To the Graduate Council:

I am submitting herewith a dissertation written by Dorothy Williams entitled "Hardiness, John Henryism and the Stress-Illness Link among Low Socioeconomic Status Women." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Psychology.

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HARDINESS, JOHN HENRYISM AND THE STRESS-ILLNESS LINK AMONG LOW SOCIOECONOMIC STATUS WOMEN

A Dissertation
Presented for the
Doctor of Philosophy
Degree
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Dorothy Williams
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DEDICATION

This dissertation is dedicated to my professor

Dr. Kathleen Lawler

who provided direction rather than control, facilitation rather than barriers, and bridges rather than chasms

and

to my daughter

Chanda Yvette Williams

who provided encouragement and support

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Abstract

The influence of Hardiness on the stress-illness relationship among a biracial sample of low socioeconomic status women was investigated, and the importance of John Henryism, community stress, and network stress to illness also were studied. Total family income, at or below the poverty line (as established by the United States Department of Health and Human Services) determined inclusion of women in the study. Participants were asked to complete the Social Readjustment Rating Scale for events that occurred in the preceding 12 months in order to assess stress. Hardiness was measured with the Dispositional Resilience Scale, and the John Henryism Active Coping Scale was the measure of John Henryism. Community stress was assessed with three subscales, including the fear scale, the social problem scale, and the violent crime scale. As a measure of network stress, participants were asked to identify events on the Social Readjustment Rating Scale that had happened during the immediately preceding 12 month period to someone important to them. The dependent variable was illness that had occurred within the 12 month period immediately preceding the dates of the study. Illness was measured with the Seriousness of Illness Rating Scale. The results indicated that highly stressed women with low hardiness scores had higher levels of illness than women with high scores on hardiness, a finding consistent with the assumption that hardiness buffers the effects of stress on illness. In addition, differential correlation analysis showed that the difference between the correlation coefficients for low and high hardy, highly stressed women was significant at the .05 level. These results were supported by the regression analysis, which showed a hardiness*stress interaction that

was significant at alpha .05. Within race examination of hardiness moderation effects revealed that highly stressed Caucasian American women with scores above the median hardiness score had lower levels of illness than Caucasian women with low scores on hardiness; However, this was not the case for African American high hardy women. John Henryism was not found to influence illness in the total sample; however, the regression analysis showed a John Henryism*stress interaction that was significant at the .05 level of significance. Racial differences relative to the experience of violence in one's neighborhood were significant; on average, African American low-income women encountered more episodes of violence in the communities were they lived. The results provided evidence that hardiness buffers stress and that this moderation effect extends to low-income women.

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1. Introduction

Statement of the Problem

Women and lower socioeconomic status individuals experience higher rates of psychological distress and physical illness (Kessler & McRae, 1981; Pappas, Queen, Hadden, & Fisher, 1993), are more vulnerable to stress (Kessler & Cleary, 1980), and have greater exposure to stressful life events (Dohrenwend, 1973) than men or middle/upper socioeconomic status persons. These results come from epidemiological studies which document a pervasive inverse relationship between socioeconomic status (as measured by income, occupation, and education level) and various indices of illness, including mortality rates (Pappas, Queen, Hadden, & Fisher, 1993), rates of chronic diseases (Marmot, Rose, & Shipley, 1984), sickness absences (Marmot, 1994), and life expectancy (Wilkinson, 1992). As early as four decades ago, it was recognized that the lowest socioeconomic groups had the highest mortality rates (Antonovsky, 1967). More recent studies show that, over time, SES differences in mortality have persisted and increased in magnitude (Marmot, 1994; Pappas et al., 1993). In the Pappas et al. (1993) study of mortality differentials in the United States, it was shown that differences in mortality rates between lower and middle/upper socioeconomic status groups were greater for 1986 than for 1960. Lower socioeconomic status also has been associated with higher rates of coronary heart disease, angina, and gastrointestinal disease.

What is it about socioeconomic status that places individuals at risk of disease and death? One view suggests that the social conditions of lower socioeconomic status, combined with inadequate coping behaviors, operate to produce chronically stressful experiences which are associated with the sustained negative emotions and enhanced autonomic activation implicated in heightened susceptibility to stress induced illness (Siegrist, 1995). Stressful events affect those in less privileged positions more severely.

The less privileged classes more frequently are exposed to stressful events that characteristically are uncontrollable, undesirable, and unpredictable, and these stressor characteristics are more strongly correlated with stress induced physical illnesses (Weiss, 1972). Differential exposure to stress also has been offered as an explanation of the increased susceptibility to illness found among lower socioeconomic status groups (Dohrenwend, 1973). However, the research related to the importance of differential exposure for the stress-illness relationship has been mixed. While most studies have supported the notion that lower socioeconomic status persons are disproportionately exposed to stressful life events (e.g. Dohrenwend, 1973; Kessler & Cleary, 1980), there is disagreement over the extent to which such social class differences in exposure may account for higher rates of illness and psychological distress. Whereas differential exposure explains some of the social class differences in illness, differential stress vulnerability may be a more important determinant of the stress-illness relationship among low SES women (Dohrenwend, Levah, Shrout, Schwartz, Naveh, Link, Skodol, & Stueve, 1992; Kessler, 1979). Research has shown that individuals comprising the lower socioeconomic strata of society are more likely than people of higher social classes to become ill at any given level of exposure to stressful events, and that at higher levels of stress, the social class differences in illness are greater. (Kessler & Cleary, 1980).

The SES-illness literature suggests that lower socioeconomic status is associated with both differential exposure (Dohrenwend, 1973) and differential vulnerability (Kessler & Cleary, 1980) to stressful events. In addition, lower socioeconomic status individuals have higher stress scores than middle and upper socioeconomic status persons (Langner & Michael, 1963). There is an extensive literature relating stressful life events to illness (Lal, Ahuja, & Madhukar, 1982; Sklar & Anisman, 1981). Therefore, specifying what factors may be protective against the deleterious effects of stress on illness for economically disadvantaged groups such as women and African Americans is

important.

Rationale

Researchers interested in hardiness are beginning to question if its moderation effects extend to other groups. Recent claims that hardiness buffers in certain circumstances and among certain groups (Funk, 1992) find support in studies which have shown that hardiness buffering effects may not extend to students (Roth et al., 1989), to working class women (Schmied & Lawler, 1986), nor to nurses (McCranie, Lambert, & Lambert, 1987). Ouellette (1993), in her review of the hardiness literature, suggested that examining hardiness effects among disadvantaged and racially diverse groups could provide answers to questions about hardiness moderation effects in the presence of poverty and discrimination. Ouellette also indicated that studying economically disadvantaged groups would increase our understanding of observed race differences in physiological responses to stress and in health status.

In regard to John Henryism, research has shown that gender (Duiijker et al., 1988) and racial (James, Strogatz, Wing, & Ramsey, 1987) factors exert differential effects on blood pressure. In addition, the effects of John Henryism on other aspects of health, such as illness and self-report of illness, have yet to be explored. Research relative to both hardiness and John Henryism, to this time, has overlooked the question of differential effects. Also, it has been suggested that traditional measures of stressful life events obscure stressors that are especially relevant for females by aggregating stressful events into a single measure of stress (Kessler & McLeod, 1984).

Based on the above considerations, the present study examined the importance of person variables in promoting health among low socioeconomic status females. Specifically, the study examined hardiness- buffering effects among lower socioeconomic status women. The present study also examined the effect of John Henryism on illness

among lower socioeconomic status females. The possibility of race differences in the effects of John Henryism, stress, and hardiness, and in stress x hardiness interaction effects was an additional area of interest in the current study.

In addition to its primary purposes, the present study attempted to provide information about stressful events that were particularly relevant for women. Toward this end, the current study conducted exploratory work related to the experience of network stress and community stress among lower socioeconomic status women. High and low hardiness groups were compared relative to exposure to network stress and to community stressors, and the importance of these stressors to the stress-illness relationship were examined.

2. Review of the Literature

The Stress-Illness Relationship

Not uncommonly, stress is seen as a prime determinant of the SES-illness link (Siegrist, 1995; Williams, 1990). Initial evidence of the connection between stress and illness came from causal research documenting that physiological changes, relevant to a number of different illnesses, can be induced by physical stressors of varying characteristics, including uncontrollability, unpredictability, chronicity, and severity (Anisman, Pizzino, & Sklar, 1980; Baizman, Cox, Osman, & Goldstein, 1979; Kvetnansky, Kopin, & Saavedra, 1978). For example, stress-induced changes in norepinephrine have been linked to NE-induced myopathy (Anisman, Pizzino, and Sklar, 1980). Other physiological alterations in response to stress have been linked to diseases such as cancer (Sklar & Anisman, 1981).

Other research provides evidence of a link between stress and coronary heart disease and hypertension (Lal, Ahuja, & Madhukar, 1982). A direct relation between stress and

diseases such as gastric ulcers (Weiss, 1971) also has been established. Changes in systolic blood pressure and in heart rate during stress provoking events have been reported by Lawler and Schmied (1987). Life event stress research has provided evidence for a reliable association between stressful life events and psychological disorders (Justice & McBee, 1977).

Women are known to experience higher levels of psychological distress (Kessler & McRae, 1981) and illness (Rodin & Ickovics, 1990) than men. It has been suggested that this increased risk of psychological distress and physical illness is related to women's heightened vulnerability to stress. Past research has shown that the women's vulnerability to stress, rather than being pervasive, is restricted to certain types of undesirable events. These events include death of a spouse and other events that happen to people in the social networks of women (Kessler & McLeod, 1984). Kessler and McLeod concluded that men and women differed in their vulnerability to undesirable events. Undesirable events (Vinokur & Selzer, 1975), uncontrollable life events (Stern, McCants, & Pettine, 1982), and the death of significant others (Myers, Lindenthal, Pepper, & Ostrander, 1972) are more strongly associated with distress and illness than are total life change units.

The literature indicated that the stress-illness relationship can be modified by a variety of protective factors, including behavioral coping, personality factors, and social resources; this study will emphasize the role of personality as a moderator factor within the context of socioeconomic status. Evidence of the positive effects of personality on the physiologic stress response comes from a study by Garrity and Marx (1985), where personality characteristics influenced the level of psychophysiological strain experienced. The researchers concluded that personality factors significantly add to the power of life event stress to predict psychophysiological strain. Although there are many personality features that are important for the stress-illness relation, this present study focused on two

factors, hardiness and John Henryism.

Hardiness and the Stress-Illness Relationship

Hardiness has been defined as a configuration of personality characteristics operating together to strengthen resistance to the harmful effects of stress (Kobasa, Maddi & Kahn, 1982). It is a multifaceted personality construct comprised of control, commitment, and challenge. Control is a personality characteristic that involves a belief in personal influence over the events in one's life. Kobasa distinguished two types of control: (a) decisional control, or the capability of autonomously choosing among various courses of action to handle stress; and (b) cognitive control, the ability to interpret, appraise, and incorporate diverse stressors into an ongoing plan. The theory proposes that cognitive control reduces the sense of having one's effort to reach a goal blocked. Commitment, a second dimension of hardiness, is the tendency to invest oneself in the activities and events experienced in life, thereby mitigating encounters with stressful life events. Challenge, a third hardiness characteristic, is an appreciation of the positive aspects of change, which is viewed as stimulating and as an opportunity for growth. The attribute of challenge facilitates the appropriate appraisal of the threat associated with events.

Hardiness and health. The effects of hardiness in maintaining physical health have been the focus of numerous studies. Early retrospective and prospective studies provided evidence of the positive effects of hardiness in maintaining the health of individuals faced with highly stressful circumstances. These studies showed that, compared to persons low on hardiness, individuals with high scores on hardiness reported less illness (Kobasa, 1982; Kobasa, Maddi, & Kahn, 1982; Kobasa & Puccetti, 1983). In addition, these prospective and retrospective studies provided evidence that hardiness predicts both current and future health (Hull, Van Treuren, & Virnelli, 1987).

Self reported illness is but one aspect of health. Sympathetic arousal, another health

aspect, has been identified as one of the pathways through which stress is linked to illness. Animal studies showed increased sympathetic arousal, which may eventuate in the exhaustion phase of Selye's (1956) General Adaptation Syndrome, during exposure to chronic, uncontrollable, unpredictable, and severe stressors (Anisman, Pizzino, & Sklar, 1980; Baizman, Cox, Osman, & Goldstein, 1979; Kvetnansky, Kopin, & Saavedra, 1978; Weiss, 1971). This sympathetic reactivity purportedly is decreased by personality hardiness (Kobasa, Maddi, Puccetti, and Zola, 1985). Hardiness effects relative to physiological reactivity were examined in several studies. Consistent with theoretical expectations of hardiness influences on physiological measures, one study showed that persons with high scores on hardiness, compared to those with low hardiness scores, had lower systolic blood pressure when faced with stress (Allred & Smith, 1989). In this same study, hardiness was associated with lower arousal, measured by finger pressure volume, during the anticipation phase of a test, but, once the task began, high hardy and low hardy participants were equally aroused. In another study (Wiebe, 1991), men with high scores on hardiness exhibited lower heart rates during an evaluative threat task. Another investigation (Lawler & Schmied, 1987) of the physiological correlates of hardiness found that females who were low on powerlessness, the only hardiness scale related to illness in this study, exhibited less physiological reactivity to stressful events than did females high in powerlessness.

Kobasa (1979), in her original formulation, proposed that hardiness buffered the effects of stress on illness; but, empirical evidence of the stress-buffering properties of hardiness has been found in only a few studies. Hardiness was found to moderate the stress-illness relationship among lawyers (Kobasa, 1982), managers (Kobasa, Maddi, & Kahn, 1982), and female undergraduate students. However buffering effects for hardiness were not found for female clerical workers (Schmied & Lawler, 1986), male and female students (Roth, Wiebe, Fillingim, & Shay, 1989), and nurses (McCranie,

Lambert, & Lambert, 1987). In a literature review, Funk (1992) reported that some critics argued against hardiness as a moderator of the stress-illness relation, while others argued that hardiness buffering effects may not extend to certain groups. This suggests the need to examine hardiness effects on the stress-illness relationship among different groups.

Hardiness, socioeconomic status, and race. Hardiness may not have either direct or indirect effects on illness among low socioeconomic status women. Evidence for this comes from Schmied & Lawler's (1986) study which showed that hardiness did not mitigate the relation between stress and illness, nor did it have a direct effect on illness among a group of female clerical workers. In contrast, hardiness was found to reduce the effect of stress on depression among female college students (Rhodewalt & Zone, 1989). Hardiness was not found to buffer stress in the presence of predisposing factors (Kobasa, Maddi, and Courington, 1981). In the Kobasa, Maddi, and Courington study of hardiness effects in the presence of constitutional predisposition, persons high on hardiness, who were predisposed to an illness, were not less likely than constitutionally predisposed, low hardy persons to experience illness. These findings suggest that hardiness may not moderate the stress-illness relation in the presence of factors, such as socioeconomic status, that increase the likelihood that illness will occur.

The importance of hardiness for the stress-illness relationship in working women and low socioeconomic status women has yet to be answered. The current study examined additional personality factors, which could be relevant for the health status of lower socioeconomic women through studying the concept of John Henryism. John Henryism has been found in two studies to have differential effects for males and females (Dressler, Bindon, & Neggers, 1997; Duiijkers, Drijver, Kromholt, & James, 1988).

John Henryism

John Henryism refers to a coping style characterized by an active and striving manner of confronting stressful life events. Individuals manifesting John Henryism believe that through hard work and determination to succeed, they can overcome adverse circumstances. The term symbolizes the legend of a black, uneducated steel driver who defeated a mechanical steam drill and then died from overexertion. For this reason, initial investigations of John Henryism were limited to African American males (James, Hartnett, & Kalsbeek, 1984). Recent studies, however, have been extended to women and to other racial and national groups, including Caucasian Americans (James, Strogatz, Wing, & Ramsey, 1987)) and members of a Dutch population (Duiijkers et al., 1988).

John Henryism, socioeconomic status, and health. Although, it is generally believed that the active coping style of lower socioeconomic status persons, high in John Henryism, results in high blood pressure for African American males (James, Keenan, Strogatz, Browning, & Garrett, 1992), such has not been the case for women. Dressler, Bindon, & Neggers (1997) found that while men, with high scores on John Henryism, showed patterns of increasing systolic blood pressure and heightened risk of hypertension, their female counterparts showed both declining blood pressure and decreased risk of hypertension. This pattern of differential effects for John Henryism extends to socioeconomic status. Duiijkers et al. (1988) found that while high scores on John Henryism were associated with high blood pressure among lower socioeconomic status men, this association did not hold among lower socioeconomic status women.

While some studies have shown interaction effects between John Henryism and socioeconomic status on blood pressure among whites, other studies have shown that the pattern of differential John Henryism effects found for women also extends to race (James, Strogatz, Wing, & Ramsey, 1987). James et al. (1987) examined the joint effects of socioeconomic status and John Henryism on risk for hypertension among blacks and

whites. While Blacks, with high scores on John Henryism, showed significant differences in both systolic and diastolic blood pressure levels between lower and higher socioeconomic groups, economically advantaged and disadvantaged whites, with high scores on John Henryism, did not differ in their blood pressure levels.

There is some agreement that the findings relative to differential John Henryism effects suggest the need for further specification and elaboration of the model (Dressler et al., 1997). Presently, two studies have indicated that John Henryism may not have negative health consequences for women. These studies differed from each other in that only one (Duiijkers et al., 1988) examined the influence of John Henryism among low socioeconomic status women. In addition, the studies of the interaction of John Henryism and socioeconomic status have been limited to only one aspect of health, hypertension. At the present time, no single study has directly assessed the effects of John Henryism relative to other aspects of health. One objective of this study was to examine the importance of John Henryism for self-reported illness. In addition, this study provided another test of John Henryism effects among low income women.

The need for further specification of both the John Henryism and the Hardiness models is especially important with regards to race. While investigation of John Henryism has been conducted almost exclusively with African Americans, investigations of the effects of hardiness on illness and stress have been limited to Caucasian Americans. Differential John Henryism effects found for Blacks and for Whites have been attributed to differences in socioeconomic circumstances (James, Strogatz, Wing, & Ramsey, 1987). For example, James et al. speculated that the lack of association of John Henryism with blood pressure among whites in their study may be explained by the inadequate representation of lower socioeconomic whites and the over representation of lower socioeconomic Blacks. Among white subjects, in this study, the lower and upper ends of the income spectrum were not well represented; most of the subjects were middle

class individuals. In contrast, African American subjects were primarily uneducated individuals, employed in low-paying, unskilled jobs. Kessler and Neighbors (1986) have argued for the usefulness of empirically investigating the influence of the John Henryism coping style on race differences in distress among lower socioeconomic people. In regard to hardiness research, although there is some indication that the beneficial effects may be limited to middle and upper socioeconomic status, white males, investigations of its effects among different socioeconomic status and racial groups have not been forthcoming. These facts suggested the need to: 1) examine the influence of John Henryism on illness among low socioeconomic status women and to determine if this effect differs for African and Caucasian American females; and 2) examine hardiness effects among groups that are different in socioeconomic status and race from Kobasa's original group of subjects.

Race and Health

While most racial comparisons of health are confounded with SES, this present study provided a unique opportunity to examine effects of race in women; all of whom were low SES. For more than five decades, African Americans have been shown to have higher rates of psychological distress than whites (Kessler & Neighbors, 1986). It is generally agreed that this disproportionate distribution of distress among African Americans is associated with differences in the socioeconomic status of Caucasian and African American. Evidence for this can be seen in studies, which showed that when socioeconomic status was held constant, differences between Caucasian and African Americans in the distribution of psychological distress disappeared (Mirowsky & Ross, 1980; Warheit, Holzer, & Arey, 1975). It has been suggested that these results indicate interactive effects of race and socioeconomic status on illness. Kessler and Neighbors (1986) found that racial differences in distress were greater among people who had low

incomes and limited education than among those with higher incomes and better education. They concluded that race differences in distress were more pronounced among economically disadvantaged groups. Ulbrich, Warheit, and Zimmerman (1989) examined the interactive effects of race and socioeconomic status on psychological distress by testing for the unique contributions of differential vulnerability and differential exposure to stressful life events. While, among lower socioeconomic status African Americans, vulnerability to both undesirable events and economic problems was associated with distress, for whites, only economic problems were associated with emotional distress. Ulbrich et al (1989) concluded that this difference in vulnerability could not explain race differences in distress among lower socioeconomic groups. They suggested the need to investigate how race differences in health status among lower socioeconomic status groups are influenced by coping resources. An examination of hardiness and John Henryism among lower socioeconomic status, African American women is consistent with this suggestion.

Network Stress, Community Stress, and Low Socioeconomic Status Women

While an examination of hardiness and John Henryism will expand our understanding of the significance of certain personality factors to the stress-illness relation among lower socioeconomic status women, it does very little to increase our understanding of how this relationship is influenced by stressors of particular relevance to lower socioeconomic status women. For example, females living in poverty are exposed to community stressors, such as fear, social problems, and violence (Cohen, Struening, Muhlin, Genevie, Kaplan, & Peck, 1982); however, traditional stressful life events check lists do not include such items.

Women are uniquely vulnerable to the stress associated with events that happen to people in their social networks (Kessler and Mcleod, 1984; Thomas, 1997). Kessler and

Mcleod, asserted that life event research traditionally has over looked network stress through measuring stress by aggregating different stressful events into a single measure of exposure. Similarly, Thomas (1997) maintained that checklists of stressful life-events prevent discovery of stressors, which may be unique to women. Network stress has been defined as stress associated with events that happen to people in one's social network. Belle (1982) stated that poor people have greater exposure to stressful events experienced by persons in their networks. The research showed that women often reported crises that happened to family members, neighbors, and friends, as stress-provoking (Dohrenwend, 1977). The contribution of network stress to greater vulnerability and to diffferential exposure to stressful events among women was examined by Kessler and McLeod (1984). Network events accounted for the greater exposure of females to stressful events. The results of this study indicated that greater female vulnerability also was associated with the death of a loved one and other such network events. Kessler and McLeod (1984) concluded that their analysis provided clear evidence that the greater vulnerability of women to undesirable events was largely explainable by a higher vulnerability to network events.

While network stress is important for all women, chronic community stress is especially significant for lower socioeconomic status women. Community stress refers to conditions in the neighborhood which elevate demoralization either because of their aversive manifestation or because of their ability to limit one's positive experiences (Cohen et al. 1982). Three scales have been used to measure community stress: 1) fear, defined as the estimate of the degree of danger experienced by those living in or traveling through the neighborhood; 2) Social problems, defined as the rating of the extent to which drug addiction, burglary, and unemployment were present in the community; and 3) Violent crime, defined as the extent to which participants had witnessed or personally heard of crimes occurring in the neighborhood. These measures of community stress

have been found to be significantly correlated with feeling badly (Cohn et al., 1982).

Hardiness research has provided some basis for understanding individual differences in illness susceptibility when confronted with highly stressful situations. More importantly, perhaps, hardiness shifted the focus of life-event research away from its overemphasis on establishing a temporal link between illness onset and the occurrence of stressful life-events to an interest in understanding why some people, undergoing highly stressful situations, remained healthy and others did not (Ouelette, 1993). While hardiness studies have expanded our understanding of differential vulnerability to stress, many of the early studies were limited in the extent to which the results from the studies were generalizable to populations other than the white male, middle class executives originally examined. There clearly is a need to know whether hardiness moderation effects extend to economically disadvantaged groups, known to be at higher risks of illness and mortality. Accordingly, the questions of interest in the present study were as follows:

1. Does hardiness moderate the stress-illness relation in low socioeconomic status women, and is this moderation effect equivalent for African and Caucasian American women?
2. Does level of John Henryism influence illness in low socioeconomic status women, and is the relationship equivalent for African and Caucasian American women? Also, is John Henryism correlated with stress? In addition, the hardiness approach to assessing the importance of personality factors for the stress-illness relationship was replicated in assessing John Henryism as a moderator.
3. Among low socioeconomic women, is hardiness associated with differences in the experience of network stress, and are these potential differences

associated with differences in illness reports?

4. Among low socioeconomic women, is hardiness associated with variations in levels of community stress, and are these potential differences associated with differences in illness reports?
5. Among low socioeconomic women, is hardiness associated with differences in self-reports of other relevant stressors, and are these potential differences associated with differences in illness reports?
6. How do African and Caucasian American, low socioeconomic status women compare in exposure to network, community, and other relevant stressors?
7. What demographic variables are correlated with hardiness, John Henryism, and with race?

3. Method

Participants and Setting

One hundred women (50 Caucasian and 50 African Americans) with family incomes at or below the poverty line, as established by the Department of Health and Human Services of the United States Government and published in the 1998 Federal Register, participated in the study. These individuals were compensated for their involvement in the study. The data was collected in the offices of four public housing projects and at two large supermarkets located in economically distressed areas in the Southeastern United States.

Design and Procedure

This field study of low income-women (N=100) included measures of hardiness, John Henryism, life-event stress, severity of illness, network stress, and community stress. The data was collected over a two-week period between the hours of 10:00 a. m. to 4:00 p.m. Participants were instructed that completion of the questionnaires constituted informed consent. The investigator and graduate student assistants distributed the questionnaires to participants and informed them to read the instructions printed on each inventory before beginning to complete it.

Socioeconomic status, operationally defined as income level, was used as the primary admission criteria for the study. A total family income at or below the poverty line, as established by the Department of Health and Human Services of the United States Government, determined inclusion of participants in the study. The established yearly family income poverty levels range from $7,890, for a family of one, to $27,650, for a family of 8.

Following completion of the questionnaire, each participant was given a lottery

ticket for a 1 in 100 chance of winning a television set valued at $250. Respondents, as they prepared to leave, were asked if they had any questions concerning the study and if anything about the questionnaires concerned them?

Measures

Hardiness. This factor was measured with a modified version (the Dispositional Resilience scale, Bartone, Ursano, Wright, & Ingraham, 1989) of the Personal Views Survey (Bartone, 1984). The Personal Views Survey corrected many of the psychometric problems associated with Kobasa's Unabridged Hardiness Scale (Ouellette, 1993). Reliability and validity data of the Unabridged Hardiness Scale is summarized in Kobasa, Maddi, Pucetti, and Zola's (1985) article, which examined hardiness, exercise and social support as stress resistance resources . The hardiness version (Dispositional Resilience scale) utilized in this current study was used in the Bartone et al. (1989) study of the influence of hardiness on health among persons who had assisted with a military air disaster. The Dispositional Resilience scale is a 45 item, Likert type, modified version of the Personal Views Survey, a scale originally used with blue-collar workers (Bartone et al., 1989). The 45 items comprising the scale were selected on the basis of high item-scale correlation among bus drivers (Bartone et al., 1989). Cronbach's alpha for this measure is .85. The responses on the scale range from "Not at all true" (score=0) to "Completely true" (score=3). Examples of the items on the questionnaire include "Most of my life gets spent doing things that are worthwhile", "No matter how hard I try, my efforts usually accomplish nothing", and "I don't like to make changes in my every day schedule".

Stress. The Social Readjustment Rating scale (Holmes & Rahe, 1967) was used to measure stress level. This scale contains 43 items. Examples of the items include divorce that is weighted 73, marital separation that is weighted 65, change in financial

state that is weighted 38, and minor violations of the law which is given a magnitude score of 11. This scale shows good reliability as evidenced by a reliability coefficient of .90, across various samples of adults, including males, various age groups, and lower class. For purposes of this study, minor modifications were made in the Social Readjustment Rating Scale. Items not relevant for the population under study were deleted. For example, "wife beginning or ceasing work outside the home" was deleted. Items related to health problems were deleted. For example, change in sleeping habits, changes in eating habits, and personal illness were deleted. The stress score on the Social Readjustment Rating Scale (Holmes & Rahe, 1967) is the weighted sum of 43 items. Weights are assigned to each item in proportion to the amount of readjustment required by each item relative to a standard event, marriage, which was given an arbitrary value of 50. The ratings range from 100 for the adjustment required after death of a spouse to a value of 11 for minor violations of the law.

Illness. The illness score was the weighted sum of 126 items on the Seriousness of Illness Rating scale (Wyler, Masuda, & Holmes, 1968). This measure is a self-report check list of diseases, which are scored according to the respondent's perception of the relative seriousness of the illness. The items are weighted on the basis of prognosis, duration, threat to life, degree of disability, and degree of discomfort. Sample items from the scale are peptic ulcer with a weight of 500, sinus infection weighted 150, and heart attack with a weight of 855. Wyler, Masuda, and Holmes (1968) reported that, between the medical group of individuals and the non-medical group of individuals, the mean rank order correlation coefficient for the items on the questionnaire was .947.

John Henryism. This behavioral coping style was assessed with the John Henryism Scale for Active Coping (James, Strogatz, Wing, and Ramsey, 1987), a 12-item Likert-type scale, with responses ranging from "completely true" (score=5) to "completely false" (score=1). The maximum obtainable score is 60 and the minimum is 12. The total score

is calculated by summing the score for each item on the scale. Sample items include "I've always felt that I could make of my life pretty much what I wanted to make of it"; " Once I make up my mind to do something, I stay with it until the job is completely done" and "When things don't go the way I want them to, that just makes me work even harder". James et al. (1987) reported correlation coefficients of .72 for all subjects, .71 and .74 for African and Caucasian American women, respectively, and .67 and .66 for African and Caucasian American men, respectively.

Community stress. This score was the total score for the three scales comprising the measure of community stress (Cohen et al., 1982). The total score was obtained by summing the items on the three scales. The scales include the folowing: 1) Fear Scale, a five-item Likert-type scale, with responses ranging from "not at all like it is" (score=1) to "exactly like it is" (score=4). Sample items from the scale include "In this area, many people I know are afraid to go out at night", and "This neighborhood is really a safe place to live". Minor modifications to this scale were made to moderate the extremes. For example, for the above items, in the first item, the word "many" was deleted and in the second item the word "really" was deleted. The reliability coefficient for this scale was .88; 2) Social Problem scale, a 6-item Likert-type scale, with responses ranging from "not a problem at all" to "very serious problem". Sample items from the scale include "drug addicts in the neighborhood", " "unemployment", and "Crazy people in the streets". The reliability coefficient for this scale was .82; and 3) Violent Crimes scale, a 5-item Likert-type scale with responses ranging from "never" (score=1) to "frequently" (score=4). Sample items from the scale include "Someone murdered", "People being hit by the police", and "Violent arguments between neighbors". The reliability coefficient for this scale was .78 (Cohen et al., 1982).

Network stress. This score was the sum of the weighted items on the Social Readjustment Rating Scale (Holmes & Rahe, 1967). Kessler and McLeod (1984)

measured network stress by having respondents complete the measure used to assess life event stress a second time and indicate whether the event had happened to someone important to them. Kessler and McLeod assessed life event stress with four surveys, including the Survey of Modern Living, and three surveys designed by the Center for Epidemiologic Studies at the National Institute of Mental Health. Consistent with this approach, the present study assessed network stress by asking respondents to complete the Social Readjustment Rating Scale a second time and indicate if the event happened to someone important to them. A caveat related to using the Social Readjustment Scale for this purpose is that it assumes that the stress experienced when events happen to someone important to us is equally as stressful as when events happen to us.

Additional Items. Informal questioning of low socioeconomic status women suggests additional stressful events, which may be important for the stress-illness relation among low socioeconomic status women. These stressful events have not been included in any of the indices of stress. A questionnaire containing these events was developed for this particular study as a means of further exploring their relevance for this group. These additional items were assessed with a 9-item, Likert-type scale, with responses ranging from "not often" (score=0) to "very often" (score=4). Examples of the items include "I worry that my child will be attacked by a gang or killed on the way to school", "There have been times when I did not have the money to pay my rent or to buy food to eat", and "I worry that me or my children will be hit by a stray bullet while in our home". The score was the sum of the items comprising the scale.

Demographics. A participant information sheet was used to collect descriptive information concerning the marital history, age, employment status, family composition and size, health practices, education, and income of respondents.

Data Analysis

In order to test the first set of questions, a two factor [stress (2), hardiness (2)] ANOVA was performed on illness in order to determine whether hardiness moderates the stress-illness relation in low socioeconomic status women. In addition, both differential correlation analysis and hierarchical regression analysis were performed. A three-way [stress (2), hardiness (2), race (2)] ANOVA also was computed on illness to determine whether this moderation effect was equivalent for African and Caucasian American women.

In order to determine if John Henryism influences illness in low socioeconomic status women, t-tests were performed, comparing the illness scores for high and low John Henryism groups. The equivalence of the relationship between John Henryism and illness for African and Caucasian American women was determined by performing a three way [(stress (2), John Henryism (2), race (2)] ANOVA on illness scores. Correlation analysis of John Henryism and stress was executed to determine whether John Henryism was correlated with stress, and hierarchical regression analysis was performed in order to replicate the hardiness approach.

In order to determine whether hardiness was associated with differences in network stress and community stress, t-tests were performed, comparing low and high hardiness, low socioeconomic status women on their scores on network stress and on community stress. Determination of whether differences in both network stress and community stress scores were associated with differences in illness scores was made by performing t-tests, comparing the illnesses scores of high and low network and community stress groups. Exploratory investigation of the association of hardiness with differences in the group mean scores on other relevant stressors, involved t-tests that were performed, comparing low and high hardiness, low socioeconomic status women on their scores on the measure of other relevant stressors. To determine whether differences on the measure of other

relevant stressors were associated with differences in illness scores, t-tests, comparing the illnesses scores of high and low groups on the other relevant stressors measure, were performed.

In order to determine racial differences in exposure to network, community, and other relevant stressors, t-tests were performed, comparing the group means of African and Caucasian American, low socioeconomic status women for these three categories of stressors. The association of demographic variables with hardiness, John Henryism, and race was determined by performing correlation analysis.

4. Results

Race Differences

Race differences on select variables were analyzed by comparing the group means of Caucasian and African American, low socioeconomic status women. The results in Table A-1 show that the group mean scores on violence for African and Caucasian American, low SES women are significantly different $t(98) = -3.76$, $p < .0001$. On average, low-income. Caucasian American women are less likely to experience violence in their neighborhoods than are their African American counterparts. Further examination of the results in Table A-1 shows that African and Caucasian American women group mean scores on the challenge hardiness subscale are significantly different, $t(89) = 2.13$, $p = .036$. African American women, on average, scored lower than Caucasian American women on this subscale. The group mean score for African American women on the challenge subscale was 20.4, with a standard deviation of 3.98. As can be seen from Table A-1, differences in the group means for number of children and for family size of African and Caucasian American women did not approach significance. Since most of the demographics were at the nominal level, crosstabulations were used to assess

similarities between the groups. The results in Table A-2 show that 67.9% of the women who were unemployed were Caucasians compared to 32% who were African American. Of the participants who reported being employed, 56.3% were African American versus 43.7% who were Caucasians. The nine levels of income were collapsed to form three levels; as reported in Table A-2, African American women accounted for 56.4% of the participants with incomes in the range of $0 to $8,050 compared with Caucasian women who accounted for 43.6% of those in this income group. Most of the participants reported incomes in the range of $8,050-22, 049. Race comparisons indicated that African American women constituted 53.2% of this income group compared with Caucasian women who comprised 46.8%. As regards education, 53.6% of the participants with an educational level of high school or less were Caucasian versus 46.4% who were African American. While a greater percentage of participants who had attended junior college were African American, 72.2% compared with 27.8% for Caucasians; a greater percentage of participants who attended college were Caucasian American, 57.7% compared with 42.3% for African Americans. Race comparisons relative to religion revealed that 63.3% of the Baptists were African American versus 36.7% who were Caucasians. The Baptists comprised 60% of the total sample. There were a variety of other religious denominations included; these were collapsed into the category of "other"; of this group, 69.4% were Caucasians compared with 30.6% who were African Americans.

The Effect of Hardiness on the Stress-Illness Relationship in Low SES Women

The mean life-event stress score for the total group was 283.5, SD = 154.08. This score was much lower than the score of 490.16 obtained for the 170 executives who participated in Kobasa and Puccetti's study (1983). It is closer to the mean weight stress score of 361 obtained for participants in Schmied and Lawler's study (1986). Life-event

stress scores, in the present study, ranged from 40 to 762. The most frequently reported stressful events were Christmas (reported by 50 participants), changes in family get-togethers (50 reports), changes in financial state (48 reports), and changes in health or behavior of a family member (48 reports). The mean illness score for the total group was 2420.98, with a standard deviation of 1661.4; while this mean score is somewhat higher than that for African American women who participated in this study (M = 2183.6, SD =1400.01), it is lower than the group mean for Caucasian American female participants (M = 2663.2, SD = 1875.17).

Stress moderation effects depend on there being a stress-illness relationship; as can be seen from Table A-3, the strong, positive correlation between stress and illness was statistically significant, $r = .487$, $p < .01$. The results in Table A-3 also show that the negative correlation between hardiness and illness attained statistical significance ($r = -.234$, $p = .031$), as did the relationship between the commitment hardiness subscale and illness. Individuals with lower scores on the hardiness scale and on the commitment subscale had higher illness scores than did individuals with high scores on hardiness and commitment.

In order to determine whether hardiness moderated the stress-illness relationship in low socioeconomic status women, a two-way analysis of variance, consistent with the statistical approach of Kobasa, Maddi, and Courington (1981), was performed. Prior to executing the analysis of variance test, the median scores on stress and hardiness were used to split participants into high stress/high hardy, high stress/low hardy, low stress/high hardy, and low stress/low hardy groups. Table A-4 shows the mean illness scores for these groups. For each of these groups, the mean illness weight scores are much higher than that reported for the white, male, middle and upper-level management

participants in Kobasa, Maddi, and Courington's study (1981). For example, Kobasa, Maddi, and Courington reported a mean illness weight score of 978.72 for highly stressed low hardy middle and upper-level managers compared with a mean illness weight score of 3290.86 for the low socioeconomic status participants in the present study. However, this illness score is lower than the illness score of 3390.43 reported for Type B participants in the Schmied and Lawler study (1986). Similar to the Kobasa, Maddi, and Courington study, participants in the present study with high scores on the hardiness scale had lower illness scores than low hardy participants at each level of stress. Comparatively, in the Schmied and Lawler study, participants scoring high on hardiness had lower illness scores in the highly stressed condition. only.

The results of the two-way analysis of variance, consistent with results from the Schmied and Lawler study (1986), show that neither the main effect for hardiness nor the hardiness x stress interaction approached significance. However, the stress main effect was significant, $\underline{F}(1, 85) = 10.98$, $\underline{p} = .001$. These results support the correlation analysis, which shows a positive relationship between stress and illness. Because of claims that the manner of splitting groups on hardiness may obscure significant results, the analysis of variance procedure was repeated using two alternative approaches for dichotomizing participants on their hardiness scores. Funk (1992) suggested, first, that the median score for each hardiness subscale could be used to split participants into groups. Using this method, scores above the medians for the three scales were summed to form the composite high hardy group, and scores below each median were summed to form the composite low hardy group. Secondly, Funk (1992) suggested that if hardiness were a

synergistic construct where the components built on each other, then the subscale scores should be squared and the respective scores summed to form the composite hardiness group. The composite hardiness group is then dichotomized, using the median score. The results using these methods for dichotomizing hardiness are presented in Table A-5; they indicate that the different approaches to dichotomizing hardiness had little effect on the results of the analysis of variance procedure.

In order to establish whether significant results had been obscured by the statistical procedure selected, as has been suggested by the literature, the test was repeated, using differential correlation analysis. As can be seen by the results in Table A-6, only the stress-illness relation for highly stressed, low hardy women reaches significance, $\underline{r} = .673$, $\underline{p} = .001$. This correlation coefficient is substantially higher than the non-significant correlation coefficient obtained for highly stressed women, with high scores on the hardiness scale. Although the correlation coefficients for the two highly stressed hardiness groups are different, the difference may not have been statistically significant. This was established by testing the difference between the two correlation coefficients. The results showed that this difference was significant at the .05 level, $\underline{z} = 2.016$, which is consistent with the results from the regression analysis. Table A-7 presents these results, which show that the hardiness x stress interaction was significant ($ß = -1.316$, $t = -2.486$, $\underline{p} = .015$). Model 3 of the regression analysis explained 31% of the variance in illness. After entering stress and hardiness, the hardiness x stress interaction results in a statistically significant R-square change of .051, thus the predictive power of the model improves with the addition of the interaction term.

In regard to the question of whether the hardiness moderation effect was equivalent for Caucasian and African American, low socioeconomic status women, a three-way analysis of variance was performed, the hardiness by race interaction failed to attain the required level of significance; similarly, results from the regression analysis, in Table A-7, show that the hardiness x race x stress interaction is not significant. However, the race x stress interaction is significant, $\beta = -4.566$, $t = -2.515$, $p = .014$. The mean illness scores by race and stress groups are reported in Table A-8; as is shown, Caucasian American females, who are highly stressed, have higher illness scores than do their African American counterparts. The regression analysis (see Table A-7) shows that adding the race*stress interaction to the model, after entering stress, hardiness, hardiness*stress, and race, results in an R square change of .090. This indicates that the race*stress interaction improves the model's predictive power. The results of the correlation analysis by race, stress group, and hardy group appear in Table A-9; as can be seen, the n's for the various groups are very small and only the stress-illness correlation for low hardy, highly stressed Caucasian females reaches significance, $r = .740$, $p < .05$. Consistent with hardiness theory, the stress-illness correlation, for highly stressed Caucasian women with low scores on hardiness is stronger than that for highly stressed Caucasian females with high hardiness scores. In comparison, while the stress-illness relationship for highly stressed African American women with high hardiness scores is weaker than that for low hardiness women, this relationship fails to reach significance.

John Henryism Effects on Illness

A second question examined in this study concerned whether John Henryism influenced illness in low SES women. In order to test this question, participants were dichotomized into high and low John Henryism groups by using a median split. Participants scoring below 46 were assigned the label of low John Henryism, while those scoring at or above 46 were categorized as high John Henryism. Fifty participants were in the low John Henryism group, and 45 were in the high John Henryism group. T-tests were performed to determine differences in the mean illness scores of the two groups. The results revealed that the mean illness score for low income women with high scores on the John Henryism scale (M = 2266.76, SD = 1537.139) did not significantly differ from that of low income women with low scores on John Henryism (M = 2578.37, SD = 1781.47), $t(97) = .93$, $p = .35$.

The means from the two-way analysis of variance, which was performed to examine the equivalence of the John Henryism influence on illness for African and Caucasian American women, are presented in Table A-10. This Table shows that Caucasian American women, with high John Henryism scores, have lower mean illness scores than Caucasian American women with low scores on John Henryism. Conversely, for African American women, those with high John Henryism scores have higher mean illness scores than those with lower scores on John Henryism. This is consistent with the John Henryism literature which consistently reports race effects for John Henryism. Analysis of variance revealed a statistically significant John Henryism x race interaction, $F(1, 99) = 4.139$, $p = .045$ (see Table A-11).

In order to replicate the hardiness approach with John Henryism, tests for moderation effects were performed. Median splits for both life event stress and John Henryism were used to separate participants into high stress/high John Henryism, high stress/low John Henryism, low stress/high John Henryism, and low stress/low John Henryism groups. The mean illness and stress scores for these groups are presented in Table A-12. Similar to the findings relative to hardiness, only the correlation of stress with illness for the highly stressed/low John Henryism group is significant, $r = .526$, $p = .01$ (see Table A-13). The stress-illness relationship is considerably stronger for the high stress/low John Henryism group. The results of the regression, presented in Table A- 14, show a significant John Henryism by stress interaction ($ß = 2.248$, $t(3.09) = .196$, $p = .003$). The John Henryism x stress interaction explains about 8 percent of the variance in illness; this indicates an improvement in the predictive power of the model.

In conjunction with the question about whether John Henryism influenced illness, the question of whether John Henryism was correlated with stress was examined. The results showed that the correlation of John Henryism with life event stress is statistically non-significant, $r = -.031$, $p = .761$.

Hardiness and Network Stress and Community Stress

In order to examine differences in the reporting of network stress by low socioeconomic status women as a function of personality hardiness, participants were dichotomized into high and low hardy groups, and t tests, comparing the mean network stress scores of the two groups, were performed. The mean network stress score for low hardy women was 418, with a standard deviation of 209.25, compared with a mean network stress score of 368.64 ($SD = 192$) for high hardy women. The results

demonstrated that the means of the two groups were not significantly different, ($t(84) = 1.145$, $p = .255$); however, the mean illness score ($M = 2804.16$, $SD = 1790.39$) for women with high scores on network stress was significantly different from the mean illness score ($M = 2045.48$, $SD = 1445.64$) for women with low network stress scores, $t(97) = -2.32$, $p = .022$.

T-tests, comparing the group mean scores of low and high hardy low SES women were performed in order to establish whether these two groups differed in their scores on the community stress scale. The group mean community stress score, for women with low scores on hardiness, was 35, with a standard deviation of 9.27 compared with a group mean score of 26.5, with a standard deviation of 9, for women who scored high on hardiness. The results from t-tests indicated a significant difference between the means of the two groups, $t(79) = 4.155$, $p < .0001$. Women whose scores fell within the range of low hardiness had higher levels of community stress. Additional t-tests were performed, in order to determine whether women with higher scores on the community stress scale had a higher mean illness score than women with lower scores on community stress. The mean illness score for the low community stress group was essentially the same as that for the high community stress group ($M = 2420.6$, $SD = 1539.21$ vs. $M = 2397.36$, $SD = 1765.65$, respectively). T-tests, comparing the illness scores of high and low community stress groups, confirmed that there was no significant difference between the means of the two groups, $t(92) = .068$, $p = .946$.

Exploratory Inquiry: the Unique Stress Experience of Low SES Women

Because stressors with particular relevance for women often are obscured by global measures of stress, a measure of stressors unique to low SES women, living in risky neighborhoods, was developed (see Appendix B) as a way of initially exploring unique indices of stress among this population of women. T-tests, comparing low hardy and

high hardy women on their scores on a measure of uniquely relevant stressors, were performed to determine if there were differences in the means of the two groups. The group mean score on this nine-item measure of stressors such as concern over paying bills, worries related to the safety of one's children, fear of becoming ill, and lack of money to purchase food was higher for low hardy women than that for women with higher scores on hardiness ($\underline{M}$ = 17.9, $\underline{SD}$ = 5.57 vs. $\underline{M}$ = 15.25, $\underline{SD}$ = 4.65). The analysis revealed that these differences in group means for low and high hardy women were statistically significant, $\underline{t}(81) = 2.367$, $\underline{p} = .02$. Subsequently, t-tests were performed to determine if the women with high scores differed in their mean illness score for women with low scores. The mean illness score for women with low scores was 2046.34, with a standard deviation of 1320.63, compared to a mean of 2800.875, with a standard deviation of 1902.49 for women with high scores. This difference in group means was statistically significant, $\underline{t}(92) = -2.23$, $\underline{p} = .029$.

5. Discussion

Implications for Theory

Initial empirical evidence that hardiness moderation effects extend to low socioeconomic status women has been provided by this study; consequently we have some indication that hardiness effects may not be bound by peculiar person characteristics or by particular situations. Hardiness maybe a stress resistance resource for individuals confronted with poverty, and who have very limited social resources (Ouellette, 1993).

This study provides additional empirical evidence that hardiness and stress interact to influence illness susceptibility. More specifically, hardiness decreased the strength of the stress-illness relationship in this biracial sample of low socioeconomic status women. Consistent with hardiness theory and with the results obtained by Kobasa and several of her colleagues, highly stressed low income women who were high on personality hardiness were far less compromised by stressful experiences than were low hardiness persons. The findings established that the stress-illness association for low hardy women who were under a large amount of stress was stronger than that for highly stressed high hardy women. Only the stress-illness relationship for the low hardiness group attained significance. Even at lower levels of stress, hardiness either decreased the strength or changed the direction of the relationship between stress and illness; however, these results were not statistically significant. These results provide support for Garrity and Marx's (1985) conclusion that knowledge of personality factors adds significantly to the predictive power of life-event stress in predicting psychophysiological strain.

Race differentials in hardiness moderation effects were not clearly established by the results. Although the regression analysis indicated that there were no race differences in the stress buffering properties of hardiness, correlation analysis indicated that the stress-

illness relationship for highly stressed African American women with high scores on hardiness was not significantly different from that of highly stressed, low hardy African American women. For African American females, none of the stress-illness relationships were significant for any of the hardiness groups, and in some instances these relationships were not in the expected direction. For example, in the low stress, high hardiness group, the relationship between stress and illness was considerably stronger for high hardy African American women than for low hardy African American women. This was not the case, however for the highly stressed African American group. Here, low hardy females were considerably more compromised by stress.

The statistically significant race x stress interaction is explainable on the basis of social selection theory which attributes rates of psychopathology in a given socioeconomic status to intergenerational and intragenerational drifting whereby the healthy and able tend to ascend to or maintain more advantaged socioeconomic positions and the unhealthy tend to drift down to or fail to rise out of lesser advantaged socioeconomic positions. More important for the presence of a statistically significant stress x race interaction is the social selection theoretical assumption that these selection processes are likely to affect advantaged and disadvantaged ethnic and, by extension, racial groups differently. Specifically, it is proposed that prejudice and discrimination operate to prevent healthier members of disadvantaged ethnic groups from rising out of lower socioconomic classes, thereby creating a group that is diluted in terms of coping effectiveness and in terms of rates of disorder. Comparatively, healthier members of advantaged ethnic groups, with fewer obstacles to block them, are able to move up to higher statuses, thereby leaving a relatively undiluted "residue" (Gruenberg, 1961, p 269) of less effective individuals. Gruenberg's position suggests a race by social selection process, which could explain why Caucasian American females were more vulnerable to the deleterious effects of stress. The heightened susceptibility to illness when under

stress found for Caucasian women in this study is not consistent with the literature that reports differences between blacks and whites in mortality rates (Ouellette, 1993). This demonstrates we must conducted further research on hardiness effects among socially disadvantaged, racially diverse groups before we can fully understand race differences in vulnerability to stress.

The John Henryism literature consistently has documented a negative influence for John Henryism, but this research has been restricted to blood pressure; therefore, the present study examined the influence of John Henryism on physical illness. The results showed that, on average, high and low John Henryism persons have essentially the same magnitude of illness, which suggests that John Henryism may not influence illness in low socioeconomic status women. This lack of significant results maybe explainable by gender effects, since they appear to be consistent with findings that John Henryism effects for females differ from its effects for males. The John Henryism literature indicated that, in women, higher levels of John Henryism is associated with lower levels of blood pressure and hypertension, while in low socioeconomic status African American males, it has the opposite effect. Similarly, in the current study, although the results lacked significance, the group of high John Henryism women had lower illness scores than the group of low John Henryism women. The lack of statistically significant mean illness score differences between high versus low John Henryism groups also may be explainable by the inclusion of Caucasian American women in the sample. The literature consistently has reported race effects for John Henryism. The results have been mixed, but it is generally agreed that John Henryism does not influence blood pressure among whites.

The influence of John Henryism on illness may not be equivalent for Caucasian and African American, low-income women, as is suggested by the statistically significant John Henryism x race interaction. This interaction also was suggested by observations

which showed that for African American women, high John Henryism scores were associated with higher illness scores, while higher John Henryism scores were associated with lower mean illness scores for Caucasian American women. This suggests the need to replicate the current study with a larger sample of African American females.

Results from the replication of the hardiness model with John Henryism indicated that, similar to the results of hardiness research, John Henryism effects were significant for the highly stressed group. Only the stress-illness association for the highly stressed low John Henryism group was significant. In addition, the relationship between stress and illness was impressively stronger for this group. Also, it is important to note that there is a significant interaction between John Henryism and stress; this suggests the need to investigate the meaning of John Henryism for the association between stress and illness.

The results from this study established that women with high scores on network stress have higher illness scores. This provides some support for Kessler and Mcleod's (1984) argument that network stress explains some of women's vulnerability to stress. Hardiness is associated with differences in community stress; on average, low hardy women are more likely than high hardy women to report experiences with problems such as violence in their neighborhoods. Theoretical assumptions related to the influence of hardiness on cognitive appraisal suggest such a difference. Kobasa, Maddi, and Kahn (1982) posited that cognitive appraisals by hardy individuals render events not so threatening, overwhelming, and undesirable. Therefore community stressors may take on a different significance for those with hardy personalities.

This being a biracial sample of women, it was important to examine differences based on race. This sample of Caucasian and African American, low SES women was found to be essentially homogeneous in respect to demographics, levels of life-event stress, levels of illness, and scores on personality measures. Exceptions included

differences between African and Caucasian American women on their scores on the challenge dimension of hardiness. African American women, on average, had lower scores on challenge. Explanations for this statistically significant difference may include the idea that the challenge subscale fails to capture the meanings that African American, low SES women assign to stimulating events. For example, it is generally known that the effects of lower socioeconomic status on a variety of outcomes for the poor are not the same for African and Caucasian Americans. In this current study, for instance, African American women had higher levels of education, but reported lower levels of income. Although this finding was not statistically significant, experiences such as the education/income differential may lead to a sense of alienation causing stimulating events to become those involving overcoming insurmountable odds or those events that lead to victory over the oppressor, victory over "the man". Events such as these differ from items such as "it is exciting to learn something about myself", or "I really look forward to my work", or "I like a lot of variety in my work", which comprise the challenge dimension of the hardiness scale. It is possible also that the conditions of life for poor African American women militate against dispositions like challenge. It is generally recognized that poor African Americans are more likely to suffer greater adversity than poor Caucasian Americans (Kessler & Neighbors, 1986). It is, therefore, conceivable that survival under conditions of poverty, for African American women, requires attitudes that are less congruent with the optimism, certitude, confidence, and boldness, which are thought to constitute the challenge component of hardiness. For example, Oscar Lewis in his book La Vida (1966) spoke of a culture of poverty, conditions that foster attitudes of alienation, hopelessness, and fatalism, and that breed self doubt and mistrust. These attitudinal requisites for survival under the adverse conditions of poverty may cause questions on the challenge subscale such as "daydreams are more exciting than reality for me" to seem trivial and unimportant. Statements that perhaps are more meaningful

include "making it is exciting to me" or "finding a hustle is exciting to me". The concept of challenge, steeped in meanings unique to middle-class Americans, fails to capture meanings relevant for poor African American women.

Implications for Research

The results from the current study showed that hardiness moderates the effects of stress on illness, thereby increasing the number of studies that have found buffering effects for hardiness. In a 1992 review of hardiness theory and research, Funk identified four studies that had reported significant hardiness moderation effects. Of these four studies, Kobasa and her colleagues had conducted three. Three of the four studies conducted by Kobasa and others used analysis of variance to assess the effects of hardiness on stress and one used hierarchical regression. The present study used analysis of variance, differential correlation analysis and hierarchical regression analysis. While differential correlation analysis and hierarchical regression confirmed hardiness moderation effects, analysis of variance did not. This suggests that differences in statistical procedures should be given consideration when conducting research on moderator variables. The failure of some studies that used ANOVA in assessing hardiness moderation effects to obtain significant results may suggest that analysis of variance is a more sensitive procedure when using small sample sizes. In several of Kobasa et al. Studies, the sample sizes exceeded 200. In addition, some theorists argue that regression analysis is more appropriate when testing for moderation effects.

Funk (1992), in his review of hardiness research, maintained that the results obtained by Kobasa and her colleagues were probably due to idiosyncratic procedural factors; these claims are seriously challenged by the finding of statistically significant hardiness stress moderation effects. Although the present study used a different measure of hardiness, the measure employed was highly correlated with Kobasa's hardiness scale,

which established its criterion-related validity. The methods of dichotomizing all groups, in the present study, were consistent with all of the studies conducted by Kobasa and her colleagues. In addition to using median splits of the composite hardiness score to form high and low hardiness groups, the current study used the two alternative approaches to dichotomizing suggested by Funk (1992). The results produced with the different methods of dichotomizing hardiness did not influence the statistical significance of the obtained results. Comparatively, the strengths of the associations produced by the other two methods were similar in magnitude to the traditional method of dichotomizing hardiness. The alpha values were essentially unaffected by the different methods. Overall, the methods differed with respect to the strength of the associations, with most of the difference occurring for the high hardiness groups.

The results from the present study dispute speculations that hardiness moderation effects are limited to working adults, males, and to particular circumstances as in prospective analysis (Funk, 1992), and that the effects may not generalize to females. Hardiness was found to have protective effects for highly stressed low SES females; this finding offers some empirical confirmation that hardiness effects extend to low SES females who are quite different from the white, middle class executives studied in the original research. In this sense, the findings extend earlier research on hardiness by demonstrating that hardiness effects can generalize to other groups and to other contexts. However, there remains a need to better understand the contexts within which hardiness effects are important to the stress-illness relationship. Investigation of hardiness effects in low SES men may add to our understanding of the contexts within which hardiness is important to the stress-illness relation.

Implications for Practice

Perhaps the greatest contribution of the current study is its practical implications for

improving the coping mechanisms of low socioeconomic status women. There is extensive epidemiological research evidencing an inverse relationship between low socioeconomic status and higher risk for death, chronic diseases, and for other forms of poor health (Marmot, 1994; Pappas, et. al, 1993, Wilkinson, 1992). Traditionally, explanations of this inverse link between socioeconomic status and illness have pointed to either social selection or social causation influences. According to one variant of the social selection position, heightened illness susceptibility among low socioeconomic status individuals, under conditions of stress, is attributable to ineffective coping strategies, which restrain proficient management of stressful events. Given this view, the hardiness components of control, challenge, and commitment have important implications as stress-resistance resources for low-income women.

The results of this current study provided evidence that women with high scores on hardiness had lower scores on community stress, which was found to influence illness in this population of women. It is reasonable that women with high scores on hardiness appraised neighborhood occurrences like violence, drug abuse, and unsafe conditions as less threatening and overwhelming than did women with lower scores on hardiness. According to Kobasa and Puccetti (1983), the challenge disposition directs individuals to find opportunities for decision-making and to evaluate events in the context of an overall plan. For low- income women, the challenge disposition would help to reduce potential disruptions associated with stressful community events. Increases in the levels of challenge may lead to better decision-making and more adaptive cognitive appraisals, which attenuate the physiological arousal precipitated by stressful events (Funk, 1992). The environment influences coping effectiveness through shaping the appraisals and behavioral dispositions of individuals (Kessler and Cleary, 1980). Economically impoverished communities provide little social resources for coping effectively with stressful events; some theorists have posited that this lack of social resources explains

why lower SES persons are more affected by stressful life events.

The hardiness dimension of control is especially relevant for low socioeconomic status women. Poverty increases feelings of despair, powerlessness, and helplessness. Research on socioeconomic status and stress provide evidence that poverty increases a person's exposure to uncontrollable events (Belle, 1982). Higher exposure to events beyond one's control lessens the belief in one's ability to control some situations. Society offers low-income women little opportunity for developing strong beliefs in their own effectiveness. Increased opportunities for independent decision-making and self-direction would deepen low-income women's sense of control. However, traditional attitudes about gender roles, societal values, and belief in male superiority continue to restrain opportunities for expanded control of important events in the lives of poor women. The hardiness literature suggests that individuals who believe in their own effectiveness take decisive action and use active rather than passive coping styles. Passive coping styles rely on devices that help individuals tolerate stress. Alcohol dependence and drug addiction are two examples of how people manage to forget their problems (Kessler & Cleary, 1980).

The beneficial effects of hardiness for adaptive coping and cognitive appraisals suggest that identifying factors that promote the development of commitment, challenge, and a sense of self-effectiveness is important for low-socioeconomic status females who are disproportionately exposed to stressful life events. It is important to conduct research aimed at identifying both how hardiness develops and how environmental resources operate to shape hardiness within the individual. Low-income women may benefit from programs designed to increase successful experiences in managing stressful situations, which may lead to the development of more effective coping strategies. Extensive efforts to reduce the sense of alienation experienced by low-income persons are essential if the poor are to have an increased sense of coherence with their environment (Antonovsky,

1979). Organizations utilized by low-income women must offer expanded opportunities for self-determination and participation in decision-making processes.

Limitations of Study

The current study was limited to assessing the relation of stress and hardiness with physical illness; of the other studies that have investigated hardiness effects in women, two (Schmied & Lawler, 1986; Lawler & Schmied, 1992) used physical illness as the dependent variable. The remaining studies, which investigated hardiness buffering effects, used psychological distress as the dependent variable. Studying hardiness as a moderator of the relation between stress and physical illness continues Kobasa's focus on hardiness as a protective factor against stress-induced physical illnesses. Kobasa's interest in the role of personality factors in stress moderation was stimulated by the need to explain the unexpected weak relation between stress and physical illness. Consistent with a traditional view of the nature of moderators (Baron & Kenny, 1986), assumptions about hardiness posit that it affects the strength of the relation between stress and illness. Specifically, the hardiness literature proposes that at some critical level (e.g. above some median score) of hardiness, the deleterious effects of high levels of stress are reduced. Current inconsistencies in the hardiness literature, together with doubts about the adequacy of existing research as evidence for hardiness effects (Hull, Van Treuren, & Virnelli, 1987), suggest the need for further studies that emphasize the role of hardiness in physical illness. There is a serious need for more independent tests of hardiness effects. Hull et. al argued that the studies conducted by Kobasa and her colleagues are not independent tests for several reasons. These reasons included the fact that in one study Kobasa and her colleagues reported analyses on the same data set and in another study, they used the same sample of Illinois Bell Telephone executives used in an earlier study. If one accepts the arguments of Hull et al (1987), then the number of studies that

have examined the role of personality hardiness as a protective factor for physical illness is very small. Research in this area needs to be expanded.

Generalization of the findings in this current study to the entire population of African and Caucasian women would not be appropriate since the sample was limited to low socioeconomic status women. It is also important to note that the majority of the African American participants were residents of public housing, while all of the Caucasian participants lived in private housing facilities. There is the possibility that because of this difference in living arrangements, participants differed in their levels of social support. It has been suggested that public housing offer many forms of social support that are not available to poor people living in private housing. While contemporary public housing offers residents social support such as associations with people in like circumstances through organized tenant groups, counseling services, and access to recreational facilities, private housing residents are often isolated from others in their neighborhood and are expected to find their own support services. Social support has been found to interact with hardiness to influence illness reports in a group of 170 middle and upper level executives (Kobasa & Puccetti, 1983).

Conclusions

The primary focus of the present study was the investigation of hardiness moderation effects. The results challenge claims that hardiness effects may be related to participant characteristics or to idiosyncratic procedures. Hardiness was found to buffer stress, and this moderation effect was found to extend to low socioeconomic status females. However the evidence for moderation effects among African American women is equivocal at best. Another finding is that hardiness may generalize to contexts other than socioeconomic status, including rural and urban ecosystems. In addition, hardiness effects may extend to other groups, including children, the elderly, victims of HIV, and

African American males. In addition to these implications for future research, cross sectional studies of hardiness across the life span offer promise for further specification of the hardiness perspective. The differences in results produced by the varying methods of dichotomizing hardiness were minimal and do not suggest the need to discard the traditional approach to splitting participants on hardiness. However, caution should be exercised since there were differences in the results.

The role of personality factors in reducing the deleterious effects of stress is far from being fully understood. Hardiness, as a resistance resource, has provided a start toward gaining a fuller understanding of the importance of personality factors to individual differences in illness susceptibility. Resolving the problem of why some people become ill when under stress and others do not continues to be a major barrier to understanding the stress-illness link.

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APPENDICES

Table A-1
Race Comparisons on Life-event Stress, Network stress, Community Stress, Illness, and Personality Measures

Variables	Race	n	Mean	SD	Range	t
Life event stress	C A	50	275.66	156.21	661	-0.508
	A A	50	291.38	153.099	718	
Illness	C A	49	2663.2	1875.17	8566	1.44
	A A	50	2183.62	1400.01	6203	
Hardiness	C A	49	83.04	14.17	59	1.37
	A A	37	78.95	13.17	54	
Hardiness subscales:						
Challenge	C A	49	22.18	3.96	17	2.13*
	A A	42	20.41	3.98	17	
Commitment	C A	50	30.66	7.06	30	1.12
	A A	45	29	7.4	28	
Control	C A	50	30.06	5.67	25	1.25
	A A	46	28.5	6.58	25	
John Henryism	C A	50	44.48	6.23	30	-0.412
	A A	50	45.08	8.19	40	
Network stress	C A	50	371.96	207.73	862	-0.157
	A A	50	378.52	210.84	810	
Community stress	C A	48	29.15	9.35	39	-1.85
	A A	47	33.02	11.05	45	
Comm[a] Stress subscales:						
Fear	C A	49	9.45	3.01	0.895	-0.53
	A A	49	9.82	3.77	0.705	
Social problems	C A	48	11.94	6.3	34	-0.77
	A A	48	12.92	6.09	24	
Violence	C A	50	7.66	2.96	11	-3.76 ***
	A A	50	10.36	4.13	15	
Family size	C A	49	3.64	1.856	7	0.685
	A A	48	3.42	1.164	6	
Children	C A	46	1.96	1.62	6	-0.072
	A A	46	1.98	1.24	5	
Age	C A	48	33.65	9.73	37	-0.445
	A A	46	34.59	10.75	33	

Note. CA = Caucasian. AA = African American, [a] comm = community.

* $p < .05$
** $p < .01$
*** $p < .0001$

Table A-2
Race Comparisons on Percentages on Demographic Variables

Variables	Race C A	A A	Total
Education			
High school	30	26	52
% within education	53.6	46.4	
% within race	60	46.4	
Junior college	5	13	18
% within education	27.8	72.2	
% within race	10	26	
College	15	11	26
% within education	57.7	42.3	
% within race	30	22	
Employment status			
Unemployed	19	9	28
% within employment	67.9	32.1	
% within race	38	18	
Employed	31	40	71
% within employment	43.7	56.3	
% within race	62	81.6	
Marital status			
Never married	12	22	34
% within marital status	35.3	64	
% within race	24	44	
Married	12	12	24
% within marital status	50	50	
% within race	24	24	
Divorced	14	3	17
% within marital status	82.4	17.6	
% within race	28	6	
Separated	8	9	17
% within marital status	47.1	52.9	
% within race	16	18	
Religion			
Baptist	22	38	60
% within religion	36.7	63.3	
% within race	46.8	77.6	
Other	25	11	35
% within religion	69.4	30.6	
% within race	53.2	22.4	
Income			
Less than $8,050	17	22	39
% within income	43.6	56.4	
% within race	37.8	44.9	
$8,050 - $22, 049	22	25	47
% within income	46.8	53.2	
% within race	48.9	51	
$22,050 to above $27,650	6	2	8
% within income	75	25	
% within race	13.3	4.1	

Table A-3
Intercorrelations of Life Event Stress, Network Stress, Community Stress, Personality Measures, and illness

Variables	1	2	3	4	5	6	7	8	9
1. Hardiness	--	.61**	.90**	.87**	-.71	-.43	-.03	-.03	-.23*
Hardiness Subscales									
2. Challenge		--	.37**	.34**	-.04	-.24	.07	.05	.05
3. Commitment			--	.70**	.02	-.37**	-.35	-.02	-.29**
4. Control				--	.08	-.41**	-.91	-.04	-.20
5. John Henryism					--	.13	-.23	-.03	-.04
6. Community Stress						--	.01	-.07	.06
7. Network Stress							--	.36**	.28**
8. Life-event Stress								--	.49**
9. Illness									--

*p< .05
**p < .01

Table A-4

Mean Illness and Stress Scores for Highly Stressed Hardy Groups

Stress Group	Hardy Group	Variable	M	SD	n
Low Stress					
	Low Hardy	Illness	1949.7	1504.03	19
		Stress	170.2	69.219	19
	High Hardy	Illness	1874	1207.96	25
		Stress	160	68.70	26
High Stress					
	Low Hardy	Illness	3290.86	2052.74	22
		Stress	396.09	114.028	22
	High Hardy	Illness	2824.158	1486.7	19
		Stress	436.16	135.695	19

Table A-5

Analysis of Variance on Illness Using Stressful Events and Hardiness as Predictors: A Comparison of Different Approaches to Dichotomizing Hardiness

		F		
		Approach to Dichotomizing Hardiness		
Source	df	Kobasa	Median Split for all Subscales	Synergistic
Stress	1	10.98**	11.81**	11.30**
Hardiness	1	.615	.003	.029
Stress*hardiness	1	.320	.040	.301

**p < .01

Table A-6
Stress-Illness Correlation by Hardiness and Stress Groups

Stress Group	Hardy Group	Variables	1	2	n
Low Stress					
	High Hardiness	1. Stress	--	.245	25
		2. Illness		--	
	Low Hardiness	1. Stress	--	.335	19
		2. Illness		--	
High Stress					
	High Hardiness	1. Stress	--	.135	19
		2. Illness		--	
	Low Hardiness	1. Stress	--	.673**	22
		2. Illness		--	

**p< .01

Table A-7
Hierarchical Regression Analysis of Hardiness as a Predictor of Illness
(N = 100

Variable	B	SE B	Beta
Step1			
Stress	5.076	.999	.487**
Step 2			
Stress	5.005	.974	.480**
Hardiness	-26.379	11.224	-.220*
Step 3			
Stress	17.962	5.296	1.723**
Hardiness	22.616	22.514	.188
Hardiness *stress	-.161	.065	-.1.316*
Step 4			
Stress	23.09	5.417	2.215**
Hardiness	20.569	35.23	.171
Hardiness * stress	-.142	.062	-1.156*
Race	1090.69	1855.585	.326
Race * stress	-4.566	1.816	-.790**
Hardiness * race	-6.098	21.485	-.155

Note. R^2 = .228 for step 1; R^2 = .268 for step 2;
R^2 change = .051 for step 3; R^2 change = .090 for step 4.

*p < .05
**p < .01

Table A-8
Mean Illness Scores by Race and Stress Group

Stress Group	Race C A	A A
High Stress		
M	3552.5	2536.57
SD	2090.22	1421.92
N	22	28
Low Stress		
M	1938.59	1734.41
SD	1322.23	1263.48
N	27	22

Table A-9
Stress-Illness Correlation by Race and Hardy Group

Race	Stress group	Hardy group	Variables	1	2	n
Caucasian American						
	Low stress					
		High Hardy	1. Stress	--	.255	16
			2. Illness		--	
		Low Hardy	1. Stress	--	.496	10
			2. Illness		--	
	High stress					
		High hardy	1. Stress	--	.301	12
			2. Illness		--	
		Low hardy	1. Stress	--	.740*	10
			2. Illness		--	
African American	Low stress					
		High hardy	1. Stress	--	-.279	9
			2. Illness		--	
		Low hardy	1. Stress	--	-.016	9
			2. Illness		--	
	High stress					
		High hardy	1. Stress	--	.243	7
			2. Illness		--	
		Low hardy	1. Stress	--	.498	12
			2. Illness		--	

*p < .05
**p < .01

Table A-10
Mean Illness Scores by Race and John Henryism Groups

Race	John Henryism Group	M	SD	n
Caucasian American				
	Low john henryism	3110.385	2007.168	26
	High john henryism	2157.696	1609.426	23
African American				
	Low john henryism	1976.957	1278.094	23
	High john henryism	2359.667	1497.24	27

Table A-11
Analysis of Variance on Illness for John Henryism and Race (N = 100)

Factors	df	F
John Henryism	1	.754
Race	1	2.01
John Henryism *Race	1	4.139*

*p < .05

Table A-12
Mean Illnes Scores for John Henryism and Stress Groups

Stress group	John henryism group	M	SD	N
Low stress				
	High john henryism	1613.696	1254.706	23
	Low john henryism	2053.23	1303.73	26
High Stress	High john henryism	2823.07	1556.34	27
	Low john henryism	3172.0	2073.266	23

Table A-13
Stress-Illness Correlation by John Henryism Groups

Stress Group	John Henryism Group	Variables	1	2	n
Low stress					
	High john henryism	1. Stress	--	.172	23
		2. Illness		--	
	Low john henryism	1. Stress	--	.317	26
		2. Illness		--	
High stress	High john henryism	1. Stress	--	.318	27
		2. Illness		--	
	Low john henryism	1. Stress	--	.526**	23
		2. Illness		--	

**p < .01

Table A-14
Summary of Hierarchical Regression Analysis for John Henryism as a Predictor of Illness (N = 100)

Factor	B	SE B	Beta
Step 1			
Stress	1.96	.491	.376**
Step 2			
Stress	1.962	.494	.376**
John henryism	-1.705	8.920	-.018
Step 3			
Stress	-9.082	3.6	-1.739**
John henryism	-70.874	23.93	-.751**
John henryism * stress	.236	.076	2.248**
Step 4			
Stress	10.945	7.275	1.017
John Henryism	-74.968	82.984	-.328
John Henryism * stress	1.259	.159	.057
Race	-1281.932	1971.829	-.388
Race * stress	-4.220	1.935	-.729
John Henryism * Race	43.279	41.329	.680

Note. R^2 = .229 for step 1; R^2 = .222 for step 2; R^2 = .217 for step 3; R^2 change = .003 for step 3; R^2 = .072 for step 4

*p < .05
**p < .01

APPENDIX B

RESEARCH QUESTIONNAIRE PACKET

Research Questionnaire Packet

Subject #____

Your agreement to complete this packet of questionnaires is a valuable service, because, as you may know, women are at risk of psychological distress and illness. The answers you provide will help us to better understand the relation between stress and illness in women. All information is strictly confidential. Each part of this packet has individual instructions, please read these carefully before answering the questions. Feel free to ask for assistance with any question about which you are unsure. Thank you for your help with this research.

Questionnaire 1

Instructions:

Below is a list of events that may have happened to you within the past 12 months. If the event happened during the last 6 months of 1997 (July to December, 1997), place a check () in the first blank across from the event. If the event happened to you during the first 6 months of 1998 (January to June, 1998), place a check () in the second blank across from the event. If the event occurred during both six month time periods, place a check () in both blank spaces. If the event did not occur in your life over the previous 12 months please leave the blanks empty.

		1997	1998
1.	Marriage	___	___
2.	Troubles with the boss	___	___
3.	Detention in jail or other institution	___	___
4.	Death of a spouse, mate, or boyfriend	___	___
5.	Death of a close family member	___	___
6.	Foreclosure on a mortgage or loan	___	___
7.	Death of a close friend	___	___
8.	Minor violations of the law (e. g. traffic tickets, jaywalking, disturbing the peace)	___	___
9.	Outstanding personal achievement	___	___
10.	Pregnancy	___	___
11.	Major change in the health or behavior of a family member	___	___
12.	Sexual difficulties	___	___
13.	In-law troubles	___	___
14.	Major change in the number of family get-togethers (e.g., a lot more or a lot less than usual)	___	___

	1997	1998
15. Major change in financial state (e. g.,a lot worse off or a lot better off than usual)	___	___
16. Gaining a new family member (e. g.,through birth, adoption, or an older person moving in)	___	___
17. Change in residence	___	___
18. Son or daughter leaving home (e.g., marriage, attending college)	___	___
19. Separation from spouse or partner or breakup with boyfriend or partner	___	___
20. Major change in church activities (e. g., a lot more or a lot less than usual)	___	___
21. Reconciliation with a mate or boyfriend	___	___
22. Being fired from work	___	___
23. Divorce	___	___
24. Changing to a different line of work	___	___
25. Major change in the number of arguments with mate or boyfriend (e. g., either a lot more or a lot less than usual)	___	___
26. Major change in responsibilities at work (e. g., promotion, demotion, lateral transfer)	___	___
27. Major change in work hours or conditions	___	___
28. Major change in usual type and/or amount of recreation	___	___
29. Taking on a mortgage greater than $10,000 (e. g., purchasing a home, business)	___	___
30. Taking on a mortgage or loan less than $10,000 (e. g., purchasing a car, TV, freezer)	___	___
31. Major personal injury or illness	___	___
32. Major change in social activities (e. g., more or less dancing, going to the movies, visiting)	___	___
33. Major change in living conditions (e. g., building a new home, remodeling, deterioration of home or neighborhood)	___	___
34. Vacation	___	___
35. Christmas	___	___
36. Changing to a new school	___	___
37. Beginning or ceasing formal schooling	___	___

Questionnaire 2

Instructions:

Often people feel differently about the same life events; below are a series of opinions on life. We are interested in knowing the extent to which women think these opinions are true. To indicate your thinking, circle the number that best shows how true you think the statement is, in general. There are no right or wrong answers. We are interested in your honest opinion.

Not at all true = 0
A little true = 1
Quite true = 2
Completely true = 3

1.	Most of my life gets spent doing things that are worthwhile	0	1	2	3
2.	Planning ahead can help avoid most future problems	0	1	2	3
3.	Trying hard doesn't pay since things still don't turn out right	0	1	2	3
4.	No matter how hard I try, my efforts usually accomplish nothing	0	1	2	3
5.	I don't like to make changes in my everyday schedule	0	1	2	3
6.	The "tried and true" ways are always best	0	1	2	3
7.	Working hard doesn't matter, since only the bosses profit by it	0	1	2	3
8.	By working hard, you can always achieve your goals	0	1	2	3
9.	Most working people are simply manipulated by their bosses	0	1	2	3
10.	Most of what happens in life is just meant to be	0	1	2	3
11.	It's usually impossible for me to change things at work	0	1	2	3
12.	New laws should never hurt a person's pay-check	0	1	2	3
13.	When I make plans, I'm certain I can make them work	0	1	2	3
14.	It's very hard for me to change a friend's mind about something	0	1	2	3
15.	It's exciting to learn something about myself	0	1	2	3
16.	People who never change their minds usually have good judgment	0	1	2	3
17.	I really look forward to my work	0	1	2	3
18.	Politicians run our lives	0	1	2	3
19.	If I'm working on a difficult task, I know when to seek help	0	1	2	3
20.	I won't answer a question, until I'm really sure I understand it	0	1	2	3
21.	I like a lot of variety in my work	0	1	2	3
22.	Most of the time, people listen carefully to what I say	0	1	2	3
23.	Daydreams are more exciting than reality for me	0	1	2	3
24.	Thinking of yourself as a free person just leads to frustration	0	1	2	3
25.	Trying your best at work really pays off in the end	0	1	2	3
26.	My mistakes are usually very difficult to correct	0	1	2	3
27.	It bothers me when my daily routine gets interrupted	0	1	2	3
28.	It's best to handle most problems by just not thinking of them	0	1	2	3
29.	Most good athletes and leaders are born, not made	0	1	2	3
30.	I often wake up eager to take up my life wherever it left off	0	1	2	3
31.	Lots of times, I don't really know my own mind	0	1	2	3

32.	I respect rules because they guide me	0	1	2	3
33.	I like it when things are uncertain or unpredictable	0	1	2	3
34.	I can't do much to prevent it, if someone wants to harm me	0	1	2	3
35.	People who do their best should get full support from society	0	1	2	3
36.	Changes in routine are interesting to me	0	1	2	3
37.	People who believe in individuality are only kidding themselves	0	1	2	3
38.	I have no use for theories that are not closely tied to facts	0	1	2	3
39.	Most days, life is really interesting and exciting for me	0	1	2	3
40.	I want to be sure someone will take care of me when I'm old	0	1	2	3
41.	It's hard to imagine anyone getting excited about working	0	1	2	3
42.	What happens to me tomorrow depends on what I do today	0	1	2	3
43.	If someone gets angry at me, it's usually no fault of mine	0	1	2	3
44.	It's hard to believe people who say their work helps society	0	1	2	3
45.	Ordinary work is just too boring to be worth doing	0	1	2	3

Questionnaire 3

Instructions :

Below is a list of illnesses that may have happened to you within the past 12 months. If you had the illness during the last 6 months of 1997 (July to December, 1997), place a check () in the first blank across from the illness. If this illness occurred during the first 6 months of 1998 (January to June, 1998), place a check () in the second blank across from theillness. If you had an that is not chronic, such a common cold or a cold sore, during both six month periods, then place a check() in both spaces. If the event did not occur in your life over the past 12 months, please leave the blanks empty.

	1997	1998
Cold sore, canker sore	___	___
Hiccups	___	___
Bad breath	___	___
Sty	___	___
Common cold	___	___
Nosebleed	___	___
Sore throat	___	___
Constipation	___	___
Laryngitis	___	___
Ringworm	___	___
Headache	___	___
Scabies	___	___
Boils	___	___
Heartburn	___	___
Acne	___	___
Abcessed tooth	___	___
Diarrhea	___	___

	1997	1998
Carbuncle	___	___
Chicken pox	___	___
Mumps	___	___
Dizziness	___	___
Sinus infection	___	___
Increased menstrual flow	___	___
Fainting	___	___
Measles	___	___
Painful menstruation	___	___
Infection of the middle ear	___	___
Varicose veins	___	___
Psoriasis	___	___
No menstrual period	___	___
Hemorrhoids	___	___
Hay fever	___	___
Low blood pressure	___	___
Eczema	___	___
Drug allergy	___	___
Bronchitis	___	___
Hyperventilation	___	___
Shingles	___	___
Mononucleosis	___	___
Infected eye	___	___
Bursitis	___	___
Whooping cough	___	___
Lumbago	___	___
Fibroids of the uterus	___	___
Migraine	___	___
Hernia	___	___
Frostbite	___	___
Goiter	___	___
Ovarian cyst	___	___
Heatstroke	___	___
Gonorrhea	___	___
Irregular heart beats	___	___
Overweight	___	___
Anemia	___	___
Anxiety reaction	___	___
Gout	___	___
Appendicitis	___	___
Pneumonia	___	___
Depression	___	___
Frigidity	___	___

	1997	1998
Burns	___	___
Kidney infection	___	___
Hyperthyroid	___	___
Asthma	___	___
Glaucoma	___	___
Gallstones	___	___
Arthritis	___	___
Syphilis	___	___
Accidental poisoning	___	___
Slipped disk	___	___
Hepatitis	___	___
Kidney stones	___	___
Peptic ulcer	___	___
Pancreatitis	___	___
High blood pressure	___	___
Smallpox	___	___
Deafness	___	___
Collapsed lung	___	___
Epilepsy	___	___
Chest pain	___	___
Nervous breakdown	___	___
Diabetes	___	___
Blood clot in blood vessels	___	___
Hardening of the arteries	___	___
Emphysema	___	___
T. B.	___	___
Alcoholism	___	___
Drug addiction	___	___
Coma	___	___
Cirrhosis of the liver	___	___
Parkinson's disease	___	___
Blindness	___	___
Blood clot in the lung	___	___
Stroke	___	___
Muscular dystrophy	___	___
Tumor in the spinal cord	___	___
Cerebral Palsy	___	___
Heart failure	___	___
Heart attack	___	___
Brain infection	___	___

	1997	1998
Multiple sclerosis	___	___
Bleeding in the brain	___	___
Uremia	___	___
Cancer	___	___
Leukemia	___	___

Questionnaire 4

Instructions:

Below are a series of statements describing opinions about ones neighborhood. Please circle the number that best describes your opinion about your neighborhood.

	Not at all like it is	Somewhat like it is	Like it is	Exactly Like it is
1. In this area, many people I know are afraid to go out at night.	1	2	3	4
2. You're taking a big chance in this neighborhood, if you walk around alone after dark.	1	2	3	4
3. A lot of people in this neighborhood stay home after dark because they're afraid to go outside by themselves.	1	2	3	4
4. People should not walk alone in this neighborhood.	1	2	3	4
5. This neighborhood is really a safe place to live.	1	2	3	4

The next setof statements describe problems common to some communities. Please circle the number that indicates how much of a problem these things have been in your

neighborhood during the past 12 months.

	Not a problem at all	Somewhat of a problem	A problem	A serious problem
1. Drug addicts in the neighborhood	1	2	3	4
2. Alcoholics in the streets	1	2	3	4
3. Rundown buildings	1	2	3	4
4. Burglary of homes and apartments	1	2	3	4
5. Crazy people on the streets	1	2	3	4
6. Unemployment	1	2	3	4

The next series of questions asks you how frequently you have observed violent events in your neighborhood, circle the number that shows how often you have either witnessed or heard about these events during the past 12 months.

	Never	Seldom	Sometimes	Frequently
1. A fight in which a weapon was used	1	2	3	4
2. Violent arguments between neighbors	1	2	3	4
3. People being hit by the police	1	2	3	4
4. Someone murdered	1	2	3	4
5. Someone committing suicide	1	2	3	4

Questionnaire 5

Instructions:

Below are a series of statements describing some concerns and events that perhaps you have had or have experienced, circle the number which indicates how often these events or concerns have occurred in your life during the past 12 months.

	Never	Seldom	Sometimes	Frequently
1. There have been times when I could not pay my rent.	1	2	3	4
2. There have been times when I did not have the money to buy food.	1	2	3	4
3. I worry that my child will be attacked or killed by a gang on the way to and from school.	1	2	3	4
4. I worry that me or my children will be hit by a stray bullet while in my home.	1	2	3	4
5. I worry that my children will be forced to join a gang against their will.	1	2	3	4
6. I worry that my child will get involved with drugs.	1	2	3	4
7. My child has been suspended from school.	1	2	3	4
8. I have had problems getting health insurance coverage for my children.	1	2	3	4
9. I worry that if I become ill and must take off from my job, I will not have any means of paying my bills	1	2	3	4

Questionnaire 6

Instructions:

Below is a list of events that happen in the daily lives of people. During the past 12 months, certain ones of these events may have happened to people you know. If, during the past 12 months, the event happened to someone important to you, please place a

check () in the blank across from the event. If the event did not occur to someone important to you, please leave the blank empty.

		Happened to someone important to me
1.	Marriage	_____
2.	Troubles with the boss	_____
3.	Detention in jail or other institution	_____
4.	Death of spouse, mate, or boyfriend	_____
5.	Death of a close family member	_____
6.	Foreclosure on a mortgage or loan	_____
7.	Death of a close friend	_____
8.	Minor violations of the law (e. g., traffic tickets, jaywalking, disturbing the peace)	_____
9.	Outstanding personal achievement	_____
10.	Pregnancy	_____
11.	Major change in the health or behavior of a family member	_____
12.	Sexual difficulties	_____
13.	In-law troubles	_____
14.	Major change in the number of family get-togethers (e.g., a lot more or a lot less than usual)	____
15.	Major change in financial state (e. g., a lot worse off or a lot better off than usual)	_____
16.	Gaining a new family member (e. g., through birth, adoption, or an older person moving in)	_____
17.	Change in residence	_____
18.	Son or daughter leaving home (e.g., marriage, attending college)	_____
19.	Separation from spouse or partner or breakup with boyfriend or partner	_____
20.	Major change in church activities (e. g., a lot more or a lot less than usual)	_____
21.	Reconciliation with mate or boyfriend	_____
22.	Being fired from work	_____
23.	Divorce	_____
24.	Changing to a different line of work	_____
25.	Major change in the number of arguments with spouse, mate, or boyfriend (e. g., either a lot more or a lot less than usual)	_____
26.	Major change in responsibilities at work (e. g., promotion,demotion, lateral transfer)	_____
27.	Major change in work hours or conditions	_____

	Happened to Someone Important to Me
28. Major change in usual type and/or amount of recreation	_____
29. Taking on a mortgage greater than $10,000 (e. g., purchasing a home, business)	_____
30. Taking on a mortgage or loan less than $10,000 (e. g., purchasing a car, TV, freezer)	_____
31. Major personal injury or illness	_____
32. Major change in social activities (e. g., more or less dancing, going to the movies, visiting)	_____
33. Major change in living conditions (e. g., building a new home,remodeling, deterioration of home or neighborhood)	_____
34. Vacation	_____
35. Christmas	_____
36. Changing to a new school	_____
37. Beginning or ceasing formal schooling	_____

Questionnaire 7

Instructions:

The questions below concern how you see yourself, **TODAY**. Read each **QUESTION CAREFULLY** and then write the number of the response which best describes how you feel on the line next to the item number for each question. Each person is different, so there are no **"RIGHT"** or **"WRONG"** answers. We want an honest statement of how you generally see yourself.

FOR EACH OF THE FOLLOWING STATEMENTS, PLEASE SELECT ONE OF THE FOLLOWING RESPONSES, AND THEN RECORD THE NUMBER OF THAT RESPONSE ON THE LINE NEXT TO THE STATEMENT:

Completely False = 1 Don't Know = 3 Somewhat True = 4
Somewhat False = 2 Completely True = 5

___ 1. I've always felt that I could make of my life pretty much what I wanted to make of it.
___ 2. When trying to learn something new, I soon give up if I am not initially successful.
___ 3. Once I make up my mind to do something, I stay with it until the job is completely done.
___ 4. When unexpected problems occur, I don't handle them well.
___ 5. I like doing things that other people thought could not be done.

___ 6. It is difficult for me to make new friends.
___ 7. When things don't go the way I want them to, that just makes me work even harder.
___ 8. Sometimes I feel that if anything is going to be done right, I have to do it myself.
___ 9. It's not always easy, but I manage to find a way to do the things I really need to get done.
___ 10. Very seldom have I been disappointed by the results of my work.
___ 11. I feel that I am the kind of individual who stands up for what I believe in regardless of the consequences.
___ 12. In the past, even when things got really tough, I never stopped working on my goals.
___ 13. It's important for me to be able to do things the way I want to do them, rather than the way other people want me to do them.
___ 14. I don't let my personal feelings get in the way of doing a job.
___ 15. Hard work has never really helped me to get ahead in life

Research Participant Information Sheet

Subject Number: _____

Date of birth: ____

Family size ____ (include adults and children)

Marital Status: _____ Never married ____Married ___ Divorced ____ Separated ____Widowed

Do You have children? ____ If yes, how many? ____

What is your racial background?
African American ___
White ___

How many years of education have you completed?
Less than 8 years ___
8 ___ college ___
high school ___ Beyond college ___
Junior college ___

Are you currently employed? ____

If currently employed:
Full-time ____
Part-time ____

If not currently employed, which of the following best describes your situation:
Not looking for work ____
Looking for work ____
On leave ____
Temporary disability ____
Permanently disabled ___
Other _____

What is the total annual household income?
Less than $8,050 ___

$8.050-$10,849 ___

$10,850-$13,649 ___

$13,650-$16,449 ___

$16,450-$19,249 ___

$19,250-$22,049 ___

$22,050-$24,849 ___

$24,850-$27,649 ___

$27,650 ___

Above $ 27,650 ___

What is your religious affiliation (optional)?

Methodist ____
Presbyterian ____
Lutheran ____
Episcopal ____
Baptist ____
Jewish ____
Catholic ____
Other _____

Do you have a chronic illness? ____, if yes, what type
_____

Do you exercise? ____ If yes, Please indicate how often:
Once per week ____
Twice per week ____
Three times per week ____
More than three times per week ____

INFORMED CONSENT

Project: A study of the influence of stress and personality factors on illness in low socioeconomic status women.

Researcher: Dorothy Williams, Graduate student, Department of Psychology, The University of Tennessee, Knoxville - (423) 755-4514

This study is interested in whether women who are undergoing a great amount of stress experience higher rates of illness than women who are not under a large amount of stress. We are also interested in whether the rate of illness is the same or different in those with varying personality characteristics, and in whether there are racial differences in these outcomes.

As a participant in this research project, you will be asked to complete a questionnaire packet. The first questionnaire asks you about events that happened to you that were stressful. The second questionnaire asks your opinion about certain events. The third questionnaire asks about any illnesses, which you may have had. The fourth questionnaire asks for your opinion about your neighborhood. The fifth questionnaire asks about special circumstances and concerns that you may have experienced within the past 12 months. The sixth questionnaire asks you about events that may have happened to someone you know or to someone important to you. You also will fill out a questionnaire about your health status, age, family size, marital status, and other personal information. Completing these questionnaires will not expected to subject you to any discomfort greater than that ordinarily encountered during the performance of routine psychological tests.

Your participation in this research is voluntary, and you may withdraw from participation in the project at any time. For your participation in the project you will receive a lottery ticket giving you a 1 in 400 chance of winning a 19 inch color TV. The ticket will be given to you after the questionnaires have been completed.

You will not be required to provide your name and the information provided on the various questionnaires does not, in any way, reveal your identity. The questionnaires will be scored and used for the purpose of this research project within one year. After that time, they will be retained in the files of this researcher, and may be used for future research for up to ten years. If you have any questions, please contact Dorothy Williams at the above address and phone number.

In order to protect your identity, you will not be asked to sign this consent form, however, your completion of the questionnaire packet indicates your informed consent to participate in the investigation conducted by Dorothy Williams. It also indicates that you have read the description of the study's procedure and that you have had all of your questions answered. Finally, by completing the questionnaire packet, you are indicating

that you understand that you may terminate your participation at any time without penalty or loss of benefits. A copy of this form is being provided to you, and a copy will be maintained in the files of the researcher. Your agreement to participate is restricted to this study and can not be understood as an indication of your willingness to participate in future research projects conducted by this researcher or by this institution.

Date: _____

Researcher's Signature: _____

VITA

Dorothy Williams was born in Greenville, South Carolina on January 17, 1944. She attended Bryson High in South Carolina where she was Valedictorian of the Class of 1962. During her high school years she served in various positions of leadership, including President of the Senior class and Student body president. Dorothy continued her involvement in school activities during her matriculation at South Carolina State College in Orangeburg, South Carolina. She graduated cum laude in May 1967 with a Bachelor of Arts in Sociology. During her Junior year at South Carolina State College, she was elected to Who's Who in American Colleges and Universities. After working for several years as a caseworker for the New York State Department of Public Welfare, she entered the Master's program in Social Work at the State University of New York at Buffalo; from which she graduated in 1971 with a Master's in Social Work. In 1973, Ms Williams moved to Chattanooga, Tennessee where she became employed as a psychiatric social worker at Moccasin Bend Mental Health Institute. She was promoted to Assistant Director of Admissions. She later left this position to pursue a career in higher education. She was employed at the University of Tennessee at Chattanooga as a teacher in September of 1977. During her years of employment she has served in a variety of positions, including Acting head of the Social Work Program. She received the Distinguished Professor Award in 1980 and the University of Tennessee at Chattanooga student government Outstanding teacher award in 1987. Ms. Williams entered the University of Tennessee, Knoxville as a doctoral student in psychology in 1988, and expects to received her Ph D in December 1998. She continues in her employment as an Associate professor at the University of Tennessee at Chattanooga, where she teaches in the Social Work Program. She is active in the community through her involvement with several local boards.