but prior epidemiologic studies of religion do offer support in the context of health. For example, early reviews of the religion and health literature found that among those denominations that make strict behavioral demands (e.g., Latter-Day Saints, Seventh-day Adventists) and among religious groups characterized by greater piety or practice (e.g., clergy), population-wide morbidity and mortality rates were the lowest (Jarvis and Northcott 1987; Levin and Schiller 1987). Greater commitment to health-related behavioral prescriptions and proscriptives among members of more conservative religious denominations or sects was

suggested as an explanation for the lower rates of overall cancer morbidity and mortality among some religious populations (Troyer 1988). Further, an interaction has been observed such that primarily among the frequent attenders of the conservatively affiliated is one most likely to observe lower risk of disease (Gardner et al. 1995).

An additional note on age adjustment, conducted here for two reasons: First, research in other populations, such as Israel, suggests age variation in Jewish population structure by where one is located along the spectrum of religious identity, from left to right. Orthodox and *haredi* Jews, for example, exhibit higher fertility and thus, on average, skew toward younger populations (DellaPergola 2011; Friedlander 2002). As younger populations also, on average, provide higher scores on self-assessments of health, analyses need to take this into account.

Second, possible confounding between measures of religious attendance and health has been raised since the 1970s (Comstock and Tonascia 1977). This issue involves “the possibility that, among older cohorts, a measure of religious attendance represents a proxy for age-related declines in functional health (that would hinder ambulatory status and thus an ability to go to services) and thus may render observed associations with well-being at least partly artifactual” (Levin 2014:599). While subsequent studies have confirmed that attendance indeed exhibits a substantive salutary effect on health (Idler and Kasl 1977) and longevity (Strawbridge et al. 1997), without longitudinal data such observed associations cannot be properly interpreted. Otherwise significant results could be an artifact of a cross-sectional design, such that older and less healthy respondents attend public services less frequently due to greater disability, on average—not that more frequently attending respondents gain a health advantage. Age adjustment of prevalence data is an imperfect means of accounting for this possibility, enabling one to argue that a positive finding is at least partly substantive and not just an artifact of age-related declines in physical function. Still, to be clear, these data are cross-sectional and thus any inference of epidemiologic protection or risk cannot conclusively be made.

## Methods

Data for this study come from five population surveys conducted in four US cities since 2000: the Jewish Community Study of New York: 2002; the Jewish Community Study of New York: 2011; the 2010 Metropolitan Chicago Jewish Community Survey; the 2009 Jewish Population Study of Greater Philadelphia; and the Greater Boston 2005 Community Study. These are a subset of a larger group of Jewish community surveys conducted over the past 30 years in about 100 cities in three dozen states, primarily with support of the local Jewish Federations. These five surveys were selected because they represent major urban centers of Jewish population and are of recent vintage, all conducted in the 2000s.<sup>1</sup> Also, each survey includes the constructs required for the

<sup>1</sup> Why just these five samples and not others? For one, New York, Chicago, Philadelphia, and Boston represent major Jewish urban population centers for which data from surveys with large sample sizes and conducted since 2000 were available. Another obvious candidate, the 1997 Los Angeles Jewish Population Survey, was considered on account of the large Jewish population in southern California, but its single health variable was constructed with a metric that did not match the other studies and, moreover, data were not available on health for half the sample. Further, the public data were available only with recodes of Jewish religious affiliation and synagogue attendance; original raw responses were not available. Also, the information is somewhat dated compared to the other studies, all of which were conducted in the new century. Many other large urban centers with substantial Jewish populations were also considered, but either the respective survey did not include a health variable or the data were too old or the sample too small.

**Table 1** Population characteristics, by study sample

Variables	New York 2002 <i>N</i> (%)	New York 2011 <i>N</i> (%)	Chicago 2010 <i>N</i> (%)	Philadelphia 2009 <i>N</i> (%)	Boston 2005 <i>N</i> (%)
Jewish religious affiliation					
Secular	653 (16.7)	802 (16.9)	268 (14.1)	123 (10.9)	268 (15.5)
Reform	1,184 (30.2)	1,500 (31.6)	867 (45.7)	454 (40.0)	748 (43.2)
Reconstructionist	53 (1.4)	73 (1.5)	59 (3.1)	45 (4.0)	44 (2.5)
Conservative	1,167 (29.8)	1,286 (27.1)	578 (30.5)	461 (40.7)	601 (34.7)
Orthodox	865 (22.1)	1,085 (22.9)	124 (6.5)	51 (4.5)	69 (4.0)
Synagogue attendance					
Never	567 (14.1)	1,118 (18.8)	345 (17.5)	223 (18.6)	233 (13.6)
Less than monthly	2,082 (51.9)	3,022 (50.7)	958 (48.6)	621 (51.8)	963 (56.2)
At least monthly, less than weekly	573 (14.3)	732 (12.3)	427 (21.6)	230 (19.2)	346 (20.2)
At least weekly	788 (19.7)	1,090 (18.3)	243 (12.3)	125 (10.4)	172 (10.0)
Self-rated health					
Poor	206 (5.0)	341 (5.8)	70 (3.5)	47 (3.9)	38 (2.3)
Fair	654 (15.8)	922 (15.6)	174 (8.8)	152 (12.6)	153 (9.1)
Good (or very good)	1,721 (41.6)	2,406 (40.6)	1,050 (52.9)	618 (51.1)	841 (49.9)
Excellent	1,560 (37.7)	2,258 (38.1)	693 (34.9)	393 (32.5)	652 (38.7)
Age [mean (sd)]	54.0 (18.8)	58.1 (18.9)	56.2 (17.8)	61.1 (15.8)	53.8 (15.9)
Gender					
Male	1,663 (36.7)	2,333 (39.0)	787 (39.5)	426 (35.0)	746 (42.3)
Female	2,870 (63.3)	3,654 (61.0)	1,206 (60.5)	791 (65.0)	1,018 (57.7)
Marital status					
Married and living together	1,799 (40.0)	2,426 (40.7)	787 (39.6)	433 (35.6)	538 (31.2)
Not married and living together	2,704 (60.1)	3,530 (59.3)	1,203 (60.5)	783 (64.4)	1,187 (68.8)
Education					
High school graduate or less	992 (22.0)	862 (14.7)	115 (5.8)	201 (16.5)	115 (6.5)
Associates degree or some college	654 (14.5)	905 (15.5)	257 (12.9)	169 (13.9)	181 (10.3)
College graduate	1,246 (27.6)	1,686 (28.8)	735 (37.0)	361 (29.7)	957 (54.3)
Masters degree	1,274 (28.2)	1,767 (30.2)	584 (29.4)	290 (23.9)	341 (19.3)
Doctoral degree	348 (7.71)	634 (10.8)	297 (14.9)	195 (16.0)	170 (9.6)

present analysis, enabling side-by-side comparison of results using the same health indicator and the same religious and sociodemographic measures in five distinct samples. These datasets are publicly archived at the Berman Jewish DataBank of the Jewish Federations of North America (formerly the North American Jewish Data Bank of the Mandell L. Berman Institute at the University of Connecticut). Population characteristics of these samples are shown in Table 1.

## Study Samples

### *New York 2002*

The Jewish Community Study of New York: 2002 was a two-step probability survey of Jewish households in the eight-county service area of the UJA-Federation of New York. It used a four-strata stratified random sampling design and was conducted as a computer-assisted telephone (CATI) interview averaging 20–21 min to complete. The survey's overall response rate was 38 %, and of the 6,035 eligible households identified in the screening process, 4,533 interviews were conducted (an interview cooperation rate of 75 %) and 4,090 of these have full data. This was a comprehensive social survey, with hundreds of original and derived variables on numerous aspects of the social and religious life of New York Jews (UJA-Federation of New York 2004). For additional information on the study sample, design, and methodology, see the main report (Ukeles and Miller 2004).

### *New York 2011*

As was the 2002 study, the Jewish Community Study of New York: 2011 was a two-step survey of randomly selected Jewish households in the eight-county UJA-Federation of New York service area. It used a seven-strata stratified random sampling design and was conducted as a CATI-based interview using both cell phones and landlines, and averaged 24 min. Overall response rate was 32 % (using AAPOR Response Rate 3 criteria), 35 % based on landlines and 30 % on cell phones. Of 8,609 households identified during screening, 6,274 interviews were completed, 5,993 are included in the data file, and the interview cooperation rate was calculated as 79 %. Content was similar in scope to the 2002 study, but expanded for certain topics (UJA-Federation of New York 2012). Detailed information on research methods is available in the study's comprehensive report (Cohen et al. 2012), especially in the appendix and in a supplementary methodology report (Cohen et al. 2013).

### *Chicago 2010*

The 2010 Metropolitan Chicago Jewish Community Survey used three complementary, randomized sampling frames of Jewish households in a five-county area. Run by the same team that did the Philadelphia survey (see below), it used CATI methods and a similar core of questionnaire items (Jewish United Fund/Jewish Federation of Metropolitan Chicago 2010). The interview averaged 20 min to complete, with a response rate of 46 %, resulting in a total of 1,993 interviews. For additional information on study sample, design, and methodology, see the methodology report (Social Science Research Solutions 2010).

### *Philadelphia 2009*

The 2009 Jewish Population Study of Greater Philadelphia was a probability survey of Jewish households in a five-county area. It consisted of a sample drawn from four successive sampling frames and was conducted as a CATI survey averaging about 19 min to complete. The study's response rate was 53.2 %, resulting in a total of 1,217 completed interviews. Survey questions addressed Jewish identity, attachment, upbringing, education, affiliation, and engagement, as well as multiple domains of needs assessment, social involvement, and other issues (Jewish Federation of Greater Philadelphia 2009). For more



information on study sample, design, and methodology, see the summary report (Phipps 2009), especially its methodological appendix (Social Science Research Solutions 2009).

### *Boston 2005*

The Greater Boston 2005 Community Study used two independent, complementary sampling frames to build a sample of Jewish households surveyed by phone. The interview, following screening questions, took about 30 min to complete, with a response rate of 40 %, resulting in a total of 1,766 interviews (Combined Jewish Philanthropies of Boston 2005). The questionnaire solicited information on demographic, social, family, and Jewish identity, attitudes, and practices. Additional information is available on the study (Steinhardt Social Research Institute 2006) and its methodology (Phillips et al. 2007).

### Measures

#### *Self-Rated Health*

This construct is assessed by a single variable using a standard, four- or five-category metric in all community studies. A four-category metric is used in these analyses, requiring some collapsing in a couple samples (coded: 1 = poor, 2 = fair, 3 = good or very good, 4 = excellent). These response categories are in keeping with its conventional assessment by medical sociologists, epidemiologists, and other investigators who study determinants of self-assessed health outcomes (Idler 2008).

#### *Jewish Religious Affiliation*

The following five categories are included in all five community studies: secular, Reform, Reconstructionist, Conservative, Orthodox. In some studies, other categories may appear, but they have been collapsed into these five (e.g., Chasidic or *haredi* into Orthodox; Traditional or Conservadox into Conservative; atheist or none or humanist into secular) using the best judgment of the present author in order not to exclude cases and lower the available sample size. Self-identified Jews who practice another religion (e.g., Messianic Jews; JUBUs or Buddhist Jews) are excluded from analyses. All five surveys also include a response category for “just Jewish”—these are largely non-religious cultural Jews, and so have been folded into the secular category for these analyses.<sup>2</sup>

#### *Synagogue Attendance*

This is assessed by a single variable whose metric differs slightly across the five community surveys. For purposes of facilitating comparisons across samples and for use in the analyses (see Table 2), this variable is collapsed and recoded along a common four-category metric: 4 = at least weekly, 3 = at least monthly but less than weekly, 2 = occasionally (i.e., all frequencies less than category 3), 1 = never.

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<sup>2</sup> The phrase “just Jewish” has become a branding mechanism for cultural, secular, non-religious, and humanist Jews, e.g. according to the National Youth Organization of Humanistic Jews (<http://www.hujews.org/hb-hj.htm>). Preliminary analyses showed that respondents in the just Jewish and secular or humanist categories did not differ significantly by age, gender, health, synagogue attendance, and importance of religion in at least four of the five samples. Thus, they were combined for purposes of this study.

**Table 2** Self-rated health by Jewish religious affiliation and synagogue attendance, by study sample

Study	Gross findings <sup>a</sup>			Net findings <sup>b</sup>		
	Jewish religious affiliation	Synagogue attendance	JRA × SA	Jewish religious affiliation	Synagogue attendance	JRA × SA
New York 2002	25.69***	8.62***	2.10*	31.30*	11.10*	2.65**
New York 2011	29.80***	26.80***	2.75**	33.03***	31.87***	3.00***
Chicago 2010	3.98**	9.63***	2.67**	4.15**	10.62***	2.58**
Philadelphia 2009	3.56**	4.06**	2.00*	4.20**	3.54*	2.10*
Boston 2005	4.54**	4.30**	1.38	4.80**	4.29**	1.27

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$

<sup>a</sup> F-scores, from unadjusted analyses, using ANOVA

<sup>b</sup> F-scores, from adjusted analyses (controlling for effects of age, gender, marital status, and education), using ANCOVA

### Covariates

Besides age (in years), adjusted for in analyses for reasons noted earlier, effects of a few other sociodemographic variables common to all five surveys are controlled for in these analyses: gender, marital status, and education. Each of these is long known to be a correlate or predictor of religious measures (Taylor 1988) and health status indicators (Last 1987). In all five samples, gender was recoded (0 = male, 1 = female) and marital status was dichotomized (1 = married and living together, 0 = not married and living together; the latter category included separation, divorce, widowhood, and cohabitation). For education, the response categories differed across the samples. This variable thus, too, was recoded in each sample to conform to a common metric (1 = high school graduate or less, 2 = associates degree or some college, 3 = college graduate, 4 = masters degree, 5 = doctoral or professional degree).

### Data Analysis

The aim of these analyses is to compare self-ratings of health across categories of both Jewish religious affiliation and synagogue attendance. This is to investigate (1) a possible Jewish-denominational gradient in health, (2) a possible dose–response relationship between synagogue attendance and health, and (3) the persistence of these effects after age adjustment and controlling for other sociodemographic correlates of both religiousness and health. Accordingly, both gross results (from two-way ANOVA with interaction) and net results (from two-way ANCOVA with interaction, adjusting for age and effects of other covariates) are reported for each sample (see Table 2). The statistical significance of F-scores is based on the Type I sum of squares, which is model-order-dependent. That is, in the present case, it calculates the interaction effect for each model after first adjusting for the main effects of Jewish religious affiliation and synagogue attendance. All analyses are conducted using SAS version 9.3.

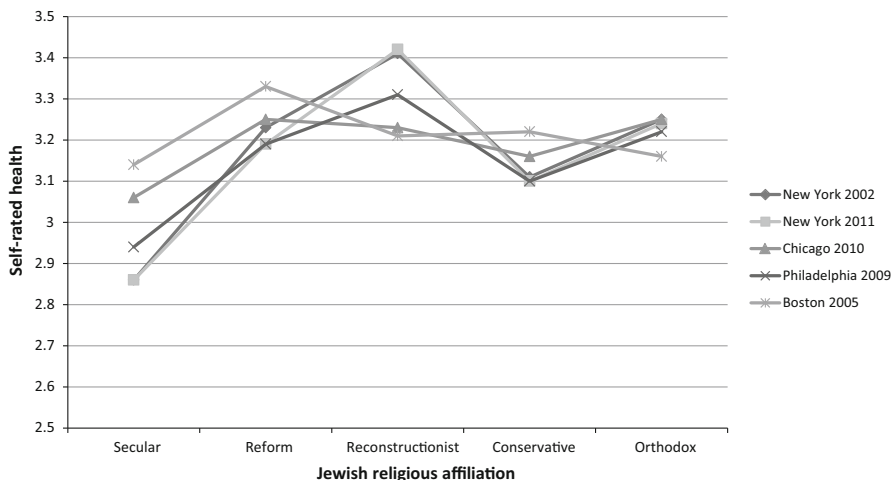
## Results

These analyses reveal statistically significant differences in health by categories of both Jewish religious affiliation and synagogue attendance in all five samples at both the gross and net levels (see Table 2). Further, the interaction term is statistically significant in four of the five samples, all but Boston. These results are mostly in keeping with hypotheses, although the empirical findings do not provide evidence of what could fairly be termed a dose–response effect, in epidemiologic terms. A difference is observed, but this is between affiliated and unaffiliated Jews and between synagogue attenders and non-attenders—not the consistent kind of gradient that was hypothesized (see Figs. 1, 2).

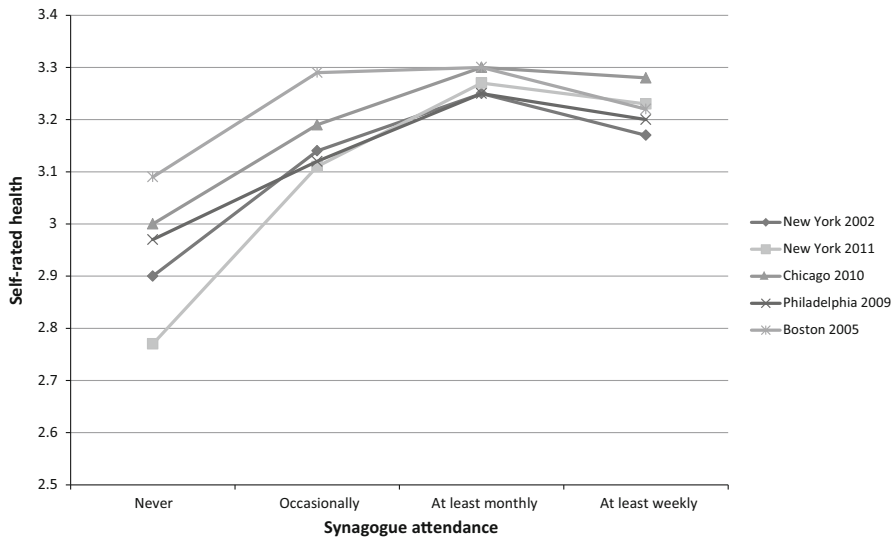
The way that the statistically significant main effects and interactions play out in these findings can best be seen by looking at the extreme ends of the data array (see Table 3). That is, the most frequently attending Orthodox Jews have moderately higher self-ratings of health than do only occasionally attending or non-attending secular Jews. This can be seen to some extent in each sample, but is less pronounced in Boston. For most of the rest of the “middle” of the data arrays for each sample—i.e., the intermediate categories of attendance (at least monthly, occasionally) and affiliation (Reform, Reconstructionist, and Conservative)—there is not much in the way of decisively observable trends to enable reliable conclusions one way or another. Moreover, again, a formal dose–response-style gradient cannot be identified here.

## Discussion

To restate, four summary findings are observed: (1) self-ratings of health are higher among affiliated Jews, on average; (2) greater synagogue attendance is modestly associated with better health, but a clear-cut dose–response gradient is not observable in these samples; (3) an interaction is present such that it is the more frequently *shul*-attending Orthodox Jews who seem to gain the most health advantage from Jewish observance; and (4) these results



**Fig. 1** Self-rated health by Jewish religious affiliation, in five urban samples



**Fig. 2** Self-rated health by synagogue attendance, in five urban samples

**Table 3** Self-rated health by interaction of Jewish religious affiliation and synagogue attendance, by study sample

Study	Synagogue attendance	Jewish religious affiliation				
		Secular	Reform	Reconstructionist	Conservative	Orthodox
New York 2002	≥ Weekly	2.53	3.12	3.25	3.02	3.27
	≥ Monthly	3.06	3.28	3.64	3.23	3.25
	Occasionally	2.88	2.67	3.38	3.13	3.19
	Never	2.85	3.03	3.00	2.66	3.10
New York 2011	≥ Weekly	2.82	3.16	3.20	3.20	3.28
	≥ Monthly	3.15	3.35	3.35	3.24	3.26
	Occasionally	2.85	3.22	3.50	3.08	3.20
	Never	2.79	2.83	4.00	2.67	2.42
Chicago 2010	≥ Weekly	2.92	3.29	3.00	3.30	3.27
	≥ Monthly	3.33	3.33	3.19	3.29	3.46
	Occasionally	3.06	3.25	3.31	3.14	2.81
	Never	3.07	3.12	3.00	2.48	3.00
Philadelphia 2009	≥ Weekly	2.00	3.12	3.29	3.15	3.42
	≥ Monthly	2.67	3.34	3.53	3.17	3.36
	Occasionally	2.90	3.12	3.14	3.11	3.00
	Never	3.02	3.11	4.00	2.68	2.20
Boston 2005	≥ Weekly	2.86	3.19	2.00	3.24	3.29
	≥ Monthly	3.14	3.38	3.38	3.24	3.22
	Occasionally	3.20	3.38	3.12	3.22	2.88
	Never	3.06	3.08	4.00	3.14	3.00

withstand age adjustment and controlling for effects of other covariates (according to Table 1).

It is important not to overstate these results. Consistencies were identified across samples—notably, a significant religious difference in self-rated health—but the presence and magnitude of this finding varied, just as is the case throughout the larger religion and health literature. In the Boston sample, no statistically significant interaction effect was present.

Interestingly, one can see in Table 3 that Reconstructionist Jews, especially, do not fit the gradient pattern hypothesized and are just as healthy or healthier than the other groups of Jewish respondents. This is also borne out clearly in Fig. 1, for the New York samples. These results could derive from the small numbers of Reconstructionists available in each sample, thus producing unstable findings. But there may be a reasonable substantive explanation: anecdotally, Reconstructionists (and followers of Jewish Renewal) have shown more interest than other Jews in issues like self-actualization, conscious living, the mind–body connection, holism and alternative healing, and progressive and eco-sensitive perspectives about health and well-being (Reconstructionist Rabbinical College 2012). It could be that this worldview predisposes them to better health, due to greater diligence in health-related behavior and to concomitant psychosocial resources not present in such great proportion among other Jews, an effect that prevails regardless of one’s frequency of synagogue attendance.

Interpretation of these findings is limited, first, by the prevalence-study (i.e., cross-sectional) design of these surveys. One is thus unable to attribute true risk or protective status to Jewish affiliation or synagogue attendance—just the presence of a salutary association. The wording and metric of study variables does enable a rough attribution of temporality—in some, but not all, surveys, health is assessed with a current time referent and synagogue attendance with a past-year referent—but, still, these are not prospective data and cannot be interpreted as such. Second, there is a possibility of some degree of confounding between synagogue attendance and age, as discussed earlier. Persistence of significant findings after age adjustment mitigates some of this concern, but, again, these are cross-sectional data and results cannot be read as longitudinal. Still, any limitations inherent in use of prevalence data are outweighed, in this instance, by an opportunity to examine this issue across multiple US population samples, something not done previously. Third, despite precedence for relying on a single-item self-rating of health, and its well-known ability to predict harder health outcomes, it is not clear that such measures assess the same underlying phenomena in all respondents (Krause and Jay 1994). Possible referents that respondents use in answering this question (e.g., presence of health problems, physical functioning, energy, positive health behaviors, overall condition, general well-being) may vary within and among the present samples.

These results run counter to previous findings from Israel and the USA that identified a physical or mental health gradient by religious affiliation (in the USA) or religious identity (in Israel). The health benefit identified here is more salient among more traditionally religious Jews than among secular or non-practicing Jews, but beyond that not much can be said. This maps onto theoretical expectations regarding high-tension and low-tension religions (Stark and Bainbridge 1987). In this regard, Orthodox and Conservative Jews share an affirmation of *halachah* (Jewish law), although not in the same way—i.e., ideally, Orthodox Jews adhere strictly to *halachah*, and Conservative Jews to the *halachic* process. By contrast, Reform and Reconstructionist Jews (and secular Jews, naturally) are post-*halachic*. Perhaps framing synagogue attendance as fulfillment of a *mitzvah* (commandment), as obedience to God, lends it additional psychological weight benefiting one’s

well-being, and perceptions of such, above and beyond the recognized psychosocial benefits of regular attendance [e.g., in terms of tangible and emotional support provided by congregational worship and fellowship (Krause 2008)] available, ostensibly, to all Jews. But this interpretation overstates the present findings a bit: it is Orthodox Jews who consistently benefit in this study, Conservatives less so. And Reconstructionists do not seem to fit the pattern at all, perhaps for reasons noted above.

The clearest contrast in these findings, then, is between Orthodox and secular Jews. For the former, the practice of Judaism is more high-demand, as far as *mitzvah* observance and adherence to *halachah*; for the latter, *halachah* does not come into play and one's relationship to the body of *mitzvot* is more voluntary, or, in sociological terms, low-demand. If there is a benefit to be had from Jewish observance, as far as one's physical well-being or perceptions thereof, then perhaps it accrues mostly to those Jews with the greatest buy-in to the traditional framework of belief and praxis that motivate and define such observance. This conclusion is consistent with the weight of findings produced by Rosmarin and colleagues, noted earlier, regarding mental health and psychological well-being among observant Jews.

These findings provide some confirmation (a) from the USA, (b) regarding physical health, and (c) using urban population data for an issue mostly studied, to now, with respect to mental health and using small clinical samples or Israeli data. These analyses, though, hardly exhaust the complexity of how religious observance and health status are associated among Jews in the USA, especially accounting for issues of religious affiliation and Jewish identity. The recent US Jewish population survey conducted by the Pew Research Center (Lugo et al. 2013) might have provided an opportunity to expand on these analyses, but no comparable health items were included. Sophisticated health assessment would enable this issue to be addressed more comprehensively than through single-item self-reports of overall health. Israeli studies have made better use of more such health assessment instruments, and studies of US Jews have done a very good job with mental health assessment, but research on the physical health of Jews in the USA would stand to benefit from a population survey of its own.

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