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Religious Behavior, Health, and Well-Being Among Israeli Jews: Findings From the European Social Survey

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This study investigates the relationship between religious behavior and health status and psychological well-being in a population sample of Israeli Jewish adults ($N = 1,849$). Using data from the Israeli sample of the European Social Survey, measures of synagogue attendance and private prayer were examined in relation to single-item indicators of subjective and functional health, happiness, and life satisfaction and to a three-item scale tapping into the somatic dimension of well-being. Bivariately, the religious, health, and well-being measures are mostly related, and in a salutary direction, but multivariable analyses revealed that these associations are more nuanced. Specifically, after age-adjustment and controls for effects of various sociodemographic characteristics, including Israeli nativity, synagogue attendance is associated with greater happiness only, whereas prayer is associated with greater happiness and life satisfaction and higher scores on the well-being scale. Additionally, prayer is significantly associated with functional health, but in an inverse direction, suggesting its use as a coping resource in response to physical or functional challenges or impairments. These latter results are supported by supplemental analyses of the well-being indicators, which also adjust for possible exogenous or moderating effects of functional health. These findings contribute to current streams of empirical research on the putative influence of Jewish religious observance on physical and mental health and psychological well-being in Israel and the Jewish diaspora.

Keywords: religion, health, well-being, Judaism, Israel

The burgeoning literature on religion and health that has emerged over the past three decades is notable for studies of both physical health status, including morbidity and mortality, and mental health and psychological well-being (Koenig, King, & Carson, 2012). The latter include studies of diagnosed psychiatric outcomes and research on determinants of single-item, multi-item, or multidimensional measures of mental or emotional well-being or adjustment. The subject of well-being is a broad-ranging area of focus—a meta-area really—and encompasses constructs and measures covering a wide swath of psychological functions, including affective, cognitive, and somatic dimensions or domains of subjectively assessed quality of life. Unlike some other areas of health-related research involving putative religious correlates or predictors, study of religious factors in well-being goes back many decades, a vast body of statistically significant results has accumulated, and in some fields, such as gerontology, the topic has attained almost mainstream status or at least is not explicitly marginal as in other fields (Levin & Chatters, 2008). As a result of this work, it is possible to reach fairly well supported conclusions about a generally salutary influence, on average, of religiousness, broadly defined, on mental health and overall psychological well-being, also broadly defined (see, e.g., Koenig, 2009; Levin, 2010).

Despite this statement, which experienced researchers in this area would likely find noncontroversial, a putative religion–well-being association is highly nuanced. This is not often made clear in research papers on this subject, although review articles have emphasized this point for many years (e.g., most recently by Krause, 2011). Most notable are key sampling limitations. First, empirical research is based overwhelmingly on North American samples and has focused, by necessity, mostly on Christian respondents of one or another denominations or on the general population which, by definition, entails drawing a largely Christian-affiliated sample. Second, studies based on population data from national probability surveys are relatively rare compared with other types of research designs and samples. Just to be clear, these are not implicitly problematic features of this literature: dozens of outstanding studies, for example, have been conducted using smallish community or clinical samples of U.S. Christians (see Koenig et al., 2012), but these two issues are raised here to underscore limitations regarding the generalizability of a religion–well-being relationship in light of existing data sources.

Even utilizing data collected as a part of large national data sets, it is still difficult to study minority religions in the United States, such as Jews or Muslims or Hindus, because of their relatively small proportion in the general population combined with limitations in total sample size. For studies of religion and well-being among Jewish respondents, two solutions have been available: (a) use of smaller community or clinical samples with recruitment of Jewish subjects and the opportunity to craft specific questions regarding both Jewish religious observance and mental health or well-being or (b) use of national data from Israel or from large U.S. Jewish population surveys for purposes of secondary analysis,

The Norwegian Social Science Data Services (NSD) provided access to the data used in these analyses. NSD is not responsible for the author's analyses.

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provided any usable questions regarding religion and well-being are present in respective surveys. The former strategy has been used in the Jewish diaspora, especially in the United Kingdom and, most recently, in the United States; the latter strategy has been used in a series of investigations mostly in Israel, but also in the diaspora, including in the United States.

The most systematic program of empirical research on the mental health and psychological well-being of Jews is a current series of studies by Rosmarin and colleagues using data from a variety of modest-sized psychological studies of Jewish subjects, mostly drawn from the Orthodox and Torah-observant communities (see Rosmarin, Shabtai, Pirutinsky, & Pargament, in press). Some of these studies are comparative, looking at well-being-related outcomes across the spectrum of Jewish religious identity and affiliation, as well as by degree of Jewish religious observance. By now, findings have accumulated on a variety of outcomes, and they point, for the most part, to a generally salutary impact of religiousness on mental health and well-being—that is, the greater the degree of Jewish religious observance or religious sentiments or beliefs, the mentally or physically healthier or better adjusted the subject. This result has been found in relation to depression and/or anxiety (Krumrei, Pirutinsky, & Rosmarin, 2012; Pirutinsky, Rosmarin, Holt, et al., 2011; Pirutinsky, Rosmarin, Pargament, & Midlarsky, 2011; Rosmarin, Krumrei, & Andersson, 2009; Rosmarin, Krumrei, & Pargament, 2010; Rosmarin, Pargament, & Mahoney, 2009; Rosmarin, Pargament, Pirutinsky, & Krumrei, 2009), to overall psychological well-being or distress (Rosmarin, Pargament, & Flannelly, 2009; Rosmarin, Pirutinsky, Cohen, Galler, & Krumrie, 2011), and to other outcomes, including physical health (Krumrei et al., 2012; Pirutinsky, Rosmarin, Holt, et al., 2011; Rosmarin, Pargament, & Flannelly, 2009).

Concomitantly, an ongoing series of population-based studies has reported on the impact of Jewish religiousness on a variety of physical- and mental health-related outcomes in Israel and the diaspora, including the United States. These studies have utilized data collected as a part of large national or cross-national population surveys or survey programs, including the U.S. National Jewish Population Survey (Levin, 2011a), the World Values Survey (Levin, 2012c), the Gallup World Poll (Levin, 2011b), and the Survey of Health, Ageing and Retirement in Europe (Levin, 2012a, 2012b). Additional reports, currently under peer review, include findings from the Israel Social Survey and the International Social Survey Programme. As with the work produced by Rosmarin and colleagues, observed findings point to a mostly salutary function of Jewish religiousness on well-being outcomes, both physical and psychological, although results are more equivocal for physical health. More consistent are findings linking various measures of Jewish religious practices, attitudes, and beliefs with greater happiness, life satisfaction, and positive well-being and with less psychological distress.

Besides these two programs of research, other studies of religion and well-being have been conducted among Jews, in Israel and the diaspora. Findings have linked indicators of Jewish religious identity or observance to greater life satisfaction (e.g., Amit, 2010; Lazar & Bjorck, 2008; Shkolnik, Weiner, Malik, & Festinger, 2001; Van Praag, Romanov, & Ferrer-i-Carbonell, 2010) and to greater happiness or positive affect or mood (e.g., Loewenthal, MacLeod, Goldblatt, Lubitsch, & Valentine, 2000; Cohen, 2002; Ferris, 2002; Francis, Katz, Yablon, & Robbins, 2004). Associations with psychological distress (e.g., Lupo & Strous, 2011; Wang, Lederman, Andrade, & Gorenstein, 2008) and physical health (e.g., Anson, Antonovsky, & Sagy, 1990; Shmotkin, 1990) have been less consistent, with nonsignificant and even inverse findings present, some of this perhaps due to the potential confounding among measures of public religious participation, age, and functional health status. Sophisticated mortality studies conducted in Israel, however, do indicate a significant long-term survival advantage for more religious Jews (Kark et al., 1996; Litwin, 2007), although age or cohort differences in the salience and even directionality of this association have been observed (Kraut, Melamed, Gofer, & Froom, 2004).

The present study is an effort to extend this body of work, particularly related to psychological well-being, to a large and outstanding population-based data source that offers distinct advantages over previous studies. Data for these analyses come from the Israeli sample of the European Social Survey (ESS) (see Method for study and sample details). The ESS Israeli sample is large and predominantly Jewish, contains measures of both public and private religious behaviors, and, most importantly, includes three well-being indicators assessing affective, cognitive, and somatic dimensions of well-being. This is especially helpful, as existing data sources used in religion and well-being analyses typically do not offer opportunities to look at multiple domains or dimensions of well-being in a respective study. Moreover, the opportunity here to examine religion in relation to the fullness of well-being, conceptually speaking, in a single population-based sample, is something that has not yet been possible in the literature on Judaism and mental health. The data sources used previously also have not enabled a close look at religious behavior, especially informal or private behaviors (such as private prayer) that are not as potentially confounded by the intercorrelation of public religious behavior and functional health especially in older-adult populations. Both of these features of the present study—a broader take on well-being and a focus on religious behavior—make these analyses of potential interest to researchers in the psychology of religion.

Conceptual and Theoretical Issues

Conceptualization and measurement of religious identity and involvement have been foci of systematic empirical research by psychologists and sociologists for about half a century (since Allport, 1954, in psychology, and Glock & Stark, 1965, in sociology). Investigators have come to understand religion as a complex, multidimensional domain of life comprising behaviors, attitudes, beliefs, feelings, experiences, values, and so forth, and hundreds of instruments have been developed to assess these constructs (see, e.g., Hill & Hood, 1999). Studies of religious correlates and predictors of physical and mental health, however, have typically defaulted to one or two simple measures such as the frequency of attendance at (church) services, perhaps because of the unfamiliarity of investigators with these larger psychometric traditions (see Ellison & Levin, 1998). This has hampered more sophisticated research, especially in studies relying on secondary analysis of existing population data sources.

An important distinction made especially in social research on the sequelae of religious behavior, and especially in the field of

gerontology, is between what is variously termed organizational, institutional, or formal religious behavior and nonorganizational, noninstitutional, or informal religious behavior. This distinction goes back at least to the 1970s (Mindel & Vaughan, 1978). A frequency measure of attendance at public worship services is a characteristic, and indeed the most typically used, indicator of the former; frequency measures or summarized binary items of private practices such as prayer or Bible reading are most typical of the latter. This distinction between public and private behaviors informs contemporary efforts to develop and validate instruments to assess religious participation, and respective measures have been found to exhibit variant effects on health and well-being outcomes (see Hall, Meador, & Koenig, 2008; Idler et al., 2003).

Likewise, psychological well-being is also a multidimensional construct, or, better, a metaconstruct. As a component of the even broader realm of subjectively assessed quality of life measures, psychological well-being comprises a variety of components, in theory, each one having spawned many validated scales and indices. There are almost as many definitions of well-being as there are definers; accordingly, the precise composition of this construct, as far as component parts, is not a settled fact. The famous assessment by Alwin (1988), that this subject suffers from "a prevailing chaos of conceptualization" characterized by "a variety of ambiguous and poorly differentiated concepts" (p. 120), is probably still valid. Nonetheless, distinct dimensions can be identified, corresponding to respective psychological functions, each with a strong tradition of measurement and study. These include, for example, an affective dimension (including measures of happiness, positive affect or mood, and affect balance), a cognitive dimension (including measures of life satisfaction and congruence), and a somatic dimension (including reference to ostensibly more "physical" or bodily statuses, such as energy or vitality). The latter is a component of selected measures of depression or psychological distress, such as the "somatic or retarded activities" factor of the Center for Epidemiologic Studies Depression (CES-D) Scale (Liang, Thanh, Krause, & Markides, 1989), the "enervation" factor of the General Well-Being (GWB) Scale (Levin, 1994), and the "lack of energy" factor of the Geriatric Depression Scale (GDS) (Sheikh et al., 1991). The important point for the present discussion is that decades of research have by now identified religious correlates or determinants, to a varying degree, across the spectrum of well-being dimensions (see Levin & Tobin, 1995).

As noted earlier, the present study uses data from the Israeli sample of the ESS (for more details, see Method). This study includes multiple health and well-being measures and two indicators of religious behavior, as well as all of the usual sociodemographic indicators known to impact on religion and well-being and on their interrelationship, including age. The capability exists, then, to examine associations between public religious participation (as assessed by the frequency of synagogue attendance) and private religious behavior (prayer conducted outside of formal synagogue services) on indicators of both global subjective and functional health and on indicators of the affective, cognitive, and somatic dimensions of psychological well-being, by way of respective measures of happiness, life satisfaction, and a brief index whose constituent items look like they tap into energy or vitality.

It is valuable to differentiate among these dimensions of well-being (and fortunate to be able to do so in these data), as indicators of religious behavior or other forms of religiousness may exhibit distinct patterns of association with respective well-being dimensions. The literature on this subject suggests this to be so, but requires close scrutiny, as there are different conventions in different fields of study regarding the labeling of well-being constructs. For example, a couple of very fine recent empirical studies of religion and well-being use the word "happiness" in their titles and in their narrative, but actually analyze religion in relation to a measure of life satisfaction (Snoep, 2008; Van Praag et al., 2010). In the present study, these are treated as distinct, albeit related, constructs. This issue is relevant, as one recent population study found that, among Israeli Jews, affirming the importance of God in one's life is significantly associated with greater life satisfaction, but not with happiness, whereas, among diaspora Jews, the same measure is associated with greater happiness, as is more frequent synagogue attendance, but neither measure is associated with life satisfaction (Levin, 2012c).

Based on prior research of longstanding, in both Jewish and non-Jewish populations, it is hypothesized that religious behavior will exhibit a generally salutary association with indicators of well-being. Previous studies have linked formal religious participation, such as religious service attendance, to greater happiness (see reviews by Diener, 1984; Diener, Suh, Lucas, & Smith, 1999; Myers & Diener, 1995; Stark & Maier, 2008), mostly in psychological studies. Considerable research, too, has identified similar predictors of life satisfaction, especially among older adults, through analyses of data from large national, probability surveys published in each of the past five decades (e.g., Bortner & Hultsch, 1970; Ellison, Gay, & Glass, 1989; Levin, Chatters, & Taylor, 1995; Lim & Putnam, 2010; Krause, 2003). Less research has focused on the more somatic dimension of well-being, such as assessed by the CES-D, GWB, and GDS scales, for example, but findings on religious correlates of physical health and on psychological distress suggest that there are reasons to expect religious behavior to have a salutary effect here as well (see review in Koenig et al., 2012, especially pp. 298–314). This may be due in part to communal religious expression and fellowship serving as a resource for coping with physical challenges and as a reinforcing agent for a variety of potentially salutary psychological functions, such as hope, optimism, meaning and purpose, internal locus of control, and self-esteem (see Koenig et al., 2012). It is also hypothesized that more frequent private prayer will be associated with greater well-being, but the possibility that it is utilized in part as a coping response to physical or emotional challenge may mitigate this association or cause a reversal of sign. The ability to adjust for effects of age (and functional health), as well as for synagogue attendance, will enable this association to be examined after statistically taking into account some of the potentially confounding and complicating aspects of a prayer–well-being relationship that arise by default in cross-sectional analyses.

Also based on prior research, it is hypothesized that religious behavior will exhibit a mostly positive association with health status, but this statement is more nuanced and conditional than the expectations regarding religion and well-being. As noted, the possibility exists that measures of public religious behavior (such as attendance at services) may be, in part, a proxy for functional health, the absence of which may be linked to age-related declines in ambulatory status that may diminish the frequency of religious attendance. The religious measure, in this situation, would thus be a partial proxy for the outcome measure. Measures of private or

noninstitutional religious behavior (such as private prayer) are not immune: private behavior may increase in compensation, thus leading to an inverse association with a measure of physical health. Epidemiologists first raised this issue decades ago (Comstock & Tonascia, 1977), and although longitudinal studies have since confirmed substantive health effects for public religious behavior (e.g., Idler & Kasl, 1997), in prevalence (cross-sectional) studies this remains a complicating factor. One way to try to address this issue in such studies is by adjusting for age—an imperfect solution, but at least a means of ensuring that any salutary association that emerges is not entirely an artifact of a possible age-related physical decline.

Method

The European Social Survey

The data used in these analyses are from the Israeli sample of Round 5 of the European Social Survey (ESS), a biennial, multiwave, and cross-national population survey of persons aged 15 or older. The first round of ESS data collection occurred in 2002–2003. The core focus of the ESS is on international comparison and study of change in social, cultural, political, economic, and moral structures and processes through use of social and attitudinal assessment (see Steering Committee and Methodology Committee for an ESS, 1999; Jowell, 2004). As of Round 5, the ESS consisted of ongoing national random probability surveys in over two dozen countries, mostly in the European Union, but also in some others, including Israel. A Round 6 is currently in the field, with over 30 nations now participating, and preparation for Round 7 in already underway. The project is overseen by a Central Coordinating Team and funded jointly by the European Commission, the European Science Foundation, and scientific funding agencies in each participating nation (see European Social Survey, 2009; Jowell, 2004).

The ESS contains a core group of questions common to all national surveys and all rounds, supplemented by rotating thematic modules and, where needed, by nation-specific item wording and response categories that maintain "functional equivalence" cross-nationally (Steering Committee and Methodology Committee for an ESS, 1999). The Round 5 instrument contains about 300 questions in several sections. The ESS has a strong reputation for having minimized potential sources of cross-national error and disparity in survey quality compared with other global surveys (Smith, Fisher, & Heath, 2011). All data are public and are archived at and distributed by the Norwegian Social Science Data Services, which maintains an online resource (http://www.europeansocialsurvey.org/) containing a large amount of detailed technical information (e.g., Norwegian Social Science Data Services, 2012b), including description of field procedures (Koch, Fitzgerald, Stoop, & Widdop, 2010). The data for the present analyses were obtained from this site (Norwegian Social Science Data Services, 2010).

The Israeli ESS survey was conducted by the B. I. Cohen Institute for Public Opinion Research at Tel Aviv University, through funding from the Israel Academy of Sciences and Humanities. Data were collected from January through June 2011, via pen-and-paper interviews in Hebrew, Arabic, or Russian, with data keyed directly from structured questionnaires, using a stratified three-stage design that sampled from respondents residing in Israel and from the Jewish population in the West Bank. Interviews were conducted by trained field workers, there were no respondent incentives, the questionnaire was pretested and selectively back-checked, and the response rate for the main questionnaire was 72.85%, resulting in a total sample size of 2,294 (see Norwegian Social Science Data Services, 2012b). In the present study, analyses were limited to respondents who self-identified as affiliated with the Jewish religion ($N = 1{,}849$), representing 80.6% of the Israeli sample. Detailed analysis of nonresponse bias revealed that, compared with the other national surveys in the ESS program, the Israeli survey is in the upper echelon of response rate and among the lowest in refusal rate and has among the highest rates of cooperative respondents (Billiet, Philippens, Fitzgerald, & Stoop, 2007). Israel has participated in the ESS since Round 1.

The ESS questionnaire contains a small number of religious, health, and well-being items, but enough to offer an excellent opportunity to explore associations among these constructs with the benefit of a large national population-based sample. The health variables have been used for global comparisons (Olsen & Dahl, 2007; von dem Knesebeck, Verde, & Dragano, 2006), as have items from a specialized well-being module included in Round 3 (Huppert et al., 2009). Religion data from earlier rounds, including from Israel, have been used in pooled multicountry analyses of life satisfaction (Clark & Lelkes, 2011), but other uses of these measures to study well-being (Georgellis, Tsitsianis, & Yin, 2009), social capital (Halman & Luijkx, 2006), and health (Nicholson, Rose, & Bobak, 2009, 2010) have been limited to analyses of respondents from European nations. At the time of this writing, according to the online ESS bibliography (Norwegian Social Science Data Services, 2012a), out of 844 total entries, 10 academic journal articles using ESS data have appeared on the topic of religion. Use of the ESS for systematic investigation of the impact of religion on health and well-being specifically among Jewish respondents and in Israel has not yet been undertaken.

Measures

Analyses utilize single-item variables and scales assessing five health and well-being outcomes, two indicators of Jewish religious behavior, and six sociodemographic covariates. Many of these variables were reverse-coded or recoded in other ways to facilitate analyses.

Health. Two single-item measures of health are used in the present analyses: *subjective health* ("How is your health in general? Would you say it is . . ."; coded: 1 = *very bad,* 2 = *bad,* 3 = *fair*, 4 = *good,* 5 = *very good*) and *functional health* ("Are you hampered in your daily activities in any way by any longstanding illness, or disability, infirmity or mental health problem?"; coded: 1 = *yes a lot,* 2 = *yes to some extent,* 3 = *no*).

Well-being. Three measures of well-being are used, two of which are single items: *happiness* ("Taking all things together, how happy would you say you are?"; coded on a metric from 0 [*extremely unhappy*] to 10 [*extremely happy*]) and *life satisfaction* ("All things considered, how satisfied are you with your life as a whole nowadays?"; coded on a metric from 0 [*extremely dissatisfied*] to 10 [*extremely satisfied*]). The third well-being measure is a *well-being scale* summarizing scores on three items taken from the five-item WHO-5 Well-Being Index (Bonsignore, Barkow,

Jessen, & Heun, 2001) ("I am going to read out a list of statements about how you may have been feeling recently. For each statement I would like you to say how often you have felt like this *over the last 2 weeks*."; the three items are, "I have felt cheerful and in good spirits," "I have felt calm and relaxed," and, "I have felt active and vigorous," all coded: 1 = *at no time,* 2 = *some of the time,* 3 = *less than half of the time,* 4 = *more than half of the time,* 5 = *most of the time,* 6 = *all of the time*). This scale exhibits high internal-consistency reliability in this sample ($\alpha = .89$).

Religious behavior. Two measures of Jewish religious behavior are used, both single items: *synagogue attendance* ("Apart from special occasions such as weddings and funerals, about how often do you attend religious services nowadays?"; coded: 1 = *never,* 2 = *less often* [*than only on special holy days*], 3 = *only on special holy days,* 4 = *at least once a month,* 5 = *once a week,* 6 = *more than once a week,* 7 = *every day*) and *prayer* ("Apart from when you are at religious services, how often, if at all, do you pray?"; coded on the same metric as for synagogue attendance).

Covariates. Six covariates are included in these analyses: *age* (in years), *gender* (0 = *male,* 1 = *female*), *education* (in years of schooling completed), *marital status* (0 = *not living with husband/wife/partner*, 1 = *living with husband/wife/partner*; in the ESS data, marital status is assessed through a maze of branching questions with multiple skip codes—this dichotomy is a close approximation to married-vs.-unmarried, especially in the Israeli sample, and will be used as such here), *urbanicity* (1 = *a farm or home in the countryside,* 2 = *a country village,* 3 = *a town or a small city,* 4 = *the suburbs or outskirts of a big city,* 5 = *a big city*), and *nativity* (0 = *diaspora,* 1 = *Israel*). The first five covariates have been found to be correlates of religious, health, and well-being indicators in innumerable studies. Israeli nativity is an important covariate for these analyses, as significant nativity differences have been found for a variety of well-being-related outcomes (e.g., psychological distress, mood disorders, anxiety disorders) in this population (Mirsky, Kohn, Levav, Grinshpoon, & Ponizovsky, 2008). Other native-born/diaspora-born differences have been found in Jewish religious observance and in indicators of positive well-being and psychosocial adjustment as well in age and components of social-class status (Levin, 2012a).

Data Analysis

All analyses were conducted using SAS version 9.2 First, descriptive statistics (means and standard deviations) and bivariate Pearson (r) correlations for all study variables were obtained using the UNIVARIATE and CORR procedures, respectively. Second, a strategy of hierarchical ordinary least-squares regression was used to model effects of the two religious measures on the five health and well-being outcomes. In Model I, each respective outcome was regressed onto synagogue attendance and prayer; in Model II, the six sociodemographic covariates were added. These analyses were conducted using the REG procedure (SAS). Both standardized (β) and unstandardized (b) regression coefficients are reported, in order to enable comparison of associations both within and across models of respective well-being indicators.

This strategy enables examination of each religious measure's putative impact on multiple outcome variables in multiple situations: first, bivariately (via correlations); second, multivariably in the presence of the other respective religious measure (Model I); and, third, multivariably after controlling for effects of the covariates, including age (Model II). Given the inherent limitations of a prevalence (cross-sectional) design, this approach offers the fullest possible look at the associations between religious behavior and health and well-being using the present data source.

Results

Results of bivariate analyses (see Table 1) show that all five health and well-being measures are strongly and significantly intercorrelated. Likewise, the two measures of religious behavior are strongly and significantly associated. Neither of these findings is surprising. More importantly, synagogue attendance is positively and significantly associated with every outcome measure, especially with the three well-being measures and likewise for prayer, with the exception of the item assessing functional health. These results also underscore the importance of age-adjustment and control for other covariate effects in the regression analyses to follow: younger and native-born respondents are healthier, have greater well-being, and are more religious; women are less religious; married folks are more religious; the educated are in better

Table 1
Descriptive Statistics and Pearson Correlations for Study Variables

	Study variables													
	1	2	3	4	5	6	7	8	9	10	11	12	*M*	*SD*
1. Subjective health													4.05	1.04
2. Functional health	.63***												2.72	.57
3. Happiness	.30***	.22***											7.59	2.06
4. Life satisfaction	.31***	.18***	.68***										7.43	2.16
5. Well-being scale	.38***	.28***	.38***	.42***									12.80	3.46
6. Synagogue attendance	.08***	.05*	.18**	.15***	.09***								2.64	1.89
7. Prayer	.08***	.00	.16***	.19***	.10***	.65***							3.39	2.46
8. Age	−.62***	−.39***	−.19***	−.20***	−.26***	−.13***	−.12***						47.11	19.90
9. Female	−.03	.02	−.03	−.02	−.07**	−.23***	−.10***	.06*					.57	.49
10. Education	.18***	.19***	.14***	.12***	.14***	.00	−.06*	−.06*	.03				13.13	3.39
11. Married	−.05*	.06*	.12***	.08**	−.01	.05*	.06**	.25***	−.01	.18***			.62	.49
12. Urbanicity	−.07**	−.04	−.13***	−.10***	−.07**	−.09***	−.07**	.06*	−.02	−.04	−.03		4.35	.99
13. Israeli nativity	.37***	.22***	.17***	.20***	.17***	.09***	.08***	−.46***	−.04	.10***	−.04	−.03	.62	.48

* $p < .05$. ** $p < .01$. *** $p < .001$.

health and well-being; and urban-dwellers are less religious and in worse health and well-being. In sum, bivariately at least, these results confirm that a higher level of religious behavior is associated with greater psychological well-being.

Results of the regression analyses point to a salutary impact of religious behavior on well-being, as expected, and to a more nuanced effect on health, also as expected. Neither religious measure exhibits a significant association with subjective health in the model containing no covariates (Model I) and in the model controlling for effects of sociodemographic variables (Model II) (see Table 2). For functional health, a positive and significant association with synagogue attendance (in Model I) disappears, as anticipated, after age-adjustment (in Model II). Prayer, by contrast, is a significant predictor of functional health, but inversely, also as anticipated, suggesting its use as a response to functional health challenges. This association withstands age-adjustment and controlling for effects of the other covariates.

The findings for the three well-being measures are more consistent and more easily interpretable (see Table 3). Synagogue attendance is positively and significantly associated with happiness in both Models I and II, and prayer is likewise positively and significantly associated with happiness, life satisfaction, and the well-being scale in both models. These results highlight the robust value of frequent prayer for the psychological well-being of Jews—particularly, in this instance, prayer conducted outside of a formal worship setting. The results of these analyses suggest that private prayer serves, dually, as a response to functional challenges and as a means to bolster happiness, satisfaction with life, and overall well-being.

Predictive models of psychological well-being outcomes, such as happiness, life satisfaction, and scales of general well-being, often include a measure of subjective or functional health as a primary determinant or among the covariates (when the focus of study is on other principal determinants, as in the present article). This can be useful, because prior studies suggest that the salience (i.e., significance, directionality, and magnitude) of a religion–well-being association may be a function, in part, of recent stressful events such as poor health (see Smith, McCullough, & Poll, 2003). Accordingly, the analyses presented in Table 3 were rerun with the inclusion in Model II of the functional health measure. This was also encouraged by functional health's significant inverse relationship with prayer (in Table 2), the religious measure exhibiting the most consistent associations with the well-being indicators (in Table 3). These supplemental analyses (results not reported in tables) were conducted in two ways, each with functional health included as an additional covariate: (a) as another exogenous variable, alongside the sociodemographic control variables and (b) in conjunction with a moderator variable for both synagogue attendance and prayer, through a method that entails creating multiplicative interaction terms from the product of centered transformations of functional health and each respective religious variable (via subtracting the sample mean from each variable (see Warner, 2012; see Baron & Kenny, 1986, for the classic discussion of moderation; see Aiken & West, 1991, for discussion of strategies for interpreting interactions).

In the first rerunning of Model II (controlling for effects of functional health), the results reveal no substantive changes in the pattern of findings nor any diminution of effects for either religious variable. The associations of prayer with happiness ($\beta = .08$, $p < .01$) and with the well-being scale ($\beta = .11$, $p < .001$) are even modestly higher. The associations of synagogue attendance with happiness ($\beta = .09$, $p < .01$) and of prayer with life satisfaction ($\beta = .15$, $p < .001$) are unchanged. In other words, religious associations with well-being withstand controlling for effects of one's physical status. In the second rerunning of Model II (adding multiplicative terms of functional health with each religious variable), the above findings are the same and a small-but-significant interaction effect is present for prayer and functional health with life satisfaction only ($\beta = .06$, $p < .05$). This modestly underscores that prayer may be a pathway to a greater cognitive appraisal of well-being or, restated, to staving off psychological distress, taking into account one's level of physical limitation. This latter finding indicates that the slope to predict life satisfaction from prayer becomes marginally more positive as functional health increases—that is, functionally healthier people get more of a well-being benefit from prayer, perhaps reflecting a self-assessment that their prayers worked. This is a bit confusing, and only holds for the one well-being outcome, underscoring the difficulty in interpreting such effects especially in a cross-sectional setting. In the absence of a longitudinal design, these imperfect

Table 2
Regressions of Health Outcomes on Religious Indicators

	Subjective health		Functional health	
Independent variables	Model I	Model II	Model I	Model II
Synagogue attendance	.05 (.03) .02	−.02 (−.01) .01	.09 (.03)** .01	.03 (.01) .01
Prayer	.05 (.02) .01	.03 (.01) .01	−.06 (−.01) .01	−.06 (−.01)* .01
Age		−.59 (−.03)*** .00		−.40 (−.01)*** .00
Female		−.01 (−.01) .04		.05 (.05)* .03
Education		.14 (.04)*** .01		.14 (.02)*** .00
Married		.06 (.12)** .04		.13 (.15)*** .03
Urbanicity		−.02 (−.02) .02		.00 (.00) .01
Israeli nativity		.08 (.18)*** .04		.03 (.04) .03
F	7.62	154.79	4.05	52.47
p	.0005	<.0001	.0176	<.0001
R^2	.01	.42	.00	.19

Note. Values for independent variables are shown as follows: β (b) *SE*.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3
Regressions of Well-Being Outcomes on Religious Indicators

	Happiness		Life satisfaction		Well-being scale	
Independent variables	Model I	Model II	Model I	Model II	Model I	Model II
Synagogue attendance	.13 (.14)*** .03	.09 (.10)** .03	.06 (.07) .03	.01 (.02) .04	.04 (.08) .06	−.03 (−.05) .06
Prayer	.07 (.06)* .03	.07 (.06)* .03	.15 (.13)*** .03	.15 (.13)*** .03	.07 (.10)* .04	.09 (.13)** .04
Age		−.15 (−.02)*** .00		−.14 (−.02)*** .00		−.22 (−.04)*** .00
Female		.00 (.01) .10		.01 (.03) .10		−.06 (−.39)* .17
Education		.10 (.06)*** .01		.10 (.06)*** .02		.12 (.12)*** .02
Married		.12 (.52)*** .10		.08 (.34)** .11		.02 (.12) .18
Urbanicity		−.09 (−.19)*** .05		−.07 (−.15)** .05		−.04 (−.14) .08
Israeli nativity		.08 (.33)** .11		.10 (.45)*** .12		.05 (.34) .19
F	32.09	25.75	33.60	23.16	9.44	21.99
p	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
R^2	.03	.11	.04	.10	.01	.09

Note. Values for independent variables are shown as follows: β (b) *SE*.
* $p < .05$. ** $p < .01$. *** $p < .001$.

supplemental analyses provide some additional confirmation in these data for religion as a determinant or correlate or psychological well-being and are at least suggestive of respondents' use of prayer as a potential coping resource.

Discussion

To summarize, these analyses suggest that religious behavior exhibits a salutary association with psychological well-being among Israeli Jews. Two religious measures, one assessing public behavior (frequency of synagogue attendance) and one assessing private behavior (frequency of prayer outside of regular worship services), exhibit positive and significant associations with indicators of well-being: synagogue attendance with happiness and private prayer with happiness, life satisfaction, and a well-being scale. These findings withstand age-adjustment and controls for effects of other covariates, including functional health.

By contrast, it was also found that the positive and significant bivariate associations between religious behavior and measures of health do not entirely withstand more sophisticated analyses. The exception here is the significant inverse association between prayer and functional health, which persists despite age-adjustment and other controls. This suggests, as anticipated, that prayer may be used in part as a response to functional limitations and challenges of a physical or psychological nature.

Of special interest are four facets of these findings. First, the association between synagogue attendance and happiness is apparently not reducible to any putative psychological benefit of praying, because attendance maintains a small but significant association with happiness even with the effects of prayer controlled for in the model (notwithstanding the wording of the prayer item as detaching itself from worship services). Second, the associations between prayer and all three well-being outcomes are not apparently due to the well documented psychosocial and interpersonal benefits and sequelae of communal worship (see, e.g., Ellison & George, 1994; Krause, 2008), because of how this particular prayer item is worded. Third, these two religious behaviors, especially prayer, impact on indicators of distinct dimensions of well-being—affective (happiness), cognitive (life satisfaction), and somatic (the well-being scale), more or less—so the observed findings are not solely a function of a serendipitously narrow range of well-being measures. Fourth, the well-being findings remain even after controlling for the effects of age and functional health and involve a private religious behavior (prayer), as well, so they are not simply artifacts of the possibility of a measure of public religious behavior being confounded with age-related declines in activity and ambulation. Taken together, these findings provide substantive evidence of a salutary influence of religious behavior in this population, at least as substantive as one can hope to observe through prevalence data.

It would appear, then, that this study's hypotheses regarding psychological well-being were largely supported. More frequent religious behavior, in general, is significantly associated with greater well-being among Israeli Jews. This is true whether one looks at affective, cognitive, or somatic dimensions of psychological well-being, and these findings withstand age-adjustment and controlling for effects of health. By contrast, hypotheses regarding health were only half supported. More frequent synagogue attendance exhibits only small bivariate associations with the two measures of physical health, and these wash out when prayer is added to their respective models along with age-adjustment. Prayer, however, does exhibit an inverse association with one of the health outcomes (functional health), as anticipated; it, too, withstands age-adjustment and inclusion of synagogue attendance in the model.

One must exhibit care in interpreting these findings, although they appear consistent. First, when using a prevalence-study (or, in the language of social and behavioral research, cross-sectional survey) design, the usual caveats are in play regarding inferences of epidemiologic causation. On the other hand, the wording of the main study variables partly mitigates this issue, enabling cautious inference of temporality: for example, happiness is assessed currently, life satisfaction "nowadays," and the well-being scale items "over the last 2 weeks," whereas both religious indicators are measured on a metric requiring a retrospective assessment over (roughly) the past few months. Still, this benefit ought not be overstated: in the absence of prospective epidemiologic data, we cannot attach any inference of true risk or protection to prayer or

synagogue attendance in relation to psychological well-being based on the results of the present study.

Second, we know very little about the religious identity of these respondents—that is, where they fall on the familiar spectrum of Israeli Jewish affiliation (i.e., secular, traditional, religious, ultra-Orthodox). In a few recent studies of religion and well-being in Israel, such a measure has been available, enabling useful comparisons (e.g., Kraut et al., 2004; Levav, Koh, & Billig, 2008; Levin, 2011b; Shmueli, 2007; Van Praag et al., 2010). This was not possible in the ESS data. Further, we know very little else about the religious life of this sample: besides the two measures of religious behavior, only a single-item self-rating of global or overall religiousness was included in the survey. Although it did not fit with the behavioral focus of the present analyses, it may be a useful variable for future studies of well-being using these data.

Third, just as these analyses are limited by the use of single-item outcome measures for subjective and functional health, happiness, and life satisfaction, so, too, are they hindered by reliance on single-item religious measures. Because the present study involved secondary analyses of existing data, this limitation is of course built in; there is no obvious remedy. Analyses were limited, by necessity, to two "distal" measures of religiousness—synagogue attendance and prayer—that may not be the most ideal indicators to assess the breadth of Jewish religious observance. Other more "proximal" religious constructs—for example, religious coping, religious meaning-making, attitudes toward God—may be more strongly related to physical and psychological well-being outcomes. They would certainly be more provocative constructs to investigate than the two variables included in the present data, and both existing theory (e.g., Pargament, 1997) and recent empirical findings (e.g., Krause, 2003; Park, 2007) suggest considerable promise as health- and well-being-related determinants. Reliance on typical single-item measures such as those included here serves to reinforce a possibly untenable view of religion as "a global, undifferentiated, stable process" (Pargament, 2002, p. 168) and, besides, methodologically speaking, may have worked to attenuate the strength of the findings that did emerge.

Still, these findings on prayer, especially, are provocative and suggest new directions for the study of religion and well-being, not just in the Jewish population. There are, by now, hundreds of studies pointing to significant effects of regular religious attendance on health and well-being (although such findings in relation to physical health may be more nuanced than is typically presumed, as the present findings indicate). One of the persistent challenges in this literature is to identify just what it is about such attendance, and public religious behavior generally, that is or should be salutary. Studies have been authored predominantly by social scientists and, accordingly, identify the tangibly and emotionally supportive resource-provision role of fellowship with like-minded others in religious congregations as a likely mediating factor or explanation. But there are other possibilities. Ongoing research in the Israeli Jewish population by the present author, not yet published, suggests that the influence of synagogue attendance on well-being may be a function in part of attendance encouraging other religious behaviors which, in turn, reinforce religious beliefs and attitudes that may directly have an impact on affective or cognitive components of well-being self-assessments. The observation that private prayer, in the present study, has such widespread effects on well-being encourages more of a focus on the private or personally mediated aspects of religious life and not just a default focus on the communal experience. In other words, there is call for both sociological *and* psychological insights if we are to more fully understand how religiousness, broadly defined, seems to matter for the well-being of people of faith.

Recent psychological studies offer insights as to how and why it may be that personal religious expression has been found to impact on well-being. Greater religiousness, broadly defined, has been observed or proposed to influence indicators of psychological well-being by marshalling psychological resources that foster self-regulation and perceived self-control (Jackson & Bergeman, 2011; Watterson & Giesler, 2012), by reducing or preventing the stress response through means such as surrendering to God (Clements & Ermakova, 2012) and by providing a means of coping with traumatic life events and challenges (Abu-Raiya, Pargament, & Mahoney, 2012). These ideas offer strong starting points for subsequent psychological research on personal or private religious determinants of well-being.

There are other reasons to encourage further study of how prayer and more informal religious behavior affect well-being. For one, the subject matter is substantively quite interesting and, in the case of prayer, involves a behavior that in various forms may be as universal a religious act as one can identify. Jews, Christians, and Muslims; Hindus, Buddhists, Sikhs, and Jains; Wiccans and new-agers—regardless of denomination or sect—all pray, all look upward or inward for a sense of divine communion, and there are those folks who do so regardless of whether or not or how often they attend formal religious gatherings. The infinite variety of prayer, in all its hues and flavors, may be an especially rich font of hypotheses for understanding how faith and spirituality can elevate or otherwise impact on well-being. Even within particular religions, such as Judaism, there is a variety of ways that prayer is expressed, depending on degree of religious observance; cultural or religious context or tradition; where one finds oneself in daily, weekly, monthly, annual, or life-course cycles; one's age cohort or era of religious socialization; and, of course, personal preference, including how one thinks about God (see Levin & Taylor, 1997). Is it a stretch to imagine that any or all of this may have something to say about one's happiness, satisfaction, overall well-being, or general adjustment to life?

Additionally, there are methodological benefits to turning our attention to less studied forms of religious expression. As noted earlier, private religious behaviors would seem to be less potentially confounded by the whole attendance–aging–ambulation issue. In the absence of longitudinal data, especially, this remains a difficult issue to navigate and oftentimes, as in the present study, something as simple as age adjustment may cancel out promising salutary effects of regular attendance. Although prospective and multiwave studies have confirmed a substantive health effect for religious attendance in some populations (e.g., Idler & Kasl, 1997), still it would be helpful to emphasize other less-studied aspects of religiousness, especially if they do not carry with them inherencies that complicate any decision making regarding study design and data analysis or limit one's ability to draw inferences from empirical findings. With a population as rapidly aging as Jews, especially in the United States (see DellaPergola, 2005), this would seem to be a worthwhile consideration.

Finally, the findings regarding prayer and functional health point to another reason why shifting away from an emphasis on

public religious behavior would be useful for this field. These findings suggest that private prayer may be used as a coping response for the kinds of physical or psychological challenges or impairments that limit normal activity or functioning. This is different than implying that a religious indicator exhibits a primary-preventive effect, as in the innumerable studies of ongoing religious attendance and health-related outcomes. Some forms of religious expression may be therapeutic or at least used in response to a health challenge, whether or not such expression of religiousness actually exhibits a healing effect. Clinical studies or medical outcomes research would thus be worth pursuing, especially for privately engaged religious behaviors like praying. To be clear, the reference here is not to the highly contentious and controversial subject of absent or distant prayer for others, as in the many randomized clinical trials of prayer that have existed for 25 years; that is a very different topic (see Levin, 2009). Rather, the recommendation is for prospective studies of prayerfulness, as a personal characteristic of respondents, and praying, as a quantifiable behavior. As a lifetime "trait" or as a situational response to circumstance, prayerfulness or praying may be a significant contributor to well-being among religious people, practicing Jews included.

Another lesson from the present study, unrelated to religious behavior, is the value of considering the multidimensionality of psychological well-being, where possible. It is just good fortune that the Israeli sample of Round 5 of the ESS happens to include the items that it does; secondary analysis, by definition, is limited by the characteristics of existing data sources. However, many religion and well-being studies attempt to generalize findings related to a single construct or variable to the entirety of an amorphous "well-being" or even "mental health," something that may not be justified. In the present study, prayer shows significant effects across the board, but synagogue attendance is only associated with feelings of happiness, not with the other outcomes. This may be an important datum for shaping subsequent theory and research in this population.

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