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## Hostility, Relationship Quality, and Health among African American Couples

**Max Guyll,**  
Iowa State University

**Carolyn Cutrona,**  
Iowa State University

**Rebecca Burzette,** and  
Iowa State University

**Daniel Russell**  
Iowa State University

### Abstract

**Objective**—This study investigates the association between hostility and health, and whether it is moderated by the relationship quality of an individual's primary romantic relationship.

**Method**—Longitudinal data were provided by 184 African Americans, including 166 women. Participants averaged 38 years old and were married or in long-term marriage-like relationships. Hostility and relationship quality were measured at the first assessment. Hostility was based on participants' responses to items tapping cynical attitudes about relationships. Relationship quality was based on trained observer ratings of videotaped couple interactions on behavioral scales reflecting warmth, support, and communication skills. At two assessments approximately five and seven years later, participants provided health data. Health index scores were formed from responses to five scales of the SF-12 (Ware, Kosinski & Keller, 1998), as well as to the number of chronic health conditions and number of prescribed medications.

**Results**—Stepwise regressions analyses controlling for demographic variables and the earlier health score tested the main and interactive effects of hostility and relationship quality on longitudinal changes in health. Whereas no main effects were supported, the interaction of hostility and relationship quality was significant ( $p < .05$ ). The form of the interaction was such that high hostile individuals had better health outcomes if they were in a high quality relationship. Conclusions. Hostile persons in high quality relationships may be at less risk for negative health outcomes because they do not regularly experience the physiologic reactivity and adverse psychosocial outcomes that they would otherwise experience as a result of recurring interpersonal conflict.

### Keywords

Hostility; Relationship quality; Health; African Americans; Couples

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Among the myriad personality traits and individual difference factors that have been investigated for their relevance to health (Contrada & Guyll, 2001), there exists comparatively strong and enduring evidence for an association between hostility and adverse physical health outcomes, particularly coronary heart disease, myocardial infarction, and all-cause mortality (for relevant reviews, see Miller, Smith, Turner, Guijarro & Hallet, 1996; Smith, 1992; Smith, Glazer, Ruiz & Gallo, 2004). A significant amount of experimental research is consistent with the hypothesis that the relationship between hostility and health materializes as a result of the negative interpersonal outcomes experienced by hostile individuals (Knox et al., 2000; Suarez & Williams, 1989; Sulls & Wan, 1993). The present study further explores this idea by investigating the health outcomes associated with hostility, and whether this association is moderated by having a long-term, high quality, primary romantic relationship. In particular, the current investigation examines whether being in a warm, supportive, and enduring relationship characterized by positive interpersonal communication behaviors can improve physical health outcomes for hostile individuals. Presumably, positive relationships would moderate the relationship between hostility and health by averting the recurrent interpersonal discord that might otherwise occur, together with the physiologic and psychosocial effects that are thought to mediate hostility's negative effects on health.

Hostility has been defined as a personality trait that entails a collection of negative beliefs and attitudes about people, human nature, and the world in general (Smith, 1992). Hostile persons are cynical, and tend to believe that others are primarily motivated by selfish concerns, even when they engage in apparently selfless acts. Accordingly they are suspicious and expect others to mistreat and manipulate them. Although hostility is associated with both anger and aggression, it is most specifically identified with a negative cognitive style that affects one's expectations for and interpretations of other people's behavior (Smith, 1992). These distinguishing features of hostile individuals highlight the potential relevance of social relationships and interpersonal experiences for understanding the connection between hostility and health.

There is reason to believe that the interrelationships among hostility, relationship quality and health may be especially important in victims of societal discrimination. African Americans are exposed to high levels of chronic stressors, that may include institutional and individual racism, as well as isolation in communities that provide few opportunities for education or employment (Troxel, Matthews, Bromberger, & Sutton-Tyrell, 2003; Williams & Collins, 2001). These stressors can affect one's world view and foster expectations of poor treatment by others (Simons, Chen, Stewart & Brody, 2003; Simons et al., 2006; Steele & Sherman, 1999). Several researchers have found that African Americans score higher on self-report measures of anger and hostility (Barefoot et al, 1991; Durel et al, 1989; Scherwitz, Perkins, Chesney & Hughes, 1991; Shapiro, Goldstein & Jamner, 1996). African Americans also experience higher rates of circulatory diseases, such as hypertension and stroke (Pleis & Lethbridge-Cejku, 2007), which may be attributable, at least in part, to the anger and physiologic reactivity experienced in response to discrimination-related stress (Armstead, Lawler, Gorden, Cross & Gibbons, 1989; Guyll, Matthews & Bromberger, 2001; Jones, Harrell, Morris-Prother, Thomas & Omowale, 1996; Fang & Myers, 2001). Thus, the ability to depend upon an important interpersonal resource like a high quality relationship may be especially important for coping and health in this population.

The idea that interpersonal factors play a key role in linking hostility to health outcomes has received significant empirical support. Situations characterized by social stress or interpersonal challenge reliably cause hostile persons to experience greater physiologic reactivity, including elevated blood pressure and heart rate, as well as neuroendocrine responses, which can facilitate the development of coronary heart disease (Treiber, Kamarck, Schneiderman, Sheffield, Kapuku & Taylor, 2003). Much of this literature consists of experimental work using a variety

of social stressors presented in the laboratory, the findings of which provide strong support for the idea that social challenge elicits greater reactivity from hostile individuals. For example, high hostile persons exhibited larger cardiovascular and neuroendocrine responses than their low hostile counterparts when working on anagrams, but only under the condition of social stress caused by an experimenter's harassing comments (Suarez, Kehn, Schanberg, Williams & Zimmerman, 1998). Similar findings occur in the context of interactions between married couples. Spouses high on hostility demonstrate greater cardiovascular and immunologic responses to discussion tasks that entail disagreement or threat than spouses low on hostility (Miller, Dopp, Myers, Stevens & Fahey, 1999; Smith & Gallo, 1999). Naturalistic studies using ambulatory cardiovascular monitoring also indicate the importance of social factors, inasmuch as hostile individuals exhibit elevated cardiovascular responses to social interaction, especially when it involves interpersonal conflict (Brondolo, Rieppi, Erickson, Bagiella, Shapiro & McKinley, 2003; Guyll & Contrada, 1998).

Complementing research on physiologic activity are studies that have documented the negative psychosocial outcomes associated with hostility. Hostile persons tend to have less positive social interactions, and on average their relationships tend to be less warm and supportive (e.g., Baron, Smith, Butner, Nealey-Moore, Hawkins & Uchino, 2006; Hardy & Smith, 1988; McCann, Russo & Benjamin, 1997). Because being in a warm, supportive, high quality relationship is linked to favorable outcomes that include being less physiologically reactive, engaging in health promoting behaviors, and enjoying better health outcomes (Cohen, Schwartz, Bromet & Parkinson, 1991; Gallo, Troxel, Kuller, Sutton-Tyrrell, Edmundowicz & Matthews, 2003; Kiecolt-Glaser & Newton, 2001; Lewis, Rook & Schwarzer, 1994; Smith et al., 2008; Trevino, Young, Groff & Jono, 1990; Wickrama, Conger & Lorenz, 1995), hostility's negative effects on health may operate by degrading the supportiveness of the hostile person's interpersonal relationships (Scherwitz & Rugulies, 1992).

Empirical support for the mechanisms reviewed above suggests that hostile individuals experience adverse interpersonal outcomes that can lead to poor health. However, experimental work suggests the importance of moderation in this association, indicating that the exact nature of the relationship is likely to be complex. Specifically, hostile individuals tend to exhibit greater reactivity in experimental conditions that involve social conflict or challenge, but not in neutral conditions (Suarez & Williams, 1989). This raises the question as to how hostile individuals might fare in their actual relationships, and whether their health depends on the quality of those relationships. Because hostile persons tend to exhibit greater reactivity to interpersonal conflict, it may be that being in a relationship in which such discord is rare would minimize hostility's damaging effects on health.

The relevance of a high quality relationship to the connection between hostility and health can be explored by examining how naturally occurring between-couple variations in actual relationship quality influence the health outcomes of hostile individuals. Despite the tendency for hostile individuals to experience worse social outcomes, some hostile individuals are nonetheless in warm and supportive relationships (Gallo & Smith, 1999). This raises the possibility that in everyday interactions with a relationship partner, the personality trait of hostility may not be a singular or sufficient cause of interpersonal stress, nor of the associated pathogenic processes, but rather that the nature and quality of one's relationship also plays a critical role. The fact that hostile persons may be prone to experience negative effects from experimental manipulations designed to create relationship discord makes it reasonable to hypothesize that the health-damaging effects of hostility could be dampened by being in a positive long term relationship that entails repeated interactions with the same person over a long period of time with the provision of much warmth and little provocation.

## Overview of the current study

The current study investigates how hostility and the quality of one's primary romantic relationship combine to predict subsequent changes in health in African American couples. Specifically, we investigated whether hostility and relationship quality interact to predict health problems. This investigation goes beyond previous work in several respects. First, whereas much of the extant experimental work tests how manipulating the tenor of an interpersonal task might differentially affect hostile individuals, this paper examines whether the naturally occurring quality of an on-going, long term romantic relationship moderates the relationship between hostility and health. Although procedures designed to create interpersonal conflict might cause hostile individuals to exhibit greater physiologic reactivity in the laboratory, it remains to be seen whether hostile individuals experience better health outcomes when they are actually in higher-quality relationships, presumably because they experience less physiologic arousal and better psychosocial outcomes. Second, the assessments of relationship quality in the current research are based on ratings of trained observers naïve to both study hypotheses and participant characteristics, thereby avoiding the possibility that hostility-related biases might influence self-report assessments of the relationship. Third, the current study employs a longitudinal design in which health assessments occur subsequent to assessments of both hostility and relationship quality. The longitudinal design enables stronger conclusions regarding the relationships among the variables by ruling out the possibility of health having a causal effect on hostility or relationship quality. Fourth, multiple assessments of health allow analyses to control for earlier health, and thereby test for changes in health over time. If earlier health were not statistically controlled, a predictive relationship between hostility and health could exist simply by virtue of a stable correlation between the two variables that existed before the timeframe of the study. And fifth, the dependent variable comprised important health outcomes, including general health, bodily pain, physical functioning, social functioning, role limitations, chronic health problems, and medication use.

## Method

### Participants

#### **The Family and Community Health Study (FACHS): Original sample acquisition**

—The current investigation analyzes previously collected data from FACHS, a longitudinal investigation of resiliency and vulnerability factors in rural African American families (Cutrona et al., 2003; Cutrona, Russell, Hessling, Brown, & Murry, 2000). The original FACHS families were recruited from identified census tracts in Iowa and Georgia in which the proportion of African American families was 10% or greater. A primary goal of FACHS is to study the development of children throughout adolescence, with particular attention being paid to the parenting they received. Accordingly, among the inclusion criteria for FACHS families were that they have a child 10 or 11 years of age at the start of FACHS, and that both the child and the child's primary caregiver participate in study assessments. Detailed information on FACHS is available in previously published reports (e.g., Brody, Ge, Conger, Gibbons, Murry, Gerrard, & Simons, 2001; Simons, Simons, Burt, Brody & Cutrona, 2005).

The initial sample drawn at the first wave of FACHS included 897 families, 8 of whom were later determined to not meet selection criteria, leaving a total of 889. For families in which a secondary caregiver was also present (e.g., a spouse, partner, relative, family friend), participation of the secondary caregiver was encouraged, but not required. A total of 463 families included a secondary caregiver who participated in study assessments. Given their smaller role in child rearing, the secondary caregiver completed a smaller battery of measures at each assessment than did the primary caregiver. In particular, FACHS procedures entailed administering the hostility and health measures only to primary caregivers, and not to secondary

caregivers. For this reason, analyses in the current investigation necessarily focus on that person in the couple who was identified as the primary caregiver.

**FACHS: Original sample characteristics**—As might be expected, the large majority of the primary caregivers were women, constituting 93.3% of the sample. At the first FACHS assessment this original sample averaged 37.1 years of age, had a mean 12.6 years of formal education, and was 71.9% employed, 14.9% unemployed, and 13.2% were either students, homemakers, disabled, or retired. Regarding secondary caregivers, 33.0% of them were women, they averaged 40.4 years of age, had a mean of 12.6 years of education, 75.4% were employed, 11.0% were unemployed, and 13.6% were students, homemakers, disabled, or retired. Of the full sample of 889 primary caregivers, 47.5% were in a marriage or marriage-like relationship with another person. Of the 463 families with both a participating primary and secondary caregiver, 59.8% were in a marriage or marriage-like relationship with each other. Participating households had a median total income of approximately \$25,000 (though 28.1% declined to provide income information), 33.9% were below the poverty line, and 42.8% received some form of governmental assistance.

## Procedures

In the course of their involvement in FACHS, individuals completed in-person interviews administered in their homes by African American interviewers who immediately entered participant's responses into laptop computers. Data for the current study were acquired from interviews conducted during Wave 1 (1997–98), Wave 3 (2001–02) and Wave 4 (2003–04). Each assessment required two interview sessions to complete and included an extensive battery of self-report measures, as well as observational assessments of couple interactions. For the couple interaction, couples were seated at a table and left alone for 20 minutes to discuss a variety of topics, presented as questions on index cards regarding their experiences as a couple. The questions were designed to be mutually engaging so as to encourage both supportive and conflictual interactive discussion, and included such prompts as “*What early memories do we have of each other?*”, “*What do we like doing together most?*”, and “*What usually happens when we disagree?*”. Further detail regarding FACHS procedures is presented elsewhere (Brody et al., 2001; Cutrona et al., 2003; Simons et al., 2005).

**Current study sample selection**—The couples selected for inclusion in the current study consisted of those pairs of primary and secondary caregivers participating in FACHS who were either married to or cohabiting with each other at Wave 1 ( $N=277$ ). We further narrowed the sample to include only those couples who provided data for the variables examined in this study. This required both participating in the Wave 1 observational assessment of couple interactions ( $N=246$ ) and completing the Wave 1, 3 and 4 survey assessments, ultimately yielding a final sample of 184 couples.

**Current sample characteristics**—As with the primary caregivers in the original sample, a large portion of the sample selected for the current study were women, constituting 90.2% of the analyzed sample. These participants were 37.7 years old and had 13.4 years of education, on average. Regarding employment status, 79.8% were employed, 7.6% were unemployed, and 12.6% were students, homemakers, disabled, or retired. As part of the selection criteria, all individuals in the sample were in a marriage or marriage-like relationship with the secondary caregiver. For these secondary caregivers who were the relationship partners to the primary caregivers, 10.3% were women, they averaged 39.5 years of age, had 13.1 years of education, and were 85.2% employed, 6.0% unemployed, and 8.8% were students, homemakers, disabled, or retired. These partnerships had lasted 11.4 years on average at the time of the first assessment. Having a spouse or partner contributed to the selected sample's greater total median household income of approximately \$42,000 (with 11.4% declining to provide income information), and

lower rates of both poverty and receiving governmental assistance, at 15.2% and 22.3%, respectively. Of the selected couples, 51.6% lived in Iowa, and 48.4% lived in Georgia.

For each variable examined in this investigation we compared those who met criteria for inclusion in the current analysis with the remainder of the original FACHS sample who did not meet inclusion criteria. Compared with those who were not included, couples in the current study had more years of formal education (13.2 vs. 12.6,  $t_{884} = 4.72, p < .01$ ), and had higher relationship quality, as indicated by their warmth, support, and communication skills as scored by observers during the interaction task previously described (5.2 vs. 4.5,  $t_{378} = 4.82, p < .01$ ). In addition, couples included in this analysis were from households that were less likely to receive government financial assistance (22.3% vs. 48.2%,  $\chi^2_1 = 40.0, p < .01$ ). There were no differences with respect to hostility or physical health problems.

## Measures

### **Demographic characteristics: Gender, education, and government assistance**

—Analyses statistically controlled for several demographic variables, including gender, education, and receipt of government assistance. Gender was scored by assigning values of 0 and 1 to women and men, respectively. Education was calculated as the number of years of formal education received by an individual (e.g., 12 = high school diploma, 16 = bachelor's degree), with these values being averaged across partners in each couple. Because so many participants declined to provide income information, economic resources were indexed by whether or not a household participated in any government assistance programs, such as food stamps, Temporary Assistance to Needy Families, Family Investment Program, or heating assistance. The government assistance variable was scored as 0 if no assistance was received, and 1 if assistance was received.

**Hostility**—Hostility was assessed using a nine-item measure of designed to assess hostile and cynical attitudes about people and interpersonal relationships (Simons et al., 2006) that was administered to the primary caregivers at Wave 1. The scale assesses the degree to which participants believe that people are primarily motivated by selfish concerns and that people are likely to mistreat and manipulate others. Sample items include *"People often just use you instead of treating you as a person"* and *"People often try to take advantage of you"*. Item response options were "False" and "True", scored as 0 and 1, respectively, so that greater values corresponded to greater hostility. Participant responses to the nine items were averaged to create a hostility score that could range from zero to one.

To our knowledge this measure has not previously been presented as an indicator of hostility, though there is good justification for doing so. First, it is consistent with the conceptual definition of hostility as a personality trait associated with a cognitive style reflected in cynical beliefs about human nature, and specifically that other people tend to be selfish, manipulative and uncaring (Smith, 1992). Therefore, hostility is most specifically measured through one's beliefs and attitudes about people, as opposed to their emotions and behaviors, which would tap the correlated but distinct constructs of anger and aggression. Accordingly, the items have face validity and are similar to those contained in other hostility measures (e.g., Buss & Perry, 1992; Cook & Medley, 1954). Further, the measure demonstrates solid psychometrics, including good internal reliability (Cronbach's  $\alpha = .85$ ), and construct validity as evidenced by significant but moderate positive correlations with pessimism and negative emotionality.

**Relationship quality**—Relationship quality was assessed on the basis of the videotaped couple interactions. Couple interactions were rated by trained African American observers who used the Iowa Family Interaction Rating Scales (IFIRS; Melby & Conger, 2001), a macrolevel behavior rating system. The system consists of 60 behavioral scales, in which each person's

behavior towards his or her partner is rated on a scale from 1 (*not at all characteristic*) to 9 (*mainly characteristic*) as indicated by both the frequency and intensity of the behaviors. To form a measure of relationship quality, we combined scores on seven observational rating scales from couples' interactions, including Warmth/Support, Endearment, Escalate Warmth, Assertiveness, Listener Responsiveness, Communication, and Prosocial behaviors toward each other. These scales were selected on the basis of those previously used to assess relationship quality by Cutrona et al. (2003), with the exception that the Physical affection and Reciprocation of warmth scales were excluded because they demonstrated poor item-total correlations. To assess interrater reliability, 25% of all videotaped tasks were randomly selected to be rated by a second independent observer. Results indicated good interrater reliability for these scales, as indicated by intraclass correlations that ranged from .60 to .80 ( $M = .69$ ). We averaged both partners' scores to form a single relationship quality score for each couple that was based equally on each partner's interaction behaviors, which were correlated with each other ( $r = .64, p < .001$ ). Additional analyses that used only one partner's behavior to assess relationship quality yielded identical patterns of significance for the statistical tests that are the focus of this investigation. The aggregate relationship quality measure based on the separate behavioral scales evidenced good internal reliability (Cronbach's  $\alpha = .92$ ).

**Health problems**—Health problems were first assessed at Wave 3, and this assessment was repeated at the Wave 4 assessment that occurred two years later. Health problems were assessed on the basis of seven scores. In particular, five scores were derived from participants' responses to items from five scales from the SF-12 Physical and Mental Health Summary Scales (Ware, Kosinski, & Keller, 1998), including the scales of general health, bodily pain, physical functioning, social functioning, and role limitations due to physical health problems. Responses to all items were coded such that greater values correspond to more health problems. For each scale, participant's responses to items pertaining to that scale were averaged. We opted to weight each item equally rather than to use the weights provided by Ware et al., given that we did not administer the full survey and we were thus concerned that the weights would not function correctly. A sixth health problem score was based on responses to a checklist of 26 chronic health conditions, which was developed for a multi-site study of health in the elderly (Coroni-Huntley et al., 1993). For each condition, the participant was asked, "Has a doctor ever told you that you have \_\_\_\_\_?". Chronic conditions included such health problems as arthritis, heart disease, stroke, cancer, diabetes, and so forth. Finally, participants reported the number of medicines they were currently prescribed. Thus, each participant had five scores pertaining to the five scales of the SF-12, one score for the number of chronic health conditions, and one score for the number of prescribed medicines. These seven scores were combined by first standardizing each score across all participants, and then averaging these seven standard scores to yield a single, overall index of health problems for each individual. The health problem index demonstrated good internal consistency at both assessments, with Cronbach's  $\alpha = .81$  and  $.83$  at Waves 3 and 4, respectively.

## Results

Table 1 presents correlations among the study variables, as well as their means, standard deviations and ranges. Reports of physical health problems at Waves 3 and 4 were rather stable across waves ( $r = .62, p < .001$ ). Hostility at Wave 1 was related to health problems at Wave 3 ( $r = .30, p < .001$ ) but was not related to health problems at Wave 4 ( $r = .10, ns$ ). Relationship quality was not significantly associated with health problems at either Wave 3 or Wave 4.

We used ordinary least-squares regression to test the hypothesis that committed, high quality relationships would moderate the impact of hostility on health problems at Wave 4, which marked the end of the time frame of this study. Using a hierarchical approach, the first step of the regression model included the predictors of Wave 3 health problems, gender, education,

and receipt of government assistance, as well as our hypothesized predictors – hostility and relationship quality. In step 2, we added the interaction between hostility and relationship quality. Table 2 presents the results for these analyses. As a group, the variables included in Step 1 significantly predicted health problems at Wave 4,  $F_{6, 177} = 19.97, p < .001, R^2 = 0.40$ . Of the variables included in Step 1, only health problems at Wave 3 was a significant unique predictor of health problems at Wave 4 ( $b = 0.69, t = 10.67, p < .001$ ), as those with more health problems at Wave 3 also had more health problems at Wave 4. Participant gender was marginally significant, suggesting that men had somewhat more health problems than women ( $b = 0.25, t = 1.76, p = .080$ ). Neither the main effect for hostility nor that for relationship quality attained significance for predicting health problems at Wave 4. However, inclusion of the product term representing the interaction of hostility and relationship quality in Step 2 explained a significant amount of additional variance in Wave 4 health problems,  $b = -.10, t = -2.47, p = .014, \Delta R^2 = .02$ .

To investigate the form of the hostility  $\times$  relationship quality interaction effect, we performed simple effects tests in which we evaluated the regression coefficients for relationship quality when hostility was high (1 *sd* above the mean) and when hostility was low (1 *sd* below the mean). These analyses revealed that when the primary caregiver's hostility was high, having a higher quality relationship was associated with having fewer health problems ( $b = -0.14, p = .029$ ). However, relationship quality demonstrated no significant relationship with health when hostility was low ( $b = .07, p = .225$ ). Thus, high hostile individuals tended to have fewer health problems if they were in a high quality relationship associated with warmth, support, and good communication, whereas among low hostile individuals results did not indicate an association between relationship quality and health. Figure 1 provides a graphical depiction of these relationships.

Further analyses explored whether gender might moderate the relationships between the key predictor variables and health problems. Results of these additional tests revealed no significant interactions of gender with either hostility, relationship quality, or their product term to predict health problems.

## Discussion

Results indicated that hostility interacted with relationship quality to predict subsequent changes in health. Specifically, high hostile individuals were found to have fewer health problems if they were in committed, warm and supportive relationships than if they were in relationships of lower quality. In the main, this pattern of results is consistent with the empirical and theoretical work focusing on the relationship between hostility and health, inasmuch as it highlights the importance of interpersonal factors and interaction behaviors in linking these variables. Hostility, as reflected in cynicism regarding interpersonal relationships, interacted significantly with observer ratings of relationship quality to predict subsequent longitudinal changes in health. Specifically, high hostile individuals enjoyed better health outcomes if they were in long-term, warm, and supportive relationships characterized by good communication, than if they were in relationships of lower quality.

The primary finding of this study further resonates with perspectives of personality that emphasize the importance of not only individual differences, but of how the expression and implications of individual differences are also dependent upon the features of situations and the social environment (e.g., Mischel & Shoda, 1995; Smith et al, 2004). Thus, it is informative to note that the relationships of a number of hostile individuals in this study were of high quality, being characterized by mutual warmth and support. This indicates that trait hostility need not manifest itself in the context of one's primary relationship, and that couples can find a way to be warm and supportive even when one partner scores relatively high on hostility.



Given the present findings, the question arises as to how relationship quality and hostility might combine to influence health. The positive interaction and communication behaviors that characterize high quality relationships might prevent hostile persons from physiologically over-reacting during interpersonal conflict, thereby averting the health damaging processes associated with exaggerated reactivity. It is plausible that such a mechanism underlies the relationships observed in the current data, particularly because these health effects emerged across a number of years during a stage of life when chronic health problems begin to occur. In addition to the pathway through physiologic reactivity, it is also possible that lifestyle or psychosocial factors could have played a role. A number of studies have documented the positive, health-related outcomes associated with higher quality relationships, including lower depression (e.g., O’Leary, Christian, Mendell, 1994), adherence to pharmacological treatment (Trevino, Young, Groff & Jono, 1990), as well as health habits such as diet, substance use, and amount of sleep (Wickrama, Conger, & Lorenz, 1995). Such positive effects could have counteracted the tendency for hostile persons to engage in unhealthy behaviors, and led them to enjoy better health than hostile individuals in worse relationships.

Reviews of the link between hostility and health include the possibility that the two variables are not causally related, but that pre-existing factors such as genetic predispositions or constitutional vulnerabilities might produce both hostility and poor health (Smith et al, 2004). Although the current research neither addresses nor contradicts this particular hypothesis, it is worthwhile to note that such influences are probably not tenable explanations for the present pattern of results. Though correlational research can never categorically rule out the potential influence of unmeasured and causally-prior third variables, it becomes difficult to imagine how a single variable could produce both hostility and impact health outcomes, but with its ability to produce that relationship depending on the quality of ones primary relationship. Thus, the present results argue for considering mechanisms associated with relationship quality.

Confidence in the interpretation of the results is further encouraged by several methodological strengths of the current work. As noted above, the data were longitudinally structured and thereby preclude the possibility that the health outcomes influenced either hostility or relationship quality. Further, health outcomes were not only assessed after the predictor variables, but were themselves assessed at two points in time, enabling analyses to examine changes in health across time. Finally, relationship quality was based on trained observers who were blind not only to study hypotheses, but also to all other information about participants. Because the relationship quality measure was not based on self-report, there is no possibility it could have been influenced by hostility-related biases that affect interpersonal perceptions (Allred & Smith, 1991; Guyll & Madon, 2004).

## Implications

The fact that hostility’s relationship to health depended upon relationship quality has several implications. First, it is consistent with the idea that relationships can be restorative, in that positive relationships were associated with better health among hostile individuals. Although hostility may entail a generally negative “hostile world view” (Conrada, Leventhal, & O’Leary ), hostile individuals may nonetheless benefit from a personal “sanctuary” provided by an intimate relationship with a warm and supportive partner. In addition to providing a valuable resource for coping with the stresses of life, such relationships are characterized by pleasant interactions, and therefore would be less likely to elicit the negative physiologic and psychosocial effects experienced by hostile persons in situations of interpersonal conflict.

An important implication of the current study is that when African American couples can establish a warm and supportive relationship, some of the interpersonal dynamics that erode health among those with high levels of hostility spawned by societal racism can be diminished.

Most studies of African American couples have been comparative, and have highlighted higher rates of relationship dissolution among married and cohabiting couples, and lower rates of relationship satisfaction among African American couples compared to European American and/or Hispanic couples (Bramlett & Mosher, 2001; Broman, 2005; Manning, 2004). Notably lacking have been studies examining predictors of positive outcomes *within* samples of African American couples. Marital interventions that acknowledge the many sources of anger, hostility, and cynicism that confront African Americans in their daily lives and that highlight the benefits of a partner who understands these frustrations and provides a safe haven may be especially beneficial for African American couples. This idea suggests the potential utility of investigating whether hostility that stems from experience with racism, discrimination, and prejudice predicts negative outcomes, but with any such association being weaker among those in partnerships characterized by high relationship quality.

These results are also relevant to couples' decisions about persisting in therapy, or otherwise seeking to improve a relationship. Specifically, a partner's motivation for working on a relationship may be increased by the knowledge that the love and support he or she can provide to a hostile mate are important, and may later yield benefits – both for one's partner and for the relationship as a whole. Over time, the ability to muster and maintain initially unilateral efforts may encourage positive changes in one's partner, thereby improving the overall quality of the relationship. Because couples in the current study were typically well established by the first assessment, these data are not well suited for examining longitudinal changes that occur early in new relationships. However, consistent with findings demonstrating that high quality relationships predict positive changes in both individuals' attachment styles (e.g., Baldwin & Fehr, 1995), and personality-related emotionality (Robins, Caspi, & Moffitt, 2002), it seems reasonable that African American couples who enjoy a warm and supportive relationship might tend to decrease one another's level of hostility over time.

### Limitations

In considering these findings it is important to remain cognizant of several limitations of this study. First, information on hostility and health problems was available only from the member of each couple who self-identified as the "primary caregiver" for the target youth, most of whom were women. As a result, the generalizability of our conclusions may be limited primarily to African American women. On a related point, it should be noted that an additional analysis restricted to women did yield similar effect sizes and the same pattern of significance, thereby bolstering confidence in the results for this group. It should further be noted that gender did not moderate any of the associations between the predictor variables and health, though future work should test whether these results also obtain in male samples, as well as in other populations. Not having the data available for both individuals in each couple precluded assessing reciprocal and dyadic-level effects, which could have otherwise been examined by application of specially developed analytic methods (Kenny, Kashy & Cook, 2006). Second, because the measurements of hostility and relationship quality were administered at Wave 1 and the health measures were not administered until Waves 3 and 4 (approximately five and seven years later, respectively) our findings may represent an underestimate of direct effects of both hostility and relationship quality on health. Measures taken in closer temporal proximity might have shown higher correlations. Third, only a particular facet of hostility was assessed, this being cynicism regarding relationships, and to our knowledge this measure has not previously been used to predict health outcomes. It is unclear how utilization of a hostility inventory more frequently used in health research might have affected findings. However, cynicism is a central component of personality hostility and, as noted in the Method, the measure did demonstrate solid psychometric properties. It also bears mentioning that this theoretically-consistent measure of hostility interacted as predicted with relationship quality to predict changes in health, indicating that it merits additional study.

## Conclusions

African Americans are subjected to frequent reminders of the racism that pervades our society. Hostility may be one result of such experiences. Marriage or a marriage-like relationship can provide a haven from experiences of racism and discrimination (Murry, Brown, Brody, Cutrona & Simons, 2001). When African American couples can construct a relationship context that provides mutual warmth and support and good communication, individuals who are predisposed to high levels of hostility appear to be somewhat protected from the health-corrosive consequences of hostility. Clinical interventions with African American couples might be advised to acknowledge the challenges of life in a racist environment and the hostile and cynical attitudes about others that are encouraged by such an environment. Therapeutic approaches that facilitate trust and a norm of caring and supportiveness, while simultaneously acknowledging the challenges to trusting others, may be especially effective in work with African American couples.

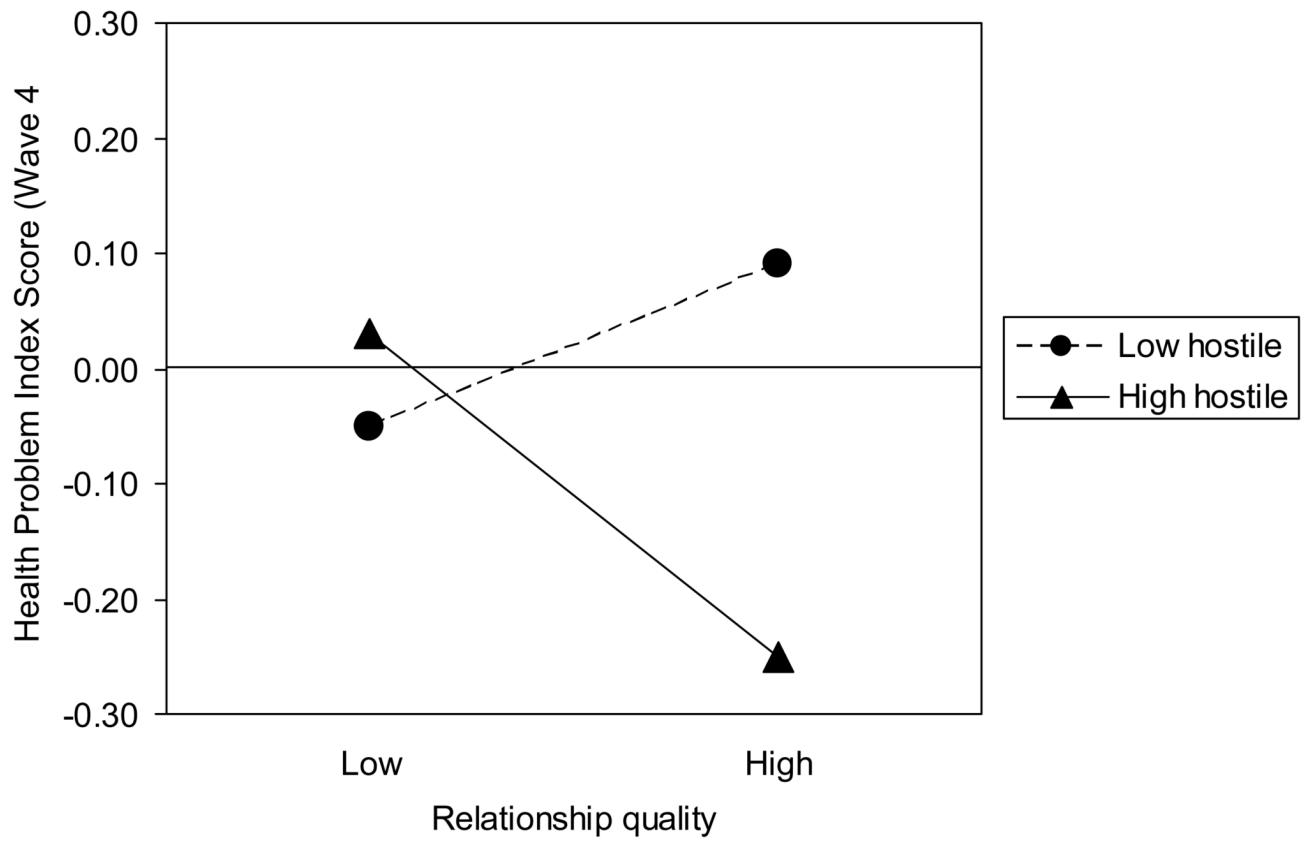
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**Figure 1.** Interaction of trait hostility with relationship quality to predict health problems at Wave 4.

**Table 1**

Intercorrelations among and descriptive statistics for study variables (N = 184)

	1	2	3	4	5	6	7
1. Gender <sup>a</sup>							
2. Education <sup>b</sup> (Wave 1)	.16*						
3. Government assistance <sup>c</sup> (Wave 1)	.09	-.29**					
4. Hostility (Wave 1)	-.07	-.33**	.23**				
5. Relationship quality (Wave 1)	.05	.27**	-.17**	-.06			
6. Health problems (Wave 3)	.04	-.21*	.16*	.30**	-.04		
7. Health problems (Wave 4)	-.06	-.07	.10	.10	-.04	.62**	
Mean	.10	13.19	.22	.36	5.19	.03	-.04
s.d.	.30	2.04	.42	.32	1.31	.67	.70
Range	0-1	7.0-19.0	0-1	0-1	2.0-8.1	-0.9-2.3	-0.8-3.3

<sup>a</sup>0 = women; 1 = men.

<sup>b</sup>Years of formal education, averaged across partners.

<sup>c</sup>0 = no governmental assistance; 1 = received governmental assistance.

<sup>†</sup> $p < .10$ ;

\*  $p < .05$ ;

\*\*  $p < .01$ .



**Table 2**

Regression analyses predicting health problems at Wave 4 (N=184)

	Model 1			Model 2		
	B	SE B	$\beta$	B	SE B	$\beta$
Health problems (Wave 3)	.69**	.06	.66	.69**	.06	.66
Gender	-.25†	.14	-.11	-.28*	.14	-.12
Education	.03	.02	.07	.03	.02	.08
Government assistance	.06	.11	.04	.04	.10	.02
Hostility	-.06	.05	-.09	-.06	.04	-.09
Relationship quality	-.02	.04	-.03	-.04	.04	-.05
Hostility X Relationship quality				-.10*	.04	-.14
Model fit						
Adjusted $R^2$			.38			.40
F			19.97**			6.12*

Note:

†  $p < .10$ ;

\*  $p < .05$ ;

\*\*  $p < .01$ .