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Religious social capital: Its measurement and utility in the study of the social determinants of health

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Abstract

As a social determinant of health, religiosity remains not well understood, despite the prevalence of religious activity and prominence of religious institutions in most societies. This paper introduces a working measure of Religious Social Capital and presents preliminary associations with neighborhood social capital and urban stressors. *Religious social capital* is defined as the social resources available to individuals and groups through their social connections with a religious community. Domains covered include group membership, social integration, values/norms, bonding/bridging trust as well as social support. Cross-sectional data come from a convenience sample of 104 community dwelling adults residing in a single urban neighborhood in a large US city, who also provided information on neighborhood social capital, and experiences of urban stressors. Results suggest that religious social capital is a valid construct that can be reliably measured. All indicators of religious social capital were higher among those who frequently attended religious services, with the exception of bridging trust (trust of people from different religious groups). A weak, inverse, association was also observed between religious and neighborhood social capital levels. Levels of religious social capital were correlated with higher levels of reported urban stressors, while neighborhood social capital was correlated with lower urban stressor levels. A significant percent of the sample was unaffiliated with a religious tradition and these individuals were more likely to be male, young and more highly educated. Social capital is a promising construct to help elucidate the influence of religion on population health.

Keywords

USA; Social capital; Religion; Measurement; Mental health; Urban stressors

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Appendix. Supplementary material

Supplementary data associated with this article can be found, in the online version, at doi:10.1016/j.socscimed.2011.06.019.

Introduction

As a social determinant of health, religion remains not well understood. This is despite the fact that about 30–40% of Americans report at least weekly engagement with religious communities (Gallup & Lindsay, 1999; Presser & Chaves, 2007), over 87 percent of the world's population affiliates with a religious tradition (Gallup, 2010) and despite the prominent role of religion in the formation of social capital as conceptualized by scholars such as Bourdieu, Putnam and others (Bourdieu, 1991; Putnam, 2000). There is a large literature showing that regular religious service attendance is consistently associated with lower mortality and somewhat less consistently correlated with lower levels of physical and psychological morbidity (Hummer, Rogers, Nam, & Ellison, 1999; Joanna Maselko, Gilman, & Buka, 2009; Maselko & Kubzansky, 2006). Given variation in religiosity by race/ethnicity and socioeconomic groups in the US (Sherkat & Ellison, 1999; Taylor, Chatters, & Jackson, 2007), there has been growing interest in understanding whether religious service attendance is especially protective among disadvantaged groups. Various mechanisms have been proposed to explain the potential relationship: frequent religious service attendance may increase access to social networks and supports, encourage better health behaviors, promote adaptive coping mechanisms, and even encourage volunteering, all of which have been independently associated with better health outcomes (Borgonovi, 2008; Gall et al., 2005; Jonker & Greeff, 2009; Pargament, 1997). However, studies which have tried to account or adjust for these factors have been unable to conclusively support or reject these mediation hypotheses (George, Ellison, & Larson, 2002; Maselko, Kubzansky, Kawachi, Staudenmayer, & Berkman, 2006), reflecting our inability to fully understand the observed correlations.

Approaching the study of religion and health through the lens of social capital has the potential to improve our understanding of the role of religious involvement (commonly understood as religious service attendance) in population health. Identifying the social resources available to those who attend religious services may not only shed light on the putative mechanisms underlying the religion-health connection but also help us understand the role of religious participation in health disparities overall. This is not a new idea, Putnam discusses religiosity as a component of social capital (Putnam, 2007) and scholars in economics (e.g. Iannaccone, 1990) and sociology (e.g. Stark & Finke, 2000) have also written about what is sometimes called religious social capital. Even Durkheim's examination of religion's role in suicide can be easily interpreted through a social capital lens (Durkheim, 1897). However, discussion of social capital's role in health has almost exclusively focused on the context of neighborhoods or other geographically bound areas (cities, states, even countries). This geographical emphasis implies that meaningful social networks, trust and norms associated with social capital are accessible (or not) based on geographic proximity. However, there is a growing call to examine other contexts in which social capital might be pertinent to health (Roux, 2008). Social capital may be available to individuals through social spaces not captured by a geographic neighborhood, such as membership in a particular community or even ethnic group, and these social spaces may offer more salient links to health (Morenoff, Sampson, & Raudenbush, 2001; Roux, 2008). Religious communities, which are based on longstanding social relationships within a

context of shared beliefs, represent a social space that may be particularly salient as repositories of social capital.

Existing research on religious social capital

The sociologists Stark and Finke have approached religious capital as something that ‘consists of the degree of mastery of, and attachment to, a particular religious culture’ (Stark & Finke, 2000). Religious capital thus includes both the skills and knowledge needed to fully integrate into any religious community as well as the emotional attachment that keeps members returning week after week. Laurence Iannaccone is concerned with the economic impact of religion and approaches religious engagement from the perspective of human capital (Iannaccone, 1990). He defines religious human capital as the specific skills and experiences related to one’s religious group. These by-products of religious activity include “religious knowledge, familiarity with church ritual and doctrine, and friendships with fellow worshipers” (Iannaccone, 1990).

Other scholars have conceptualized religious engagement as one factor that contributes to overall levels of social capital in a community (e.g. (King & Furrow, 2004; Smith, 2003)). As a source for building social capital (e.g.(Wuthnow, 2002)), the presence of religious institutions is then linked to social or behavioral health outcomes. Outcomes related to crime, violence and substance use have been of particular interest as neighborhood and social context factors are thought to exert a strong influence on the risk of these outcomes (Ennett, Flewelling, Lindrooth, & Norton, 1997; Sampson, Raudenbush, & Earls, 1997). For example Brown et al report that ‘the proportion of community social capital attributable to religious groups’ was linked with lower smoking prevalence (Brown, Scheffler, Seo, & Reed, 2006). Taking this idea further by differentiating bonding from bridging social capital (Gitell & Vidal, 1998), Beyerlein and Hipp take a purely ecological approach and find that the proportion of the population belonging to Evangelical Protestant denominations (their measure of bonding social capital) was associated with higher community crime rates while the proportion of population belonging to mainline Protestant and Catholic denominations (their measure of bridging social capital) was linked with lower crime rates (Beyerlein & Hipp, 2005). Finally, sometimes researchers simply count the number of churches per capita (Stockdale et al., 2007) or fold a question about frequency of religious service attendance into a larger social capital measure (Lederman, Loayza, & Menendez, 2002). The challenge with findings from these studies is that they are difficult to interpret as the conceptual links between the religious variables and the concept of social capital are not well defined.

Two studies that we are aware took a more formal approach to measuring religious social capital and then linked it with either depression (Irwin, Lagory, Ritchey, & Fitzpatrick, 2008) or drug use (Bartkowski & Xu, 2007). In a study of homeless persons, Irwin and colleagues’ scale of religious social capital included a summed score of 6 items: frequency of attendance, importance of religion in one’s life, use of a spiritual leader for personal problems, use of a spiritual leader when lonely, church membership, and some form of church activity in the last twelve months besides service attendance. The overall religious social capital scale was independently associated with lower depression scores, even after adjusting for the presence of other forms of social capital (Irwin et al., 2008). Unfortunately,

it is impossible to discern the extent to which the religious service attendance variable drives the association between the religious social capital measure and depression scores. For example, Bartkowski and Xu's measure of "faith-based" social capital consisted of separate domains of denominational affiliation and religious salience as markers of exposure to religious norms, frequency of religious service attendance as a marker of network integration, and trust in God. Using drug use among high school seniors as the outcome they found that, frequency of service attendance emerged as the main predictor of drug use among all of the faith-based social capital items (Bartkowski & Xu, 2007). Reliance on a frequency of religious service attendance item in an aggregate measure of religious social capital is therefore problematic for several reasons. First, there is already a large body of research showing correlations between religious attendance and a variety of health outcomes (Koenig, McCullough, & Larson, 2001) and so it is not clear what new information is gained when a church attendance variable is the main component of a religious social capital measure. Second, the use of religious attendance in health research has itself been criticized for lack of conceptual clarity as to what it is that is actually being measured (Idler et al., 2009). The theoretical and empirical connection between a 'frequency of attendance' variable and actual levels of religious social capital needs to be better clarified. In the present study, we aim to extend the literature on religious engagement and social capital by piloting a detailed measure of social capital based in a religious context.

Conceptualizing religious social capital

We base our definition of religious social capital on the theoretical foundation laid down by Bourdieu and Coleman as the collective resource that exists in social relationships which can be used towards a variety of individual and collective goals (Bourdieu, 1991; Coleman, 1990). Anchoring our definition of religious social capital in the broader literature on social capital is motivated by a desire to conduct direct comparisons between different sources of social capital. However, we acknowledge that this approach is vulnerable to omitting other salient aspects of religious social capital that could be uncovered through a more ethnographic approach specific to the study setting. In the literature on neighborhood social capital, domains such as membership in groups and networks; trust and solidarity; and collective action and cooperation are often assessed (Grootaert, Narayan, Jones, & Woolcock, 2004; Kawachi, 2006; Kawachi & Berkman, 2000). We thus define *religious social capital* as the social resources available to individuals and groups through their social connections with a religious community. These resources include shared *values*, levels of *trust* among members of one's own religious group and religious hierarchy; as well as levels of socializing that are specific to one's own religious group. We also incorporate the concepts of bonding and bridging social capital in that bonding religious social capital refers to trust and cooperation among members of one's religious community, while bridging religious social capital refers to similar links across religious groups (Gitell & Vidal, 1998). Trusting religious clergy and God/a higher power is presented as an indicator of linking social capital. Linking social capital refers to norms and trusting networks between individuals/groups across explicit, and usually institutionalized, gradients of power or authority. These are sometimes conceptualized as 'vertical' links in contrast to the 'horizontal' connections of bridging social capital (Szreter & Woolcock, 2004). Continuing with dimensions theorized to be salient to neighborhood social capital, we also distinguish

between cognitive domains of religious social capital such as trust (what people think), from structural components of religious social capital which refer to the actual group membership and involvement in social networks (what people do) (Bain & Hicks, 1998; Harpham, Grant, & Thomas, 2002). Finally, we also include *social support* from other members of the religious community, including perceived support from God/a higher power. Because of our ultimate motivation to better understand the processes underlying the religious service attendance and health correlation, we do not incorporate religious service attendance itself into the religious social capital measure.

The theoretical mechanisms linking religious social capital to health are likely similar in nature as with neighborhood social capital, but may vary in their strength of influence. Religious social capital might be an especially strong population determinant of health precisely because the ties within an *average* religious community are likely to be stronger than those in an *average* neighborhood. Religious communities may also be more homogenous in terms of health related beliefs or acceptable behaviors and hence exert a more unified force on any given individual. This could lead to either stronger salubrious or deleterious effects. For example, while espousing beliefs that are in contrast to those of one's neighbors on controversial topics such as homosexuality might lead to mild distress, espousing beliefs about homosexuality that are in direct conflict with one's religious community may lead to much higher levels of distress. Conversely, in the absence of already existing relationships, it might be easier to mobilize a group of families to share childcare responsibilities from within one's church than in one's neighborhood. Religious social capital may thus be especially important in low resource settings or where other sources of social capital are less available.

The aim of this paper is to validate a measure of religious social capital and examine how this construct, together with neighborhood social capital, relates to perceived urban stressors.

Methods

Data collection/sample

The population for this pilot study consists of community dwelling adults in a single neighborhood in West Philadelphia. The two census tracts comprising the sample area were selected because of the socioeconomic and racial diversity of their residents. As compared to the 2000 Census, our sample had a smaller proportion of African-Americans (40.4% our sample vs. 72.1% in the census tracts) and a larger proportion of whites (50.0% vs. 22.0%). Data from the city police department indicate that the sample area had violent crime rates among the highest in the city (Philadelphia Police Department, 2010). A letter describing the study was mailed to all households in the neighborhood and trained interviewers canvassed the neighborhood over the course of several weekends in 2008. The face-to-face interviews were conducted with 104 individuals who were home and willing to be interviewed (non-random sample). Ethical approval was provided by Temple University IRB. Written consent was obtained prior to the interview and participants received a \$20 token to a local grocery store.

Measures

Religious social capital and related religiosity variables—Each of the religious social capital domains described above purposefully maps on to domains used traditionally to measure social capital in other settings, specifically neighborhoods. As described below in more detail, this translates into adapting a question on, for example, whether one trusts one's neighbors into a question about whether one trusts one's fellow church members. The one exception is the variable of frequency of religious service attendance. While frequency of attendance is a clear indicator of participation intensity in a religious community, our goal to understand the social resources available to those who are religiously active leads us to consider this variable apart from the remaining items. Specifically, we consider how levels of the religious social capital items vary by level of religious service attendance.

Assessment of religious social capital covered 4 domains: 1) structural social capital, 2) values and norms, 3) trust, and 4) religious/spiritual social support. Because the items are scaled differently (some Likert scales and others categorical), each item was dichotomized at closest to its median value in order to compare levels of each item across levels of frequency of religious service attendance and urban stressors.

Participants were asked which religion they identified with. The 19 categories of religious groups included the most common denominations in the US, as well as a category for 'other' and a category for 'no religion/atheist/agnostic'. Those who endorsed the 'no religions/atheist/agnostic' category were not asked the belief or denomination specific questions and are referred to throughout the manuscript as 'not affiliated'.

Frequency of religious service attendance was categorized from more than once a week to never. Regular attendance was defined as attending religious services at least a few times a month to increase power given the small sample size (22 individuals reported at least weekly attendance).

Four *Structural religious social capital* variables tapped into the level of engagement within a religious community. Religious community membership was represented by being able to name one's place of worship (yes/no). Number of people known by name in the congregation was categorized as none/1-5/6-9/10-20/or more than 20 people. This was further dichotomized at more than 5. Frequency with which a person socializes with members of their religious community outside of religious services was ranged from more than once a week to never and was dichotomized into at least a few times a month vs. less. Respondents who were not affiliated with any religious community and never attended services received the lowest value for a given variable (0 people known etc).

To assess *values and norms* respondents were asked the extent to which they felt that people in their religious community shared their values using a 4-point Likert scale (strongly agree to strongly disagree), dichotomized at agree/strongly agree vs. disagree/strongly disagree. At this step, individuals who did not belong to a religious community and did not provide an answer were assigned the lower values and norms value.

Bonding trust includes three questions inquiring into the extent to which an individual trusted other church members, on a 4-point Likert scale (strongly agree to strongly disagree). These items were also dichotomized at agree/strongly agree vs. disagree/strongly disagree. Again, individuals who did not belong to a religious community were assigned the lower value.

Linking trust refers to the level of trust of religious leaders and “God”, measured analogously to the bonding trust variable.

To assess *bridging trust*, study participants were asked how much they trust people from the following groups and presented with a list of religions (Christian, Muslim, Hindu, Buddhist, people with no religion, Atheists). For each religion, the respondent chose an option from a 4-point Likert scale of ‘1: not at all’, ‘2: a little’, ‘3: some,’ and ‘4: a lot’. A mean of the 6 responses was taken and dichotomized at greater than ‘some’.

To assess *social support* participants were asked to endorse who they can count on in four different situations including when feeling ‘stressed and need to relax’, ‘from whom do you get practical help when needed’ and ‘who can really make you feel better when you feel down.’ For each scenario, 7 potential sources of support were presented, including spouse or partner, some other relative, close friends, close neighbor, someone from congregation, God, and no one. Multiple choices were allowed and for the religious social support measure the number of times that ‘someone from the congregation’ or ‘God’ was endorsed was summed. The value of 0–8 was dichotomized at 2 or more.

Throughout the manuscript the terms such as ‘church’ are used, while acknowledging that these terms may not adequately describe all religious communities. During the interview, respondents were asked which term they would prefer to use to describe ‘a higher power’ and in reference to their religious community if there was one, and this term was used throughout the entire interview.

Neighborhood social capital

Neighborhood social capital also covered 3 domains homologous to the measures described above: 1) structural social capital, 2) values and norms, 3) trust, and a separate measure of neighborhood/family/friend social support. Unless otherwise indicated, all of the religious social capital variables were dichotomized to match the corresponding religious social capital item.

Structural variables described respondents’ level of engagement within their neighborhood. Respondents were asked whether, outside of religious activities, they were active in any community or other groups, such as school groups, sports groups, volunteering, or community gardens. Respondents were also asked the number of people in the neighborhood they know by name and the frequency with which they socialize with other neighborhood members.

To assess *values and norms*, respondents were asked the extent to which they felt that people in their neighborhood shared their values using a 4-point Likert scale (strongly agree to strongly disagree).

A *bonding trust* variable measured the extent to which respondents feel that members of the neighborhood can be trusted, on a 4-point Likert scale (strongly agree to strongly disagree).

Linking trust was assessed through a question about respondents' trust in local political leaders who represent the neighborhood, using a 4-point Likert scale (strongly agree to strongly disagree), which was dichotomized at strongly agree/agree vs. disagree/strongly disagree. This dichotomization deviated from the split for the other trust variables because only 4 individuals endorsed the 'strongly agree' option in reference to politicians.

As part of the overall social support assessment described above, *neighborhood social support* measure summed the number of times the respondent indicated relying on 'a close neighbor' in four different situations including when feeling 'stressed and need to relax' and 'who can really make you feel better when you feel down.' *Family/friend social support* reflected indication of seeking support from spouse/partner, other relative or close friend. Both values were dichotomized at the median.

Other measures of interest

Urban stressors were assessed with the Urban Life Stressors scale, which sums the extent to which each of 21 items (e.g. money or finances, crime and violence, transportation), is a source of stress, using a 5-point Likert scale (no stress to extreme stress, range 0–105) (Jaffee et al., 2005).

Additional variables included in the analyses are the respondent's age (continuous), gender (1 = male/0 = female), race (white, black, other) and education (highest grade completed: less than high school; some college, completed college, graduate work).

Analyses

Principal components factor analyses were used to estimate the number of factors present in the religious social capital measure using all of the undichotomized religious social capital items. Chi-square and *t*-tests were used to compare religious and neighborhood social capital variables across levels of regular service attendance as well as comparisons of means of urban stressors across levels of religious and neighborhood social capital indicators.

Results

A key aim of this study was to pilot the use of a measure of religious social capital in a diverse sample of participants. Completed interviews reflected the social and economic diversity of the two census tracts selected for fielding this measure (Table 1). Of 104 participants, 50% were white. The interquartile range for household income ranged from \$20,000–\$100,000, with a median household income in the \$50,000–\$59,000 category. Ninety-one percent of the sample had completed high school and 70% had at least a bachelor's degree. A high prevalence of urban stressors was reported, with 91% of

respondents reporting at least one source of ‘some stress’ and 36% reporting at least one source of ‘extreme stress’. Sixty-eight percent of the sample identified with a religious tradition, and 45% were able to name their place of worship, interpreted as belonging to a religious community. A total of 33% reported attending religious services at least a few times a month (regular attendance).

Table 2 presents the correlation matrix between all of the individual religious social capital items and shows that two factors emerged with frequency of religious attendance loading on its own factor and the item measuring trust of other religious groups (bridging trust) not loading highly on either factor. The emergence of the single item factor for frequency of religious service attendance must be interpreted with caution as single item factors are considered unstable (Costello & Osborne, 2005). Most individual items are highly correlated with each other, with Cronbach’s α of 0.95 when the religious service attendance and bridging trust variables are excluded (0.92 with all variables); the two factors together explain 48.1% of the variance.

Table 3 presents the responses to the religious social capital items (left panel) and neighborhood social capital items (right panel), overall and by level of religious service attendance (religiously active vs. not). Providing evidence for concurrent validity, those who regularly attended services reported higher levels of religious social capital. For example, 79% of regular attendees knew more than 5 people in church by name, as compared to 16% of those who were not religiously active (p -value < 0.001). A disaggregation of the religiously active vs. not categories reveals consistent patterns of increasing levels of religious social capital with increasing frequency of religious service attendance, without evidence of any threshold effects at a particular frequency. For example, 68% of those who attend services at least weekly socialize with fellow religious community members more than once a month outside of church, vs. 50% of those who attend services a few times a month and 10% of those who attend services a few times a year. This pattern was repeated for all religious social capital items, with the exception of the bridging trust domain. Religiously active people were less trusting of people from diverse religions, with only 19% trusting others more than ‘some’ on average compared to 27% of those who were less religiously active.

The right side of Table 3 presents participant responses to the comparable neighborhood social capital items. For example, being active in a community group is considered an analogous measure of group membership as to being able to name one’s place of worship. The distribution of each neighborhood social capital item is also presented by religious activity level. Community participation was high at 63%, a number that was about evenly distributed between those who were and were not religiously active (59% vs. 64%). Subtle differences could be observed in the level of neighborhood social capital by level of religious activity in that those who were religiously active reported slightly lower levels of neighborhood social capital. For example, while 79% of the not religiously active respondents socialized at least once a month with neighbors, 67% of those who were religiously active did ($p = 0.21$). Religiously active persons were also less likely to agree that people in their neighborhood could generally be trusted (82% vs. 93%, $p = 0.095$). A

version of this table using undichotomized social capital variables is available here (Supplementary Table).

Assessment of social support revealed that respondents rely most heavily on close family and friends, followed by members of their religious community, and lastly from their neighbors. As expected, people who are active in their religious community rely more heavily on their fellow congregants as compared to those who are not active (mean 4.29 vs. 0.96, $p < 0.01$). There were no differences in levels of family, friend or neighbor support by religious activity level.

The 'not affiliated'

Almost a third of the sample ($n = 33$) endorsed the 'no religion/atheist/agnostic' response option for religious affiliation. Compared with the rest of the study sample, these individuals were more likely to be white (21.1% of non-whites vs. 42.3% of whites were not affiliated, $p = 0.02$), younger (34.9 vs. 45.0 years, $p < 0.01$) and more highly educated (mean years of education 15.4 among those with an affiliation and 16.1 among those without, $p = 0.02$). The difference by gender was not statistically significant (28.1% of females vs. 36.2% males were unaffiliated). We were also interested in differences between the unaffiliated and those who reported an affiliation but never attended religious services ($n = 11$). These affiliated never attendees were more similar to their attending counterparts with the exception of education where they were more similar to the unaffiliated (mean years of education among affiliated never attendees 16 vs. 16.1 in unaffiliated). Furthermore, although the unaffiliated by definition did not belong to a religious group, almost half of these individuals ($n = 16$) reported attending religious services and praying privately at least rarely (with the remaining 17 endorsing the never category), indicating some level of exposure to a religious environment. Finally, indicators of neighborhood social capital did not vary significantly between those who were and were not affiliated. For example, 61% of the unaffiliated were active in a group compared to 63% of the affiliated and 74% of the unaffiliated socialized frequently with their neighbors vs. 76% of the affiliated.

Urban stressors and religious and neighborhood social capital

The mean urban stress score was 20.25 ($SD = 10.6$), a value that declined with age but was not correlated with other demographic factors such as education, race/ethnicity or gender. Table 4 presents the mean value of the urban stressor scale according to low/high levels of each religious and neighborhood social capital item. Overall, higher levels of religious social capital (as well as regular religious service attendance) were correlated with higher levels of reported urban stressors. For example, those who frequently socialize with church members had a 6.5 point higher urban stressor score as compared with those who socialized less frequently (25.2 vs. 18.7, $p = 0.01$). Similarly, those who reported high levels of trust in God ($p = 0.04$) and their fellow religious community members (0.07) scored 4 points higher on the urban stressors scale than their less trusting counterparts. Remaining religious social capital items (with the exception of the bridging trust variable) exhibited similar associations with urban stressors, although to a smaller degree. We next considered the pattern of urban stressors among those who were unaffiliated (who in the table are included in the low religious social capital category). The mean value of urban stressors in this group was 19.42

(SD = 7.5), which falls between those who are religiously active and those who are otherwise inactive, although this difference is not significantly different from either of these groups or the sample mean.

Conversely, individuals who reported higher levels of *neighborhood* social capital reported lower levels of urban stressors (right panel of Table 4). This inverse association was consistent across all neighborhood social capital components but was most pronounced with the shared values (8 point difference, $p = 0.01$), trust of neighbors (10 point difference, $p < 0.01$), and trust of politicians (5 point difference, $p = 0.03$) domains. In other words, persons who trusted their neighbors, trusted their local politicians and felt they shared values with their neighbors also reported lower levels of urban stressors. A further examination of individual urban stressors (components of the aggregate measure) revealed that there was no evidence that individuals with higher religious social capital, or those who were unaffiliated, were more likely to report specific urban stressors or sets of stressors.

Discussion

Religious social capital is an important type of social capital that has been understudied by both social epidemiologists and those interested in the connection between religion and health. The preliminary results presented here support the notion that religious social capital is a valid construct that may be useful in the study of the social determinants of health.

The current religious social capital measure was designed to include and adapt to a religious setting the most commonly described features of other types of social capital, namely structural components, values and norms, bonding and bridging trust, as well as social support. A chief goal of this measure is thus to describe the social resources that may be available to those who are engaged in religious communities by regularly attending religious services. Although the individual components can be combined to an overall score, we believe it may be more informative to examine individually each component's association with a given health outcome. These social resources are theorized to influence health through similar mechanisms as that of other types of social capital. We found that people who more frequently attend religious services reported higher levels of religious social capital (with the exception of bridging trust), with further variation among those who were frequent service attendees. We theorize that religious social capital, when present, may be even more strongly tied to health outcomes than neighborhood social capital because of the unique nature of religious communities as formal gathering places for people with similar beliefs and backgrounds.

Measurement of religious social capital

Although we attempted to create a measure that is analogous to a neighborhood social capital measure, several religious social capital domains remain conceptually distinct. One such question is that of 'trusting in God'. God is often explicitly mentioned as a member of a religious individual's social support network (Kirkpatrick, 1998) and this relationship can be understood by the perception that one 'has access to' a very powerful other. Such a belief can have important health consequences, especially in the context of informing coping strategies in the presence of stressors or illness (Siegel & Schrimshaw, 2002). Although this

matches the concept of linking social capital, belonging to a religious community is not a prerequisite to having high levels of trust in God and, as such, one might argue that it is not a 'social' variable, and hence not a part of religious *social* capital, even though it is a part of religiosity. Domains like this might be better described by terms such as 'spiritual' capital which are more independent of belonging to formal communities (Finke, 2003). Furthermore, the distinction between linking and bonding can be debated as it can be argued that God and religious leaders are within one's religious community and hence are more representative of bonding social capital rather than linking (Woolcock, 1998).

Several of the cognitive items also present with a challenge of which value to assign to individuals who are agnostic/atheist and find the specific question not applicable. In the current study, the social capital items were dichotomized closest to their median value and those with 'not applicable' responses were placed in the lower category. However, not being able to trust one's co-congregants is not equivalent to not having any co-congregants to mistrust. Traditional measures of social capital are numerically positive in nature: one can have none or a lot of social capital. Yet it seems conceptually problematic to assign both the mistrustful individual and the individual who does not belong to a religious community the same value of 'zero'. Some researchers have proposed measuring religious social capital only within religious communities (Williams, 2008), but such an approach would make it impossible to conduct comparative analyses of those who are and are not involved in religious communities. In our particular sample, unaffiliated individuals tended to be younger, white and have more education, and thus comprising a group that is expected to be healthier overall. Excluding them from an analysis of religious social capital and health would bias results away from the null.

Our findings that bridging trust (trust of other religious groups) was slightly inversely correlated with the other religious social capital items confirms the idea that bridging social capital does not automatically flow out of other aspects of social capital. In-group cohesion vs. out-group exclusion can be one potentially negative aspect of social capital. Previous research has found that the bonding vs. bridging nature of religious social capital varies by denomination (Allen, 2010), although our small sample size did not allow for denomination specific analyses.

Religious social capital, urban stressors and neighborhood social capital

To better understand the potential role of religious social capital as a social determinant of health, we examined any patterns between level of religious social capital, presence of urban stressors and neighborhood social capital. Individuals with higher levels of religious social capital tended to report higher levels of urban stressors, (a pattern opposite to what was observed with neighborhood social capital). This was most stark with the domain of frequent socializing with other church members, with those who socialize at least once a month or more with church members reporting a 6-point higher urban stressor score compared with those who socialize less. Combined with tentative evidence that individuals with higher levels of religious social capital report lower levels of neighborhood social capital and vice versa, the fact that individuals who are experiencing more urban stressors are more involved in their religious communities lends further support to the possibility of a substitution effect

between investing in neighborhood vs. religious social capital. Although this was not an a priori hypothesis of this study team, individuals who find their urban environment stressful may turn away from it and invest more heavily in a different context, in this case in their religious community. (Alternatively, those who are more religiously active may perceive more urban stressors.) The notion of turning away from a stressful social environment has been documented before in a study on parents and children's behavioral outcomes which reported that, when living in a poor neighborhood, fewer ties to the community was associated with better child outcomes (Caughy, O'Campo, & Muntaner, 2003). Perhaps the participants of that study were investing in other kinds of social capital that were not measured, further supporting the notion that a neighborhood assessment of social capital may fail to capture the true level of social resources available to an individual, especially in locations with high religious engagement and low neighborhood social capital.

The findings presented here are preliminary and meant to lead to further discussion on the nature of religious social capital and its role in health disparities. The small and convenience sample size limited the types of statistical and subgroup analyses that could be conducted. Based on census information, African Americans are underrepresented in our study, suggesting the presence of selective non-participation. Since African Americans are one group for whom religiosity is thought to be especially important for health, a validation of the religious social capital construct in the African American community is especially warranted. The fact that 32% of the sample did not have any religious affiliation is also likely a reflection also of the study's location: around 18% of Americans overall do not report a religious affiliation (Gallup, 2010), a percent that is expected to be higher in urban areas. Hence, we may be underestimating the overall level of religious social capital in this community and our findings may not be generalizable to other settings, especially non-urban ones outside of the mid-Atlantic region.

Our definition of religious social capital did not emerge as a result of an ethnographic or qualitative study. The specific components of religious social capital measured were designed to easily map to a neighborhood social capital measures and hence may not adequately capture the unique features of social capital in the context of a religious community. The dichotomization of the religious social capital items in order to ease presentation of the findings obscures the inherent variation in these variables. Natural distinctions of low vs. high levels of religious social capital may only become apparent after analyzing multiple samples from diverse religious groups. Such studies would also benefit from expanding from solely individual based assessments of religious social capital to include truly contextual perspectives as well as assessments of religious social capital in different cultural settings. A mix of quantitative as well as qualitative ethnographic studies would be especially informative.

Conclusion

In this article we have argued that religion overall, and religious social capital in particular, should be included in the study of social determinants of health. The religious social capital measure presented here provides an estimate of the social resources available to those who participate in regular activities with a specific religious community. The presence or level of

these resources may, in turn, be associated with health outcomes among religious community members. Rigorous research is called for to fully elucidate the potential role that religion and religious social capital play in population health.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1

Characteristics of study participants.

	Mean ± SD or N (%)
Demographics	
Age	42 ± 6.0
Male	47 (45%)
Education	
High school or less	9 (9%)
Some college	22 (21%)
Completed college	32 (31%)
Training beyond bachelors	41 (39%)
Race	
White	52 (50%)
Black	42 (40%)
Other	10 (10%)
Religion	
Denomination	
Catholic	16 (15%)
Baptist	7 (7%)
Presbyterian	6 (6%)
Other Christian ^a	25 (24%)
Other ^b	17 (16%)
No religion, atheist/agnostic	33 (32%)
Frequency of religious service attendance	
Never	28 (27%)
Once a month or less	42 (40%)
A few times a moth	12 (12%)
Once a week or more	22 (21%)
Other variables	
Urban stressors	20.2 ± 10.59

^aIncluding Episcopalian, Lutheran, Methodist, Mormon, Orthodox, Seventh Day Adventist.

^bIncluding Hindu/Muslim/Buddhist/Jewish/Jehovah's Witness.

Table 2

Zero-order correlations among religious social capital variables and factor loadings ($N = 97$).

	1	2	3	4	5	6	7	8	9	Factor 1 Loading	Factor 2 Loading
1. Freq of attendance	-									0.389	0.878
2. Name church	0.656***	-								0.842	0.581
3. People known by name	0.647***	0.804***	-							0.812	0.367
4. Freq. socializing	0.697***	0.653***	0.730***	-						0.616	0.392
5. Share values	0.699***	0.870***	0.659***	0.659***	-					0.818	0.395
6. Trust members	0.726***	0.885***	0.832***	0.683***	0.872***	-				0.862	0.412
7. Trust rel. leaders	0.699***	0.899***	0.882***	0.701***	0.874***	0.937***	-			0.887	0.408
8. Trust God	0.593***	0.611***	0.553***	0.475***	0.627***	0.662***	0.659***	-		0.596	0.321
9. Trust diff. beliefs	-0.251*	-0.300**	-0.123	-0.188	-0.230*	-0.239*	-0.200*	-0.193	-	-0.187	-0.142
10. Rel. social support	0.670***	0.572***	0.615***	0.496***	0.603***	0.631***	0.623***	0.556***	-0.072	0.545	0.367

* $P < 0.05$,

** $P < 0.01$,

*** $P < 0.001$.

Table 3
 Religious service attendance, religious social capital and neighborhood social capital ($n = 104$).

	Religious social capital			Neighborhood social capital		
	Regular Churchgoers ^a			Regular Churchgoers ^a		
	Total	Yes	No	Total	Yes	No
<i>Structural social capital</i>						
Were able to name their place of worship	45%	91%	23%	63%	59%	64%
Know by name more than 5 people in church	37%	79%	16%	70%	68%	71%
Socializes more than once/month with other church members	24%	62%	6%	75%	67%	79%
<i>Values and Norms</i>						
Agree that members share same values	39%	88%	16%	76%	69%	80%
<i>Bonding trust</i>						
Agree that members can generally be trusted	44%	94%	20%	89%	82%	93%
Agree that their religious leaders can generally be trusted	43%	88%	21%	53%	55%	52%
Agree that if you put your faith in God, things will turn out for the best	49%	88%	30%			
<i>Bridging trust</i>						
Trust people with different beliefs	25%	19%	27%			
<i>Social support</i>						
Rely on members for support ^b	Mean number \pm SD			Mean number \pm SD		
	2.04 \pm 2.45	4.29 \pm 2.44	0.96 \pm 1.57	0.60 \pm 0.94	0.59 \pm 0.99	0.60 \pm 0.92
			Rely on neighbors for support#	7.79 \pm 3.33	7.59 \pm 3.81	7.89 \pm 3.10
			Rely on family/friends for support#			

^a Attend church at least a few times a month vs. once a month or less (yes = 34, no = 70).

^b Number of times endorsed this type of support (religious, neighbor, family/friends) given various scenarios.

Table 4
Mean urban stressor values by level of religious and neighborhood social capital indicators.

	Religious Social Capital			Neighborhood Social Capital		
	Yes = high social capital	No = low social capital	p-value	Yes = high social capital	No = low social capital	p-value
Regular religious service attendance	22.94	18.94	0.07			
<i>Structural social capital</i>						
Were able to name their place of worship	22.06	18.75	0.13	19.62	21.31	0.41
Know by name more than 5 people in church	21.68	19.42	0.34	19.79	21.32	0.5
Socializes more than once/month with other church members	25.2	18.67	0.01	19.72	22.6	0.24
<i>Values and norms</i>						
Agree that members share same values	20.8	19.89	0.67	18.72	26.5	0.01
<i>Bonding trust</i>						
Agree that members can generally be trusted	22.43	18.52	0.07	19.35	29	<0.01
Agree that their religious leaders can generally be trusted	22.09	18.85	0.14	17.92	22.73	0.03
Agree that if you put your faith in God, things will turn out for the best	22.33	18.25	0.05			
<i>Bridging trust</i>						
Trust people with different beliefs	19.46	21.3	0.36			
<i>Social support</i>						
Rely on members for support	21.09	19.61	0.48	19.86	20.46	0.79
Rely on family/friends for support				22.12	18.58	0.09