Published in final edited form as:

Clin Psychol Sci. 2015 March ; 3(2): 283–291. doi:10.1177/2167702614531581.

Spiritual and Religious Resources in African American Women: Protection from Depressive Symptoms Following Birth

Alyssa C.D. Cheadle,

University of California, Los Angeles

Christine Dunkel Schetter,

University of California, Los Angeles

Robin Gaines Lanzi,

University of Alabama at Birmingham

Maxine Reed Vance,

Baltimore Healthy Start, Inc.

Latoya S. Sahadeo,

North Carolina Department of Health and Human Services

Madeleine U. Shalowitz, and

NorthShore University HealthSystem – Research Institute

Community and Child Health Network (CCHN)

Abstract

Many women experience depressive symptoms after birth, and rates among African Americans are as high as 40 percent. Spirituality and religiosity are valued in African American communities, but their relevance to new mothers has not been empirically tested. We examined effects of religiosity and spirituality on trajectories of depressive symptoms during the year following childbirth. Data were collected by the Eunice Kennedy Shriver NICHD Community and Child Health Network (CCHN) focused on maternal-child health disparities. The sample consisted of 702 low SES African American predominantly Christian women. Participants were interviewed in their homes throughout the year following a birth. Spirituality and religiosity each independently predicted changes in depressive symptoms with low levels predicting increases over time. Effects of religiosity were mediated by a woman's spirituality. Religiosity and spirituality functioned as significant, interrelated protective factors in this study which provides novel insight about lower income African American women following birth.

Postpartum depression (PPD) is a form of depression, indistinct from major depression in symptoms, but temporally specific and occurring within 6 months after birth. It affects half a million mothers in the United States each year (Horowitz & Goodman, 2005). PPD is defined as onset of major depressive disorder (MDD) in the four weeks following birth

(American Psychiatric Association, 2013). Conservative estimates of PPD in the U.S. range from 7 to 13% (Rich-Edwards et al., 2006) making it as prevalent as MDD among non-puerperal women. The consequences can be serious for mothers, infants, and families: mothers with depressive symptoms following birth have difficulty returning to pre-pregnancy levels of employment and are more likely to experience relationship stress. PPD is also associated with increased risk of poor infant-parent attachment with potential cognitive, psychological and behavioral effects for offspring that are lifelong (Abrams & Curran, 2007). Given the consequences, it is critical to identify aspects of women's lives that may prevent or ameliorate depressive symptomatology and disorder during the postpartum period, and to determine protective factors and those women for whom they are most beneficial.

In the general population, religiosity and spirituality have been associated with lower rates of depression, although this research has not been studied systematically with respect to postpartum depression. Religiosity and spirituality can be understood as dimensions of human experience that involve beliefs, practices, and experiences related to transcendent or sacred reality. Although interrelated, religiosity and spirituality are empirically and theoretically distinct. Religiosity involves behaviors related to organized traditions whereas spirituality usually refers to beliefs and experiences. Many individuals identify as both religious and spiritual, but not all do (Miller & Thoresen, 2003). In our study, religiosity and spirituality are distinguished and their associations with depressive symptoms are examined separately.

Religious and spiritual experiences are especially salient during and after pregnancy because many religious traditions attach spiritual significance to childbirth, parenthood, and family. In addition, religious rituals (e.g., baptism, brit milah) and decision-making about religious upbringing of children often accompany this important life period. Birth narratives and interviews with pregnant couples indicate that many parents view childbirth through spiritual lenses and characterize pregnancy as sacred and a manifestation of God's will (Mahoney, Pargament, & DeMaris, 2009).

In general, African Americans have more active religious and spiritual lives than other Americans with over 80% identifying as both religious and spiritual (Chatters, Taylor, Bullard, & Jackson, 2008). Historically, religious institutions have been central in African American communities, providing a context for education, support, affiliation, socialization, and personal growth. Analysis of large national surveys indicate that in comparison to Whites, African Americans have higher levels of organized and private religious and spiritual lives and endorse higher levels of importance of beliefs and closeness to God when controlling for religious affiliation and sociodemographic variables (Taylor, Mattis, & Chatters, 1999). The robust religious and spiritual lives of many African Americans constitute a unique resource for coping with life stress.

Additionally, influences on depression among African American women in the postpartum period should be identified because research indicates women of color may be at greater risk for PPD, when controlling for sociodemographic factors (e.g., Howell, Mora, Horowitz, & Leventhal, 2005). This disparity parallels that of health outcomes generally (Dunkel Schetter

et al., 2013), although some studies report no ethnic differences in postpartum depression or attribute them to socioeconomic disparities (e.g., Rich-Edwards et al., 2006; Wei, Greaver, Marson, Herndon, & Rogers, 2008). Interpretation of these findings is further complicated by existing evidence that African Americans overall experience lower—not higher—rates of depression than Whites (e.g., Gibbs et al., 2013), and by indications that endorsement of depressive symptoms may vary by race and culture (Breslau, Javaras, Blacker, Murphy, & Normand, 2008). It has also been proposed that lower rates may be explained by more effective coping resources among African Americans such as those provided by strong religiosity and spirituality (Griffith, Neighbors, & Johnson, 2009).

Although there is little existing research on religiosity and spirituality as related to postpartum depression, that which exists suggests effects in general and specifically for African American women. For example, a prospective study of over 300 White and African American women found that religious participation during pregnancy predicted lower depressive symptoms at 6 weeks postpartum, and self-rated religiosity and spirituality were marginally predictive (Mann, McKeown, Bacon, Vesselinov, & Bush, 2008). However, cross-sectional studies show both positive and negative associations of religiosity and spirituality and depressive symptoms during pregnancy (Jesse & Swanson, 2007). Furthermore, African American women in particular may utilize religious and spiritual practices to cope with postpartum depression based on interviews documenting that they used strategies of ‘keeping the faith’ and prayer to handle sadness and depression after birth (Amankwaa, 2003).

In addition, we can build upon the strong body of evidence showing that aspects of religiosity protect against non-puerperal depression. A meta-analysis of 147 largely cross-sectional studies involving 98,975 participants found an association between religiosity and depression with a mean correlation of about $r = -0.10$ (Smith et al., 2003). The majority of rigorous studies on religiosity and depression published after this meta-analysis also report a significant, inverse relationship (e.g. Baetz, Bowen, Jones, & Koru-Sengul, 2006). Research among African Americans further indicates that greater religiosity and spirituality are associated with lower risk of depression, although studies of organizational religious involvement including religious attendance are inconsistent (e.g., Ellison & Flannelly, 2009).

The few studies that have examined spirituality and depression show mixed effects. Some found that spiritual experiences were related inversely to depression in adult samples (Mofidi et al., 2006) and that spiritual importance was associated prospectively with lower likelihood of major depression diagnosis (Miller & Wickramaratne, 2012). Two cross-sectional analyses found specific aspects of spirituality such as importance of spiritual values in adults correlated with more—not fewer—depressive symptoms (Baetz et al., 2004; cf. Maselko, Gilman, & Buka, 2009). Thus, evidence for spirituality as a protective factor against depression is inconsistent whereas the negative relation of religiosity and depression is somewhat clearer.

Researchers have speculated extensively about pathways mediating between religiosity/spirituality and mental health (e.g. Ellison & Flannelly, 2009; Smith et al., 2003). In

particular, religious practices often involve social interaction and are reliably related to greater social support from others which is a known resource against depression (cf. Marroquín, 2011). Thus, one set of mediators of effects of religiosity on depression may be social factors. Additionally, it has been hypothesized that religious involvement can facilitate spiritual experiences which directly influence affective states; thus, associations between religiosity and depression could be mediated by spirituality (Koenig et al., 2012).

Our premise was that both religiosity and spirituality would function protectively against symptoms of depression in a sample of low and middle income African American women during the postpartum period. This was tested prospectively with a large, multisite sample from more several regions studied at three time-points in the year following a birth. More specifically, it was hypothesized that: (1) Spirituality would predict reductions in depressive symptoms over the postpartum period, controlling for sociodemographic factors and current religious affiliation, (2) Religiosity would predict reductions in depressive symptoms over the postpartum period, controlling for sociodemographic factors and perceived social support; (3) the effect of religiosity on changes in depressive symptoms over time would be mediated by spirituality.

Methods

Overview of CCHN

The current study was part of the Community Child Health Network (CCHN), a community-based participatory research effort with collaborating sites in Los Angeles, Chicago, Washington, D.C., Baltimore, and eastern North Carolina (Dunkel Schetter et al., 2013). Mothers were screened for the following inclusion criteria: 18-40 years of age; ability to complete interviews in either English or Spanish; residence in one of the identified communities for at least 6 months; having 4 or fewer children including the new infant; absence of plans to be surgically sterilized following birth. Trained interviewers conducted interviews in the home at three time points: 2-16 weeks (T1), 6-10 months (T2), and 12-15 months post partum (T3). Interviews included multiple measures of stress and resilience, physical and mental health, and sociodemographic information. The study protocol was approved by the review board of each participating site.

Sample—The current study involves a subsample of 702 African American mothers selected from the CCHN maternal cohort. Inclusion required primary self-identification as African American and self-description as either Christian or no religious affiliation; less than 5% of mothers had any other religious affiliation. They were mostly from Baltimore (33%), Washington, D.C. (29%), and North Carolina (26%), and fewer from Chicago (6%) and Los Angeles (6%). Mothers were 25 years old on average with 12.7 years of education, and mean per capita household income of \$10,336; a slight majority (56%) was below the federal poverty line and only 22% of mothers had household incomes >200% of the federal poverty level, with the another 22% falling in the middle (near poverty level). About two-thirds of the women (64%) were in a relationship with the baby's father.

Measures

Religiosity and spirituality—At six months after birth (T2), participants were asked to indicate their religious backgrounds and current religious identification from a list of affiliations and denominations including “no religion.” We also administered questions adapted from the Fetzer Multidimensional Measurement of Religiousness/Spirituality for Use in Health Research (Fetzer/NIA, 1999). These included, “To what extent do you consider yourself a religious person?...” on a 4-point scale from *not at all* to *very*. Participants with a current religious affiliation also answered, “How often do you usually attend religious services?” on a 6-point scale from *never* to *4 or more times a week*. These two items were standardized and summed to form an indicator of Religiosity ($r = .45$ between them). Religious attendance is commonly used as a single-item indicator of religiosity (Fetzer/NIA, 1999; Koenig et al., 2012) and is moderately correlated with other measures of religiosity (Idler et al., 2003). Similarly, the first question about extent religious was developed for use in health research (Fetzer/NIA, 1999) and is commonly used as a single-item in epidemiological studies (Idler et al., 2003). In the current sample, three sets of tests using other measures of religiosity and religious behavior, including future religious behaviors, provided evidence of validity of the two-item indicator of Religiosity with Pearson r correlations of .4 to .6, all highly significant.

At 6 months post partum, participants were asked a series of questions about to what extent they find strength and comfort in their religion, feel deep inner peace or harmony, and experience a divine presence in their lives, all answered on a 6-point scale from *never or almost never* to *many times a day* (Fetzer/NIA, 1999). (Only currently affiliated participants who indicated that they attended religious services were asked the first question.) All participants also answered, “To what extent do you consider yourself a spiritual person?...”; on a 4-point scale from *not at all* to *very*. These four items were standardized and summed to form a composite of Spirituality with an alpha coefficient of 0.78. The first question (extent spiritual) is commonly used as a single-item indicator of spirituality in epidemiological studies (Idler et al., 2003). The three items about spiritual experiences come from the Daily Spiritual Experiences (DSE) scale of the Fetzer Multidimensional Measurement of Religiousness/Spirituality for Use in Health Research (Fetzer/NIA, 1999). Full and short versions of the DSE have shown content and divergent validity in various samples including African American adults (Loustalot et al., 2006). In the current sample, this indicator was significantly associated with future spiritual experiences and behaviors.

Depressive symptoms—At T1, T2, and T3, the Edinburgh Postnatal Depression Scale (EPDS; Cox, Holden, & Sagovsky, 1987) was administered. The EPDS is a validated screening instrument for use postpartum and consists of 10 items that pertain to the severity of common depressive symptoms during the past 7 days, each answered from 0 to 4. Cronbach alpha coefficients for the scale were above .80 at all time points. In addition, respondents were categorized on the basis of scores as not depressed (scores 0-8), possible depression (scores 9-12), or probable depression (> 12 , or endorsement of suicidal thoughts).

Social support—At T3, participants were asked about perceptions of availability of emotional support (“someone to talk with about your problems” over the previous 3 to 4

months, and “Do you have as much contact as you would like with someone you feel close to?”). These items that are often used in social epidemiological research, were answered Yes/No, and were summed to create an emotional support index. Participants were also asked to what extent they agreed or disagreed with three statements on help from relatives which are part of a subscale of a measure of familism that has been validated among Hispanic Americans and other ethnic groups (Schwartz, 2007). These items were summed to create an index of perceived family support.

Socio-demographic information—At study outset, mothers provided their ages and ethnic/racial self-identifications, educational attainment, relationship status with the baby’s father, and income (T1). A per-capita index of annual income adjusted for household size was computed.

Data Analysis

Bivariate correlations, t-tests, and ANOVAs were computed to examine associations among predictors and covariates. Due to significant associations among primary study variables, relationship status and the two-item SES index were treated as covariates.

We predicted that that religiosity and spirituality would be associated with reductions in depressive symptoms over the postpartum period. These hypotheses were tested using multilevel modeling to utilize data from repeated measures. Separate growth curve models were estimated for religiosity and spirituality with the EPDS trajectory as the outcome. In order to test change in EPDS score over time, time was entered as a categorical variable at level 1 with time 1 as the reference category. At level two, we included the religiosity/spirituality predictor and covariates. Covariates and control variables were included as predictors of the intercept (i.e., baseline depressive symptoms). Because of similar results using years of education and per capita household income as covariates, these variables were standardized and summed to form an indicator of socioeconomic status. The intercept and the slopes were allowed to vary randomly and models were estimated using maximum likelihood. Our model specifications for religiosity (1) and spirituality (2) are as follows:

$$Y_{ti} = \gamma_{00} + \gamma_{01} \text{Spirituality} + \gamma_{02} \text{relationship_status} + \gamma_{03} \text{SES} + \gamma_{04} \text{current_affiliation} + \gamma_{10} t_2 + \gamma_{11} t_2 * \text{Spirituality} + \gamma_{20} t_3 + \gamma_{21} t_3 * \text{Spirituality} + \mu_{0j} + \mu_{1j} t_2 + \mu_{2j} t_3 + e_{ti}, \quad (1)$$

$$Y_{ti} = \gamma_{00} + \gamma_{01} \text{Religiosity} + \gamma_{02} \text{relationship_status} + \gamma_{03} \text{SES} + \gamma_{04} \text{family_support} + \gamma_{05} \text{emotional_support} + \gamma_{10} t_2 + \gamma_{11} t_2 * \text{Religiosity} + \gamma_{20} t_3 + \gamma_{21} t_3 * \text{Religiosity} + \mu_{0j} + \mu_{1j} t_2 + \mu_{2j} t_3 + e_{ti}, \quad (2)$$

Mediation of the effect of religiosity on changes in depressive symptoms by spirituality was tested using a series of hierarchical linear regressions followed by a Sobel test of the mediated effect.

Though there are currently no accepted guidelines for reporting effect sizes for multilevel models, we reported Cohen’s f^2 values based on comparisons between models of residual error variance (see Table 1; Selya, Rose, Dierker, Hedeker, & Mermelstein, 2012). For other

effects, Cohen's d values are reported and the completely standardized indirect effect is reported for the mediation (Feingold, 2009; Preacher & Kelley, 2011).

Results

Demographic Characteristics

The means on EPDS at 1, 6 and 12 months were 4.70, 4.96, and 4.43 (range 0 - 30) with 8%, 10%, and 9% indicating probable depression at respective time points. Nearly two-thirds of mothers identified with a Christian religious denomination while 34% of the sample reported that they did not identify with any religious group. On the standardized indices, mothers' scores were normally distributed with average Spirituality and Religiosity scores slightly above the midpoint and a wide range ($SD = 3.2$ and $SD = 1.8$, respectively). Family support and perceived emotional support ratings were high on average ($M = 11.1$, range 3-15; $M = 0.9$, range 0-1, respectively).

Bivariate Correlations among Study Variables

Bivariate correlations indicate that depressive symptoms at all time points were significantly associated with key study variables. Correlations of depressive symptoms with family support ranged from $-.11$ to $-.14$ (all $p < .01$, all $d > 0.2$) and with perceived emotional support ranged from $-.16$ to $-.18$ (all $p < .001$, all $d > 0.3$). Spirituality and religiosity were significantly associated with each other, ($r = 0.57$, $p < .001$, $d = 1.4$), thus sharing only 32% variance, as well as at $p < .001$ level with having a current religious affiliation ($r = 0.44$, $d = 1.0$; $r = .530$, $d = 1.3$), higher SES ($r = 0.24$, $d = 0.5$; $r = 0.22$, $d = 0.5$), and perceived emotional support ($r = 0.14$, $d = 0.3$; $r = 0.12$, $d = 0.2$, $p < .01$ for latter). In addition, bivariate associations of these study variables with depressive symptoms showed that religiosity and spirituality were significantly correlated with lower EPDS scores at T2 ($r = -0.09$, $p < .05$, $d = 0.2$; $r = -0.20$, $p < .001$, $d = 0.4$, respectively) and T3 ($r = -0.08$, $p < .05$, $d = 0.2$; $r = -0.15$, $p < .001$, $d = 0.3$, respectively).

Spirituality and Changes in Depressive Symptoms

We predicted that spirituality would be associated with a decrease in depressive symptoms over time. The pattern of results shown in panel A of Figure 1 shows individuals separated by degree of spirituality with all other covariates held constant at their means. Less spiritual mothers were slightly spiritual on average and reported having spiritual experiences only once in a while; average and highly spiritual mothers rated themselves as moderately or highly spiritual and reported having spiritual experiences most if not every day. Growth curve model results appear in Table 1. There was a significant interaction between spirituality and time ($\chi^2(2, N=703)=11.36$, $p < .01$, $d = 0.3$). Tests of simple effects revealed that the change in depressive symptoms from 1 to 6 months post partum differed by spirituality. Participants one standard deviation below the mean in spirituality had a significant increase in depressive symptoms from 1 to 6 months after birth (change = 0.498, $z = 2.38$, $p = 0.02$, $d = 0.10$), and participants with spirituality at the mean or one standard deviation below the mean had no change ($p > 0.13$, $d > 0.06$). Regardless of level of spirituality, participants had a significant decrease in depressive symptoms from 6 to 12 months post partum.

Religiosity and Changes in Depressive Symptoms

We predicted that religiosity would be associated with a decrease in depressive symptoms over time. This pattern of results is illustrated in panel B of Figure 1 with individuals separated by degree of religiosity and all other covariates held constant at their sample means. Less religious mothers reported attending services about once a year and indicated they were not religious on average or were only slightly so; average and highly religious mothers rated themselves as moderately or very religious and reported attending services at least a few times a month. Growth curve model results appear in Table 1. There was a significant interaction between religiosity and time ($\chi^2(2, N=703) = 8.00, p=0.02, d=0.2$). Tests of simple effects revealed that the change in depressive symptoms from 1 to 6 months post partum differed by level of religiosity. Participants one standard deviation below the mean in religiosity had a significant increase in depressive symptoms from 1 to 6 months post partum (change=0.586, $z=2.50, p=0.01, d=0.12$), and participants with religiosity at the mean or one standard deviation below the mean had no change ($p > 0.14, d>0.06$). Regardless of level of religiosity, participants had a significant decrease in depressive symptoms from 6 to 12 months post partum.

Religiosity, Spirituality, and Changes in Depressive Symptoms

A series of linear regressions tested the hypothesis that spirituality would mediate the association of religiosity and change in depressive symptoms. Regressions revealed that religiosity was a significant predictor of spirituality ($\beta=0.934, p<.001, f^2=0.39$). A second set of hierarchical linear regressions showed that religiosity was a significant predictor of favorable change in depressive symptoms from 1 to 6 months post partum ($\beta= -0.203, p<.05, f^2=0.01$) after including the sociodemographic covariates relationship status and socioeconomic status in addition to support variables. A third set of hierarchical linear regressions revealed that when both spirituality and religiosity were included as predictors with support variables and sociodemographic variables as covariates, religiosity was no longer a significant predictor of changes in depressive symptoms ($\beta= -.001, p=.991, f^2=0.00$), however, spirituality was ($\beta= -.220, p<.001, f^2=0.02$). Complete mediation was evidenced for spirituality as the religiosity estimate reduced to non-significance; the mediation effect was significant at $p<.001$ (Sobel's $t = -3.82; ab_{cs} = -.21$). The women who attended religious services and rated themselves as more religious were more likely to rate themselves as highly spiritual and have spiritual experiences; as a result, they did not have an increase in depressive symptoms. Religiosity did not significantly predict changes in depressive symptoms from 1 to 12 months post partum or 1 to 6 months post partum, thus, mediation was not tested for these time periods.

Discussion

In a large cohort of low to middle income African American mothers, we found that those who were less religious and less spiritual evidenced an increase in depressive symptoms over the six months following the birth of a child when controlling for SES, relationship status, and other variables. In contrast to less religious and spiritual mothers, those with robust religious and spiritual lives did not show an increase in depressive symptoms. These results affirm that religiosity and spirituality are particularly important resources for low-

income African American women. Many resources that could help buffer mental health difficulties are inaccessible to this population, thus it is especially important to identify those resources that may be available during this vulnerable time. Religiosity and spirituality are both available and past research indicates that aspects of religiosity may buffer negative consequences of financial hardship (Bradshaw & Ellison, 2010).

We conceptualized and measured religiosity and spirituality with an eye to their distinction, and found each was an independent predictor of the changes in depressive symptoms during the postpartum period. That is, aspects of spirituality such as daily spiritual experiences and self-rated spiritual identity, as well as components of religiosity such as religious attendance and identity, predicted the trajectory of symptoms over the postpartum period. These effects began in the early postpartum period at one month when depressive symptoms are quite variable but also most prevalent (Cooper & Murray, 1995). These findings clarify the previously equivocal findings on the direction of the association between spirituality and depression. Furthermore, the observed effects of religiosity on changes in depressive symptoms during the first 6 months post partum appear to be mediated by spirituality. In this study, we also sought to address the hypothesis that benefits of religiosity reflect benefits of social support by controlling for emotional and family support. However, as in other studies, we did not find that social support fully explained the association of religiosity and mental health; a more likely mediating support process is that of support from fellow religious group members or in religious contexts specifically (George, Ellison, & Larson, 2002).

The longitudinal design of this study allowed for analyses and conclusions about changes in postpartum depressive symptoms that have not often been studied. Yet because religiosity and spirituality were measured at 6 months post partum, reverse causality may be a concern, namely if changes in depressive symptoms over the study promoted higher religiosity or more spiritual experiences. Another limitation is measurement of key variables by self-report such that common method variance may contribute to the associations reported. However, it is difficult to objectively assess religious and spiritual phenomena as they are inherently intrapsychic. In addition, the DSE scale has demonstrated validity and reliability in a number of samples, but we used only three items from it, and the covariate variable emotional support was assessed here with a two-item index not validated.

Possible confounds not measured in this study could conceivably account for observed associations between religiosity or spirituality and depression. Though we controlled for social support and other sociodemographic variables possibly associated with religiosity and spirituality, other potential confounds remain. Religiosity and spirituality are at least weakly associated with health behaviors like diet, exercise, and physical activity (Koenig et al., 2012), all of which could have an impact on mothers' mental health. Religious attendance is associated with better physical health which could be responsible for associations with depressive symptoms, although this association is more likely to be present and relevant in older samples (Oman & Thoresen, 2002). Lastly, both religiosity and spirituality are associated with positive emotions and behaviors like optimism, self-esteem, and forgiveness which may be linked to mental health and should be further explored as explanatory mechanisms of the associations of religiosity and spirituality and health (Oman & Thoresen, 2002).

In the future, longitudinal research is much needed to elucidate the directionality of the links between religiosity, spirituality, and depression from pregnancy or prepregnancy through postpartum. These research designs would enable us to test hypotheses about timing of the protective effects of these resources and identify women at risk and means of intervening to assist them. Measuring additional domains of religiosity and spirituality is necessary to identify specific aspects that are and are not protective and relevant. Furthermore, it will be useful to extend this research to other mental health issues known to be important in pregnancy such as anxiety (Horowitz & Goodman, 2005). Lastly, it will be important to test further mediators of protective effects including both additional psychological variables such as relaxation, coping mechanism, and optimism, as well as physiological processes such as inflammation. All of these advances will help us to determine whether and how interventions that incorporate religiosity and spirituality may be helpful for women suffering poor mental health during the pregnancy period.

Acknowledgments

This paper is designated a Core Paper of the Child Community Health Network (CCHN), because it reflects major ideas and work considered central to our network. Accordingly, the last designated author is the network itself preceded by the names of those on the writing team who directly prepared this paper listed in the order the team judged best reflects their relative contributions. The CCHN is supported through cooperative agreements with the Eunice Kennedy Shriver National Institute of Child Health and Human Development (U HD44207, U HD44219, U HD44226, U HD44245, U HD44253, U HD54791, U HD54019, U HD44226-05S1, U HD44245-06S1, R03 HD59584) and the National Institute for Nursing Research (U NR008929). Members of each site are listed below.

Baltimore, MD: Baltimore City Healthy Start, Johns Hopkins University

Community PI: M. Vance

Academic PI: C. S. Minkovitz; Co-Invs: P. O'Campo, P. Schafer

Project Coordinators: N. Sankofa, K. Walton

Lake County, IL: Lake County Health Department and Community Health Center, the North Shore University Health System

Community PI: K. Wagenaar

Academic PI: M. Shalowitz

Co-Invs: E. Adam, G. Duncan*, A. Schoua-Glusberg, C. McKinney, T. McDade, C. Simon
Project Coordinator: E. Clark-Kauffman

Los Angeles, CA: Healthy African American Families, Cedars-Sinai Medical Center, University of California, Los Angeles

Community PI: L. Jones

Academic PI: C. Hobel; Co-PIs: C. Dunkel Schetter, M. C. Lu; Co-I: B. Chung

Project Coordinators: F. Jones, D. Serafin, D. Young

North Carolina: East Carolina University, NC Division of Public Health, NC Eastern Baby Love Plus Consortium, University of North Carolina, Chapel Hill

Community PIs: S. Evans, J. Ruffin, R. Woolard

Academic PI: J. Thorp; Co-Is J. DeClerque, C. Dolbier, C. Lorenz

Project Coordinators L. S. Sahadeo, K. Salisbury

Washington, DC: Virginia Tech Carilion Research Institute, Virginia Tech, Washington Hospital Center, Developing Families Center

Community PI: L. Patchen

Academic PI: S. L. Ramey; Academic Co-PI R.G. Lanzi

Co-Invs: L. V. Klerman, M. Miodovnik, C. T. Ramey, L. Randolph

Project Coordinator: N. Timraz

Community Coordinator: R. German

Data Coordination and Analysis Center DCAC (Pennsylvania State University)

PI: V. M. Chinchilli

Co-Invs: R. Belue, G. Brown Faulkner*, M. Hillemeier, I. Paul, M. L. Shaffer

Project Coordinator: G. Snyder

Biostatisticians: E. Lehman, C. Stetter

Data Managers: J. Schmidt, K. Cerullo, S. Whisler

Programmers: J. Fisher, J. Boyer, M. Payton

NIH Program Scientists: V. J. Evans and T. N.K. Raju, Eunice Kennedy Shriver National Institute of Child Health and Human Development; L. Weglicki, National Institute of Nursing Research, Program Officers: M. Spittel* and M. Willinger, NICHD; Y. Bryan,* NINR.

Steering Committee Chairs: M. Phillippe (University of Vermont) and E. Fuentes-Afflick* (University of California - San Francisco School of Medicine)

**Indicates those who participated in only the planning phase of the CCHN.*

References

- Abrams LS, Curran L. Not just a middle-class affliction: crafting a social work research agenda on postpartum depression. *Health & Social Work*. 2007; 32(4):289–96. [PubMed: 18038730]
- American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 5. Arlington, VA: American Psychiatric Publishing; 2013.
- Amankwaa LC. Postpartum depression among African-American women. *Issues in Mental Health Nursing*. 2003; 24:297–316. [PubMed: 12623687]
- Baetz M, Bowen R, Jones G, Koru-Sengul T. How spiritual values and worship attendance relate to psychiatric disorders in the Canadian population. *Canadian Journal of Psychiatry*. 2006; 51(6):654–661.
- Bradshaw M, Ellison CG. Financial hardship and psychological distress: Exploring the buffering effects of religion. *Social Science & Medicine*. 2010; 71(1):196–204. [PubMed: 20556889]
- Breslau J, Javaras K, Blacker D, Murphy JM, Normand ST. Differential item functioning between ethnic groups in the epidemiological assessment of depression. *The Journal of Nervous and Mental Disease*. 2008; 196(4):297–306. [PubMed: 18414124]
- Chatters LM, Taylor RJ, Bullard KM, Jackson JS. Spirituality and subjective religiosity among African Americans, Caribbean Blacks and Non-Hispanic Whites. *Journal for the Scientific Study of Religion*. 2008; 47(4):725–737. [PubMed: 21052481]
- Cooper PJ, Murray L. Course and recurrence of postnatal depression. Evidence for the specificity of the diagnostic concept. *The British Journal of Psychiatry*. 1995; 166(2):191–195. [PubMed: 7728362]
- Cox JL, Holden JM, Sagovsky R. Detection of postnatal depression: Development of the 10-item Edinburgh Postnatal Depression Scale. *The British Journal of Psychiatry*. 1987; 150(6):782–786. [PubMed: 3651732]
- Dunkel Schetter C, Schaefer P, Lanzi RG, Clarke-Kauffman E, Tonse R, Hillemeier M. CCHN. Shedding light on the mechanisms of health disparities through community participatory methods: The stress pathway. *Perspectives on Psychological Science*. 2013; 8(6):613–633.
- Ellison CG, Flannelly KJ. Religious involvement and risk of major depression in a prospective nationwide study of African American adults. *The Journal of Nervous and Mental Disease*. 2009; 197(8):568–73. [PubMed: 19684492]
- Feingold A. Effect sizes for growth-modeling analysis for controlled clinical trials in the same metric as for classical analysis. *Psychological Methods*. 2009; 14(1):43–53. [PubMed: 19271847]

- Fetzer/NIA Working Group. Multidimensional measurement of religiousness/spirituality for use in health research. Kalamazoo, MI: John E. Fetzer Institute; 1999.
- George LK, Ellison CG, Larson D. Explaining the relationships between religious involvement and health. *Psychological Inquiry*. 2002; 13(3):190–200. Retrieved from http://www.tandfonline.com/doi/full/10.1207/S15327965PLI1303_04.
- Gibbs TA, Okuda M, Oquendo MA, Lawson WB, Wang S, Thomas YF, Blanco C. Mental health of African Americans and Caribbean Blacks in the United States: Results from the National Epidemiological Survey on Alcohol and Related Conditions. *American Journal of Public Health*. 2013; 103(2):330–8. [PubMed: 23237171]
- Griffith DM, Neighbors HW, Johnson J. Using national data sets to improve the health and mental health of Black Americans: challenges and opportunities. *Cultural Diversity and Ethnic Minority Psychology*. 2009; 15(1):86–95. [PubMed: 19209983]
- Horowitz JA, Goodman JH. Identifying and treating postpartum depression. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*. 2005; 34(2):264–73.
- Howell EA, Mora PA, Horowitz CR, Leventhal H. Racial and ethnic differences in factors associated with early postpartum depressive symptoms. *Obstetrics and Gynecology*. 2005; 105(6):1442–50. [PubMed: 15932842]
- Idler E, Musick M, Ellison CG, George LK, Krause N, Ory M, Williams DR, et al. Measuring Multiple Dimensions of Religion and Spirituality for Health Research Conceptual Background and Findings from the 1998 General Social Survey. *Research on Aging*. 2003; 25(4):327–365.
- Jesse DE, Swanson MS. Risks and resources associated with antepartum risk for depression among rural southern women. *Nursing Research*. 2007; 56(6):378–86. [PubMed: 18004184]
- Koenig, HG.; King, DE.; Carson, VB. *Handbook of Religion and Health*. 2. New York: Oxford University Press; 2012.
- Loustalot F, Wyatt SB, Sims M, Ellison CG, Taylor HA, Underwood LG. Psychometric testing of the Daily Spiritual Experiences scale among African Americans in the Jackson Heart Study. *Journal of Religion and Health*. 2011; 50:675–685. [PubMed: 19693673]
- Mahoney A, Pargament KI, DeMaris A. Couples viewing marriage and pregnancy through the lens of the sacred: A descriptive study. *Research in the Social Scientific Study of Religion*. 2009; 20:1–45.
- Mann JR, McKeown RE, Bacon J, Vesselinov R, Bush F. Do antenatal religious and spiritual factors impact the risk of postpartum depressive symptoms? *Journal of Women's Health*. 2008; 17(5):745–55.
- Marroquín B. Interpersonal emotion regulation as a mechanism of social support in depression. *Clinical Psychology Review*. 2011; 31(8):1276–90.10.1016/j.cpr.2011.09.005 [PubMed: 21983267]
- Maselko J, Gilman SE, Buka S. Religious service attendance and spiritual well-being are differentially associated with risk of major depression. *Psychological Medicine*. 2009; 39(6):1009–17. [PubMed: 18834554]
- Miller WR, Thoresen C. Spirituality, religion, and health: An emerging research field. *American Psychologist*. 2003; 58(1):24–35. [PubMed: 12674816]
- Miller L, Wickramaratne P. Religiosity and major depression in adults at high risk: a ten-year prospective study. *American Journal of Psychiatry*. 2012; 169(1):89–94. [PubMed: 21865527]
- Mofidi M, DeVellis RF, Blazer DG, DeVellis BM, Panter AT, Jordan JM. Spirituality and depressive symptoms in a racially diverse US sample of community-dwelling adults. *Journal of Nervous and Mental Disorders*. 2006; 194:975–977.
- Oman D, Thoresen C. “Does religion cause health?”: differing interpretations and diverse meanings. *Journal of Health Psychology*. 2002; 7(4):365–80. [PubMed: 22112748]
- Preacher KJ, Kelley K. Effect size measures for mediation models: quantitative strategies for communicating indirect effects. *Psychological Methods*. 2011; 16(2):93–115. [PubMed: 21500915]
- Rich-Edwards JW, Kleinman K, Abrams A, Harlow BL, McLaughlin TJ, Joffe H, Gillman MW. Sociodemographic predictors of antenatal and postpartum depressive symptoms among women in

- a medical group practice. *Journal of Epidemiology and Community Health*. 2006; 60(3):221–7. [PubMed: 16476752]
- Schwartz SJ. The applicability of familism to diverse ethnic groups: a preliminary study. *The Journal of Social Psychology*. 2007; 147(2):101–18. [PubMed: 17601075]
- Selya AS, Rose JS, Dierker LC, Hedeker D, Mermelstein RJ. A practical guide to calculating Cohen's f^2 , a measure of local effect size, from PROC MIXED. *Frontiers in Psychology*. 2012;3. [PubMed: 22291676]
- Smith TB, McCullough ME, Poll J. Religiousness and depression: Evidence for a main effect and the moderating influence of stressful life events. *Psychological Bulletin*. 2003; 129(4):614–636. [PubMed: 12848223]
- Taylor RJ, Mattis J, Chatters LM. Subjective religiosity among African Americans: A synthesis of findings from five national samples. *Journal of Black Psychology*. 1999; 25(4):524–543.
- Wei G, Greaver LB, Marson SM, Herndon CH, Rogers J. Postpartum depression: Racial differences and ethnic disparities in a tri-racial and bi-ethnic population. *Maternal and Child Health Journal*. 2008; 12(6):699–707. [PubMed: 17955356]

Figure 1.
Changes in Depressive Symptoms as Functions of Spirituality and Religiosity

Table 1
 Spirituality and Religiosity (R/S) as Predictors of Change in Depressive Symptoms over Time

	Spirituality			Religiosity		
	Estimate	SE	f ²	Estimate	SE	f ²
<i>Fixed Effects</i>						
R/S predictor	-0.067	0.06		0.165	0.11	
Time (reference: T1)						
T2	0.291	0.19		0.290	0.20	
T3	-0.256	0.21		-0.248	0.21	
Time*R/S predictor (reference: T1)						
T2	-0.208***	0.06	0.011	-0.296**	0.11	0.013
T3	-0.138*	0.07		-0.261*	0.12	
Current religious affiliation	0.027	0.33		--	--	
Family Support	--	--		-0.197**	0.06	<0.001
Perceived Emotional Support	--	--		-3.031***	0.54	-0.002
Relationship Status	-0.687*	0.30	<0.001	0.059*	0.29	<0.001
SES	-0.237	0.15		-0.379**	0.15	<0.001
<i>Random Effects</i>						
Intercept variance	3.278	0.19		3.173	0.19	
Slope variance	0.182	0.05		0.176	0.05	

* p<.05,

** p<.01,

*** p<.001

Note: All religiosity and spirituality items were coded such that higher scores are indicative of greater religiosity and spirituality. Cohen's f² values provided for significant effects.