Communalism Predicts Prenatal Affect, Stress, and Physiology Better Than Ethnicity and Socioeconomic Status

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The authors examined the relevance of communalism, operationalized as a cultural orientation emphasizing interdependence, to maternal prenatal emotional health and physiology and distinguished its effects from those of ethnicity and childhood and adult socioeconomic status (SES). African American and European American women ($N = 297$) were recruited early in pregnancy and followed through 32 weeks gestation using interviews and medical chart review. Overall, African American women and women of lower socioeconomic backgrounds had higher levels of negative affect, stress, and blood pressure, but these ethnic and socioeconomic disparities were not observed among women higher in communalism. Hierarchical multivariate regression analyses showed that communalism was a more robust predictor of prenatal emotional health than ethnicity, childhood SES, and adult SES. Communalism also interacted with ethnicity and SES, resulting in lower blood pressure during pregnancy for African American women and women who experienced socioeconomic disadvantage over the life course. The effects of communalism on prenatal affect, stress, and physiology were not explained by depressive symptoms at study entry, perceived availability of social support, self-esteem, optimism, mastery, nor pregnancy-specific factors, including whether the pregnancy was planned, whether the pregnancy was desired after conception, or how frequently the woman felt happy to be pregnant. This suggests that a communal cultural orientation benefits maternal prenatal emotional health and physiology over and above its links to better understood personal and social resources in addition to economic resources. Implications of culture as a determinant of maternal prenatal health and well-being and an important lens for examining ethnic and socioeconomic inequalities in health are discussed.

Keywords: communalism, culture, pregnancy, stress, health disparities

The relevance of culture to health is increasingly recognized (U.S. Department of Health and Human Services, 2001). Nevertheless, most quantitative health research continues to operationalize culture in terms of ethnic and socioeconomic categories rather than directly examining cultural factors (Betancourt & López, 1993). Culture refers to socially transmitted scripts for

living and ascribing meaning to life experiences (Heine, 2008), and is, more concretely, defined by values, attitudes, beliefs, worldviews, and schematic representations of the social world (Hofstede, 1980; Rohner, 1984; Triandis, 1984). Although culture overlaps with race, ethnicity, and even social class, it is conceptually distinct. Thus, research on ethnic and socioeconomic differences in health does not fully capture the contributions of culture to health. Consequently, little is known about whether there are particular social and psychological features of culture that are especially relevant to specific health outcomes, or whether these features of culture affect health in the same manner for all people (James, 1993). Such issues are overlooked particularly in studies of African Americans and European Americans, whose long history in the United States may reduce the salience of culture. The present work takes initial steps to fill these gaps by comparing the relative contributions of ethnicity, socioeconomic status (SES), and *communalism*—a culturally interdependent relational style—to prenatal mental health and physiology.

Culture, Relational Styles, and Nonmaterial Resources

Operationalizing culture can be daunting. Emerging trends are to approach culture as a multilevel and multidimensional construct. Recent work suggests that cultural processes are best understood when considered at the societal, group, individual, and situational levels (Cohen, 2009; Oyserman, Coon, & Kemmelmeier, 2002a; Oyserman & Uskul, 2008; Triandis, 2001). Albeit sparse, there have been a few efforts to disaggregate group- and individual-level cultural data and examine the implications for health. Dressler (2004), for example, investigated how congruence between group-level and individual-level culture, termed *cultural consonance*, affects health in African-origin groups in America and abroad. Dressler's work shows that greater consonance between individual- and group-level cultures confers health benefits to the individual, including lower risk for depression and hypertension (Dressler, Balieiro, Ribeiro, & dos Santos, 2007).

Scientific efforts to better understand culture commonly involve understanding relational approaches, or the values and norms that guide social relationships. Communal relational orientations, such as collectivism and familism, have received a good deal of scientific attention (Boykin et al., 2005; Jagers & Mock, 1995). Despite the popular notion that European Americans are less collectivistic and more individualistic than other U.S. ethnic groups, the scientific evidence is mixed (Oyserman, Coon, & Kemmelmeier, 2002b). It has instead been suggested that all social groups, including middle-class European Americans, socialize for both independence and interdependence and differ in the extent to which these sometimes competing aspects of the self are likely to be cued and prioritized (Gaines, 1997; Oyserman et al., 2002a).

Ethnic and socioeconomic categories are often used as proxies for culture. In turn, these categories are used as indicators of the availability of material resources as well as nonmaterial personal (e.g., self-esteem) and social (e.g., social support) resources (Jackson & Knight, 2006; McLoyd, 1998). In fact, it has been suggested that ethnicity moderates both the *availability* of nonmaterial resources and their *effects* on health and well-being (Sagrestano, Feldman, Rini, Woo, & Dunkel-Schetter, 1999; Taylor & Stanton, 2007), which may be at least partially attributable to cultural factors, particularly to the congruence of individual-level culture

with family and societal cultures. For example, Campos and colleagues (2008) found that familism was associated with more perceived social support and less stress and pregnancy anxiety for both European American and Latina expectant mothers, but the associations were stronger among Latinas, and social support was associated with higher infant birth weight for foreign-born Latinas. Thus, familism appeared to be most valuable in social contexts where it translated into social support for the pregnant woman.

Ethnicity, Pregnancy, and Material Resources

The relatively poor prognosis of African American pregnancies is a major public health concern. African American mothers report significantly higher rates of perceived stress, depression, and discrimination-related stress, all of which have been linked to adverse pregnancy outcomes (Dominguez, Dunkel Schetter, Glynn, Hobel, & Sandman, 2008; Giscombé & Lobel, 2005). African American women are also more likely to develop diabetes, hypertension, and an array of other medical complications that can compromise pregnancy (Hilmert et al., 2008; Hogan & Ferré, 2001). These psychological and resultant physiological demands contribute to African Americans being born too early (before 37 weeks' gestation) and too small (<2,500 g) at approximately twice the rate of European Americans. Indeed, high infant mortality among African Americans accounts for the United States having the highest infant mortality rate of any developed nation (Martin et al., 2006). Evidence linking low birth weight to adverse cardiovascular outcomes later in life (Barker, 2000) and to low birth weight in subsequent generations (Lu & Halfon, 2003) further suggests that the emotional, societal, and financial costs of adverse pregnancy outcomes are compounded over generations.

A major contributor to disparities in pregnancy and other health outcomes between African Americans and European Americans is the disproportionate burden of poverty among African Americans (Krieger, Williams, & Moss, 1997). Higher socioeconomic resources alone do not appear to solve the problem, however. Ethnic disparities persist when SES is controlled, and several studies have found that the African American–European American disparity in pregnancy outcomes actually widens with increases in SES (Blackmore et al., 1993). Such findings suggest that higher SES and upward mobility do not confer the same health benefits for all people.

Culture and Health

The *epidemiological paradox* refers to the phenomenon of favorable health among immigrants and other unassimilated Americans despite limited socioeconomic resources (Abraído-Lanza, Armbrister, Flórez, & Aguirre, 2006). This paradox is particularly well documented for early life outcomes including gestation, birth, and early childhood, which are especially sensitive to sociocultural dynamics within the family and broader social network (James, 1993). One explanation for this pattern is that there are cases in which nonmaterial resources derived from culture can buffer the negative health effects of limited material resources and even ethnic minority status. Immigrants may bring culturally based social and behavioral practices to their new environments that protect health despite also possessing liabilities to social status in the United States, such as skin color and language differences.

This suggests that the use of ethnic and socioeconomic categories as proxies for the availability of resources (both material and nonmaterial) and associated health effects do not sufficiently capture the nuances inherent in these processes.

Present Research and Study Predictions

We reasoned that the cultural resource explanation for the immigrant paradox may also help shed new light on the impact of culture on African American and European American pregnancies. The overarching research question is: How do culture, ethnicity, and SES *compare* and *interact* as predictors of maternal prenatal emotional health and physiology? We hypothesized that communalism—a cultural orientation emphasizing interdependence—should predict prenatal emotional health (perceived stress, anxiety, and depressive symptoms) and physiology (systolic and diastolic blood pressure), particularly for ethnic minorities and those facing socioeconomic disadvantage.

Several parts of this hypothesis warrant elaboration. First, we have conceptualized communalism as a nonmaterial cultural resource, which should be likely to cluster with material and other status-based resources; thus, we expected to find ethnic and socioeconomic differences in communalism. Beyond these associations, we expected to find unique contributions of communalism to maternal prenatal affect, stress, and physiology, such that communalism would attenuate the health consequences of ethnic minority status and socioeconomic disadvantage. Finally, as has been shown in the epidemiological paradox literature, we expected that communalism would be more important in cases where income and other status-based resources are low.

We tested our predictions in two steps: First, we examined group differences (i.e., ethnic and socioeconomic differences) in communalism. Second, we examined the relative and combined contributions (i.e., main effects and interactions) of communalism, ethnicity, and SES to maternal affect, stress, and physiology after accounting for known medical and sociodemographic risk factors that are closely tied to ethnicity and SES as well as to prenatal health status.

Method

Participants

Participants were 297 African American and European American women involved in the Multi-Site Behavior in Pregnancy Study (MS-BIPS), a 5-year prospective study of pregnancy conducted between 1997 and 2002 in two hospitals in Southern California. Participants had either public or private health insurance and are representative of the range of women within the standard prenatal care system in the area.

Recruitment and Retention

Of the total potential participants at each site (1,189), 63% met eligibility criteria. The most common reasons for ineligibility (in order of frequency) were non-English speaking, advanced and multiple gestation, and smoking. Of the 754 eligible women, 67.5% (509) consented and attended the initial visit. Women were more likely to drop out of MS-BIPS if they were parous[1] or

African American ($ps < .05$). There was also a trend suggesting that women who dropped out of the study had lower incomes ($p = .06$). They did not differ in age or educational attainment ($ps > .15$). Missing data were imputed at the level of individual items from grand means for continuous variables and grand medians for categorical variables.[2] Individual items were missing 8% of data on average. Additional details of the MS-BIPS design, such as exclusion criteria, are reported elsewhere (e.g., Glynn, Dunkel Schetter, Hobel, & Sandman, 2008).

Sample Characteristics

Sociodemographic characteristics of the overall sample and significance tests of ethnic differences are provided in Table 1. Twenty-three percent of participants were African American ($n = 67$) and 77% were non-Hispanic European American ($n = 230$). Participants were 31 years old on average (range = 18 to 43 years). Seventy-four percent of participants were married to the baby's father. Although the sample represented a wide range of income and educational levels, it was skewed toward being middle class on average. Annual household income ranged from under $5,000 to over $100,000, with a median annual household income of $60,000–70,000 for a median household size of three people. Sixteen percent of the sample received public assistance as children. African American and European American participants differed on all sociodemographic characteristics, with the exception of nativity (i.e., U.S.- or foreign-born) and history of smoking.

Procedure

Each participant completed extensive semistructured interviews and medical and ultrasound examinations at three times: 18–20 weeks gestation (Time 1), 24–26 weeks gestation (Time 2), and 30–32 weeks gestation (Time 3). Measures that were thought to be subject to greater social desirability bias were administered as part of a questionnaire that women completed on their own.

Information on pre-pregnancy medical risk, marital status, parity, nativity, ethnicity, and adult socioeconomic factors was obtained via interview and medical exam at Time 1. Data on childhood SES and communalism were obtained via self-administered questionnaire at Time 2. Prenatal well-being was assessed via questionnaire, and blood pressure measurements were taken during medical exams. Both were assessed as composites of measures taken at Times 2 and 3.

Measures

Pre-pregnancy medical risk. Pre-pregnancy medical risk was calculated by summing the number of lifetime (pregnancy-specific and general) medical problems or events recorded in participants' medical charts. These included lifetime history of asthma, anemia, high blood pressure, or short cervix, as well as urinary tract infection, antibiotic use, vaginal bleeding, oligohydramnios (i.e., decreased amniotic fluid), threatened abortion, or preterm labor with a previous pregnancy. The number of pre-

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[1] *Parous* refers to women with at least one previous live birth.

[2] Results reported here did not differ across multiple methods of imputation of missing data.

Table 1
Descriptive Statistics for Full Sample and Stratified by Ethnicity with Significance Tests

Variable	All	African American	European American	*p*
Mean (*SD*) age (years)	31.06 (4.44)	29.89 (4.79)	32.23 (4.09)	.008
Ever smoked	37	33	38	*ns*
Quit smoking prior to current pregnancy, %[a]	88	68	93	.007
Mean (*SD*) number of pre-pregnancy medical risks	0.80 (1.01)	1.34 (1.35)	0.64 (0.82)	<.001
Mean (*SD*) body mass index	24.59 (5.66)	26.78 (6.63)	23.96 (5.18)	<.001
Nulliparous, %[b]	60	39	66	<.001
U.S.-born, %	87	90	87	*ns*
Married, %	74	40	84	<.001
Received public assistance as children, %	16	28	12	<.001
Educational attainment	College	Some college	College	<.001
Mean (*SD*) adjusted household income (thousands $)[c]	27.86 (16.44)	17.42 (13.69)	30.90 (15.94)	<.001
Mean (*SD*) communalism	2.92 (0.27)	2.84 (0.28)	2.93 (0.26)	.012
Mean (*SD*) prenatal distress	1.47 (0.48)	1.54 (0.51)	1.45 (0.47)	*ns*
Mean (*SD*) prenatal systolic blood pressure (mmHg)	114.68 (9.06)	117.52 (8.79)	113.85 (8.99)	.003
Mean (*SD*) prenatal diastolic blood pressure (mmHg)	63.93 (6.74)	65.52 (5.63)	64.29 (6.53)	.080

[a] This study included only non-smokers. This variable assesses whether smoking cessation occurred before or after conception. [b] Nulliparous = women with no previous live births. [c] Adjusted household income is the total annual income for a household divided by the number of people dependent on that income (i.e., the amount of income available for each person per year).

pregnancy medical complications ranged from none to six in the present sample (*M* = 0.80, *SD* = 1.01). Pre-pregnancy medical risk was accounted for in all analyses.

Demographic factors. Marital status and nativity were accounted for in all analyses because of anticipated links to communalism and pregnancy outcomes. Maternal age was also accounted for in analyses. Nulliparity (no previous pregnancies resulting in a live birth), a known risk factor for adverse pregnancy outcomes, was also accounted for in analyses. Analyses also accounted for body mass index (BMI), which was calculated from pre-pregnancy weight and height. BMI ranged from 16 to 59.47. Only nonsmokers were admitted into the study, but smoking history was assessed using two items: whether women ever smoked (37%) and, for former smokers, whether smoking cessation preceded the pregnancy (88%).

Childhood SES. An index of childhood family wealth was created using 17 items found in previous work to be meaningful in capturing socioeconomic context (e.g., home ownership, car ownership, receipt of public assistance) and easily recalled in retrospective reports of the availability of resources in childhood. S ranged from −1.61 to 0.58.

Adult SES. An index consisting of the standardized sum of education and annual income adjusted for household size (i.e., the amount of income available per person in the household per year) was computed to capture a somewhat more detailed picture of adult SES (Dominguez et al., 2008). Scores ranged from −2.86 to 5.90.

Communalism. Communalism was assessed using two established scales via self-administered questionnaire rather than via face-to-face interviews. A communal orientation toward immediate family was assessed using the Familism Scale (Gaines et al., 1997), developed for use with diverse samples. Ten items assessed familial interdependence, commitment, concern, and prioritization of family goals (e.g., "I owe it to my parents to do well in life"). Communalism toward family and friends was additionally examined using an abbreviated 18-item version of Hui's (1988) INDCOL Scale, which assesses feelings, beliefs, and behavioral intentions demonstrating solidarity and concern for others (e.g., "I prefer to deal with

personal problems, instead of consulting friends about them"). Items were rated on a 4-point scale (1 = *strongly disagree* to 4 = *strongly agree*). The 28 items were combined with very good reliability (α = .82).[3] Further analyses indicated that excluding items would not strengthen the scale. Items were reverse scored as necessary and final communalism scores were calculated by averaging responses, with higher values indicating more communalism. Scores ranged from 2.00 to 3.64.

Maternal well-being Maternal well-being measures evaluated depressive symptoms, perceived stress, and state anxiety.

Depressive symptoms. Prenatal and postpartum depressive symptoms were assessed using an abbreviated nine-item version (Santor & Coyne, 1997) of the Center for Epidemiological Studies Depression scale (CES–D; Radloff, 1977). Depressive symptoms can be confounded with symptoms that are normative among expectant and new mothers. For this reason, two additional items were dropped from the abbreviated CES–D: "My sleep was restless" and "I felt that everything I did was an effort." Participants rated the extent to which they experienced depressive symptoms during the week prior (0 = *rarely or none of the time* to 3 = *most or all of the time*). The alpha coefficients of the seven-item measure were .84 at Time 2 and .86 at Time 3.

Perceived stress. A 12-item version of the Perceived Stress Scale was used to assess perceptions of stress (Cohen, Kamarck, & Mermelstein, 1983).[4] Participants rated the extent to which particular stress experiences (e.g., "I felt that my difficulties were so overwhelming that I could not overcome them") were true for

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[3] Cronbach's alphas for all measures were comparable when examined for the overall sample and within ethnic subgroups, so are not listed separately.

[4] The full Perceived Stress Scale is 14 items, but this team has used versions with 5, 8, 10, and all 14 items in past studies of pregnant women and found all were reliable (Lobel et al., 1992). The 12-item version reported here is highly correlated with the published brief 10-item Perceived Stress Scale (S. Cohen et al., 1983).

them during the week prior from 1 (*never*) to 5 (*almost always*). The alpha coefficient of the 12-item measure was .93 at Time 2.

State anxiety. Participants were asked to report their general feelings of anxiety over "the last few days" using the shortened, 10-item State–Trait Anxiety Inventory (Spielberger, 1985). Participants rated items on a scale from 1 (*not at all*) to 4 (*very much*). The alpha coefficients of this measure were .78 at Time 2 and .90 at Time 3.

Global well-being. Preliminary analyses revealed that the patterns of association among communalism, ethnicity, and SES and each of the well-being measures was similar across Time 2 and Time 3 measures. Preliminary analyses also revealed that depressive symptoms, perceived stress, and state anxiety were highly correlated at each time point ($ps < .001$). The well-being measures were, therefore, combined into a global prenatal well-being measure ($\alpha = .93$; Lobel, Dunkel-Schetter, & Scrimshaw, 1992). Higher average values indicated greater prenatal distress. Prenatal well-being scores ranged from 0.68 to 3.38.

Maternal physiology. Blood pressure was assessed at Times 2 and 3 using a Critikon Dinamap Vital Sign Monitor 2100 (GE Health Care, Milwaukee, WI) while participants were seated. Two readings separated by a two-minute rest period were collected and averages of the systolic blood pressure (SBP) and diastolic blood pressure (DBP) values were calculated to ensure accuracy. SBP and DBP distributions were very similar at Times 2 and 3; thus, average prenatal SBP (range = 90.50–150.00 mmHg) and DBP (range = 45–89.50 mmHg) scores were created by combining Time 2 and 3 readings.

Results

Data Analytic Strategy

Data were analyzed in three steps. First, bivariate correlations were assessed for multicollinearity and preliminary relationships among primary study variables. Second, variability in communalism as a function of ethnicity and socioeconomic status was examined using analysis of variance.[5] Finally, hierarchical multivariate regression analyses were conducted to examine the relative contributions of communalism, ethnicity, childhood SES, adult SES, and their interactions to maternal affect, stress, and physiology. Continuous predictors were centered before entering into regression equations as main effects and interaction terms (Cohen, Cohen, West, & Aiken, 2003).

Intercorrelation of Study Variables and Group Differences in Communalism and Outcomes

Bivariate associations among primary study variables were generally as expected. Communalism was positively correlated with childhood SES ($r = .32$, $p < .001$) and adult SES ($r = .13$, $p = .028$). Notably, the bivariate association between communalism and childhood SES was stronger than the association between communalism and adult SES, which might be expected of intergenerationally transmitted cultural values that are adopted early in life (Boykin et al., 2005). Communalism was inversely associated with history of smoking ($r = -.13$, $p = .024$), but was not directly correlated with BMI, pre-pregnancy medical risk, or prenatal blood pressure. Communalism was negatively correlated with pre-

natal distress ($r = -.26$, $p < .001$). Childhood and adult SES were moderately correlated ($r = .26$, $p < .001$). Childhood SES was also inversely correlated with prenatal distress ($r = -.18$, $p = .002$), prenatal SBP ($r = -.17$, $p = .003$), and medical risk ($r = -.13$, $p = .030$). Childhood SES was not correlated with prenatal DBP or BMI. Adult SES was inversely associated with prenatal distress ($r = -.21$, $p < .001$), prenatal SBP ($r = -.17$, $p = .006$), prenatal DBP ($r = -.12$, $p = .035$), medical risk ($r = -.15$, $p = .010$), and BMI ($r = -.27$, $p < .001$). Prenatal distress was correlated with history of smoking ($r = -.12$, $p = .041$), but not with SBP, DBP, medical risk, or BMI. Prenatal SBP and DBP were highly correlated with one another ($r = .58$, $p < .001$) and with BMI ($r = .36$, $p < .001$, for SBP; $r = .30$, $p < .001$, for DBP). Medical risk was not directly correlated with SBP, DBP, or BMI.

Communalism was negatively skewed in the present sample, with all subgroup means above the scale midpoint (>2). The distribution of communalism generally followed the distribution of material resources, as expected. Communalism was differentially distributed by ethnicity, $t(295) = 2.53$, $p = .012$, and childhood SES, $t(295) = -3.78$, $p < .001$, but not by adult SES. Specifically, communalism was higher in European Americans ($M = 2.93$, $SD = 0.26$) than in African Americans ($M = 2.84$, $SD = 0.28$) and higher in participants above the median childhood SES ($M = 2.97$, $SD = 0.23$) than in participants below the median childhood SES ($M = 2.86$, $SD = 0.29$). Ancillary multivariate analysis of variance showed that the African American–European American difference in communalism was accounted for by childhood SES, $F(1, 297) = 6.06$, $p = .014$; ethnicity no longer significant; and adult SES, *ns*.

Predicting Prenatal Affect, Stress, and Physiology

The same stepwise equation was used in all regression analyses. Step 1 consisted of maternal age, smoking history, BMI, prepregnancy medical history, marital status, nativity, and parity in addition to ethnicity, childhood SES, and adult SES. Communalism was added in Step 2. Finally, two-way interactions of primary independent variables were added in Step 3. Regression analyses are summarized in Table 2, and significant findings are described below.

Prenatal distress. The full model accounted for 12% of the variance in prenatal distress. Higher communalism ($\beta = -.23$, $p < .001$) predicted greater well-being, such that there was a 0.5 standard deviation decrease in prenatal distress for every point increase in communalism. Being married also predicted greater well-being ($\beta = -.20$, $p = .005$). There was a trend toward greater prenatal well-being among women of higher adult SES backgrounds ($\beta = -.12$, $p = .107$). In addition, there was a marginal interaction between communalism and childhood SES ($\beta = -.13$, $p = .062$), indicating that there were emotional health benefits of

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[5] This is the only analysis in which SES was treated as a categorical variable, and this was strictly for the purpose of examining ethnic and socioeconomic differences in study outcomes. For this analysis, median splits were used to divide the continuous childhood and adult SES measures into higher and lower SES groups. In all other analyses, including regression analyses, childhood and adult SES were measured continuously.

Table 2
Regression Analyses Predicting Prenatal Affect, Stress, and Physiology

Variable	Prenatal distress				Prenatal systolic blood pressure				Prenatal diastolic blood pressure			
	β	SE	t	p	β	SE	t	p	β	SE	t	p
Step 1												
Age	-.04	.07	-0.62	ns	.11	.06	1.71	.088	.03	.07	0.47	ns
Former smoker[a]	.14	.14	0.93	ns	.06	.14	0.43	ns	-.04	.15	-0.24	ns
When quit smoking[b]	-.10	.14	-0.63	ns	-.10	.14	-0.66	ns	-.14	.15	-0.89	ns
Medical risk	.03	.06	0.40	ns	.09	.06	1.60	ns	.04	.06	0.64	ns
Body mass index	-.02	.06	-0.32	ns	.36	.06	6.20	<.001	.31	.06	5.20	<.001
Parous[c]	-.07	.07	-1.03	ns	-.17	.07	-02.71	.007	-.14	.07	-2.12	.035
Nativity[d]	.01	.06	0.20	ns	-.04	.06	-0.67	ns	-.01	.06	-0.13	ns
Married[e]	-.20	.07	-2.85	.005	-.02	.07	-0.33	ns	-.07	.07	-1.06	ns
Ethnicity[f]	-.09	.07	-1.28	ns	.07	.06	1.03	ns	-.00	.07	-0.06	ns
Childhood socioeconomic status (SES)	-.03	.07	-0.52	ns	-.12	.07	-2.13	.034	.08	.07	1.15	ns
Step 2												
Adult SES	-.12	.07	-1.62	.107	-.05	.07	-0.68	ns	-.04	.07	-0.62	ns
Communalism	-.23	.06	-3.52	<.001	.08	.06	1.46	ns	.01	.06	0.20	ns
Step 3												
Communalism × Ethnicity	-.03	.07	-0.40	ns	-.16	.07	-2.26	.024	-.16	.07	-2.20	.028
Communalism × Childhood SES	.13	.06	-1.88	.062	-.08	.06	-1.18	ns	.01	.09	0.15	ns
Communalism × Adult SES	-.00	.06	-0.04	ns	-.01	.06	-0.19	ns	-.13	.07	-1.66	.098

Note. For prenatal distress: $R^2 = .11$ for Step 1; $R^2 = .15$ for Step 2; $R^2 = .17$ for Step 3. For prenatal systolic blood pressure: $R^2 = .19$ for Step 1; $R^2 = .20$ for Step 2; $R^2 = .23$ for Step 3. For prenatal diastolic blood pressure: $R^2 = .13$ for Step 1; $R^2 = .13$ for Step 2; $R^2 = .16$ for Step 3. For all three models, $df = 286$ for Step 1, $df = 284$ for Step 2, and $df = 281$ for Step 3. [a] Never smoked = 0, ever smoked = 1. [b] Smoking cessation prior to pregnancy = 1, during pregnancy = 2. [c] Nulliparous = 0, parous (at least one previous live birth) = 1. [d] U.S.-born = 1, foreign-born = 2. [e] Not married = 0, married = 1. [f] African American = 1, European American = 0.

communalism among women from lower childhood SES backgrounds.

Prenatal blood pressure. The full model accounted for 18% of the variance in SBP. Higher BMI ($\beta = .36$, $p < .001$), giving birth for the first time ($\beta = -.17$, $p = .007$), and a lower childhood SES background ($\beta = -.12$, $p = .034$) predicted higher SBP. In addition, communalism and ethnicity interacted to predict SBP ($\beta = -.16$, $p = .024$), indicating that higher communalism was associated with lower SBP, but only for African American women.

The full model accounted for 11% of the variance in DBP. As with the model predicting SBP, higher BMI ($\beta = .31$, $p < .001$) and giving birth for the first time ($\beta = -.14$, $p = .035$) predicted higher DBP. In addition, communalism interacted with ethnicity ($\beta = -.16$, $p = .028$) and marginally with adult SES ($\beta = -.13$, $p = .098$), with higher communalism levels predicting lower DBP for African American women and women with lower adult SES.

Alternative hypotheses. One possible alternative explanation for the results reported here is that some other factor leads women to report higher communalism and to have better prenatal health. For instance, it is possible that women who have more social support or who tend to be more optimistic report being more communal and have better emotional health and lower blood pressure. Such alternative hypotheses should be most relevant to emotional health outcomes because both communalism and emotional health were measured as self-report. Therefore, given space constraints, we present the results of alternative hypothesis testing for emotional health only. Alternative hypotheses were tested by examining the stability of the communalism effect when accounting for pregnancy-specific factors (i.e., whether the pregnancy was planned, is currently wanted, and how frequently the woman is happy to be pregnant) and key social and personal resources known in the literature to be associated with health—namely, depressive symptoms at baseline, social support, self-esteem, optimism, and mastery.

Eight separate regression analyses were run exactly as described in the data analysis section with the addition one of these variables in Step 1. The effect of communalism was reduced, but remained significant in each analysis predicting emotional health ($\beta = -.21$, $p < .001$, in the model accounting for whether the pregnancy was planned; $\beta = -.18$, $p = .003$, in the model accounting for whether the pregnancy is now wanted; $\beta = -.18$, $p = .003$, in the model accounting for whether how frequently the woman feels happy to be pregnant; $\beta = -.14$, $p = .012$, in the model accounting for depressive symptoms at baseline; $\beta = -.14$, $p = .019$, in the model accounting for social support; $\beta = -.12$, $p = .033$, in the model accounting for self-esteem; $\beta = -.11$, $p = .054$, in the model accounting for optimism; and $\beta = -.14$, $p = .008$, in the model accounting for mastery, as compared with $\beta = -.23$, $p < .001$, in the original model). This suggests that, as is the case with communalism and socioeconomic resources, there is some overlap between communalism and pregnancy-specific factors and other personal and social resources that are known to confer health benefits; nevertheless, communalism is distinct conceptually and in its effect on health.

Discussion

This is the first study to compare the contributions of ethnicity, adult and childhood SES, and a relational cultural factor—namely,

communalism—to maternal prenatal emotional health and physiology in a sample of African American and European American expectant mothers. Most notably, we found support for the prediction that communalism is a stronger predictor of prenatal negative affect and stress than ethnicity and life span SES. In addition, communalism interacted with ethnicity to predict prenatal SBP and DBP, potentially important indicators of maternal physical health. Higher communalism was associated with lower prenatal blood pressure among African American women and among women who had experienced socioeconomic disadvantage as children or adults. It was also marginally associated with better emotional health among women from lower childhood SES backgrounds, eliminating the group-based disparities that were observed in the full sample and among participants who had lower communalism.

Although endorsement of communalism was negatively skewed in the present study for both African Americans and European Americans ($Ms = 2.84$ and 2.93, respectively), European American women were significantly higher than African American women in communalism. This ethnic difference may at first glance seem counter to expectations. However, this pattern is consistent with our prediction based on the literature that the nonmaterial cultural resource of communalism would tend to cluster with material resources (e.g., income). It is well established that higher SES provides greater access to social relationships as well as more opportunities to savor those relationships and to engage in positive social interactions (McLoyd, 1998).

The general pattern of findings in the present study is consistent with the epidemiological paradox (Abraído-Lanza et al., 2006) and other literatures alluding to the health benefits of cultural contexts that emphasize the value of social integration, interpersonal relationships, and the social self (Boykin et al., 2005). Childhood seems to be a particularly influential time for the formation of a communal cultural orientation. The present research also expands existing empirical perspectives, showing that—like Asians and Latinos—Africans Americans and European Americans may derive important health benefits from a communal approach to interpersonal relationships and ready access to the resources that these relationships can provide. Furthermore, the present research indicates that the greatest health benefits of communalism may be derived in contexts characterized by lower status or marginalization, namely among African American women and women experiencing socioeconomic disadvantage at some point in the life course.

Limitations

A few sample characteristics limit generalizability of the findings reported here. Health status and outcomes were favorably skewed within the present sample because of stringent exclusion criteria imposed to facilitate measurement of stress biomarkers. Among the more notable of these, current smokers were excluded from participation. To address this limitation, history of smoking and smoking cessation before pregnancy were assessed and accounted for in analyses. However, we note that smoking history had little to no relationship with key study variables and had little effect on health outcomes examined in this study. Similarly, the sample was somewhat truncated with respect to SES. Although participants receiving public assistance were sampled, this study—like many studies of pregnancy—did not include indigent, home-

less, or very poor women who do not reach the prenatal care system at all. In addition, African American women and lower income women were somewhat less likely to be retained in the present study. Because the health benefits of communalism were greatest for African American women and women who experienced socioeconomic disadvantage as children or adults, this limitation implies that the results reported here would be more pronounced in a poorer or predominately African American sample. In addition, this study took a relatively narrow view of culture by including only one specific facet of culture—communalism. The present study represents a step in the right direction in terms of examining more expansive and nuanced approaches to individual- and group-based inequalities in health. Nevertheless, the models accounted for only 11% to 18% of the variance in prenatal health status, suggesting that there are still critical omissions from our explanatory models. Studies taking a broader view of culture and focusing on the substantive aspects of culture that shape beliefs about the self and surrounding world may be a promising means for closing these remaining gaps in our knowledge.

Conclusion

The present study is the first to test the hypothesis that the cultural resource of communalism is protective of prenatal emotional and physical health, particularly for African Americans and women with fewer current or lifetime socioeconomic resources. Results provide preliminary support for communalism as a stronger predictor of emotional health than ethnicity, childhood SES, or adult SES. In addition, higher communalism eliminated ethnic and socioeconomic differences in blood pressure, a potentially important indicator of prenatal physical health. The present findings reinforce the hypothesis that an interdependent relational orientation can confer benefits to emotional and physical health and expand its relevance beyond immigrant populations to African Americans and European Americans. These findings also hint at the intriguing possibility that cultural resources may help to buffer status-based stressors, thereby minimizing ethnic and socioeconomic inequalities in health and well-being. Finally, the present work is consistent with ongoing calls in the literature to distinguish complex sociocultural constructs, including ethnicity, SES, and culture, and to directly take into account how they interact with one another (e.g., Betancourt & López, 1993; Markus, 2008) to arrive at a more complete and nuanced understanding of health in U.S. individuals and populations.

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