

EXAMINING LINKAGES BETWEEN RACE, ENVIRONMENTAL CONCERN, HEALTH, AND JUSTICE IN A HIGHLY POLLUTED COMMUNITY OF COLOR

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Currently, there is a limited amount of research on Black attitudes toward the environment. Moreover, possible linkages between race, environmental attitudes, and perceptions about environmental health and justice have not been examined in the United States. This study contributes to this literature by assessing several of these linkages using data obtained from a survey of 247 residents living in or around a highly polluted community of color. It found that public perceptions about environmental health problems and environmental justice were significantly linked to race and public concern for local environmental problems. Blacks are more likely than Whites to believe they are being exposed to poorer environmental conditions, suffer more related health problems, and think that local public agencies and officials have not dealt with environmental problems in their neighborhood in a just, equitable, and effective manner.

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Although scientific consensus has not been reached, there is ample evidence to suggest that race and class are importance determinants of the location of environmental pollution, degradation, and associated health risks (Bullard, 1990; Cable, Hastings, & Mix,

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2002; Foster, 1993; Goldman, 1994; Jones, 1998; Mohai, 2003; Mohai & Bryant, 1992; Zaharan, 2003; but see Bowen, 2001). This research has helped us to understand how many of the hidden costs of an affluent society are likely to be paid by people of color and other disadvantaged groups through high levels of exposure to environmental risks. People of color and the poor are more likely than Whites and other more affluent groups to live in areas with poor environmental quality and protection (Bullard, 1990; Mohai & Bryant, 1992; United Church of Christ Commission on Racial Justice, 1987; U.S. General Accounting Office, 1983). Blacks in particular are exposed to a disproportionate amount of pollution and suffer the highest levels of lead and pesticide poisoning and other associated health problems (Adeola, 1994, 2000, 2004; Bullard, Moore, & Cole, 2002).

During the 1980s, grassroots protest led by people of color and the poor over these environmental disparities, and by an inattention from mainstream environmental groups to address them, stimulated the emergence of the environmental justice movement in the United States (Bullard, 1990; Cable et al., 2002). It was founded on the principle that "environmental quality is a basic right of all individuals" (Bullard, 1990, cited in Jones & Carter, 1994). A major claim of its activists is that communities of color and the poor do not enjoy this right because of prejudice, discrimination, and racism. Minorities, the poor, and other less powerful groups are also less able to mount a sustained effort to challenge these environmental injustices than Whites and more affluent groups (Bullard, 1994; Mohai & Bryant, 1992). Government agencies have also been criticized for being slow to provide relief to contaminated communities of color and levying lower fines on companies that pollute in Black communities (see Head, 1995; Lavelle & Coyle, 1992). Claims of the environmental justice movement gained institutional legiti-

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macy in the 1990s when the Clinton administration and the Environmental Protection Agency (EPA) acknowledged that Blacks and other minorities are disproportionately exposed to environmental pollution and associated health risks (Bailey, Faupel, & Holland, 1992; Bryant, 1995; U.S. EPA, 1992).

The emergence and rapid growth of the environmental justice movement caught many by surprise, because it was generally assumed that Blacks and other minorities had little or no concern about the environment. Some even suggested that environmentalism was really only a "White thing" (Hershey & Hill, 1977; see Jones, 1998; Jones & Carter, 1994). This belief was partly because research on public concern for the environment (environmental concern) before 1990 was almost exclusively based on the opinions of Whites (Jones, 1998). Research on environmental concern among Blacks is still very limited, and much of what is assumed to be true is based more on myth than reality (Jones, 1998, 2002; Jones & Carter, 1994; Mohai, 2003). Today, there is a growing body of evidence suggesting that African Americans are very concerned about the environment, and they are just as concerned, and in some cases more concerned, than Whites (for reviews, see Jones, 1998, 2002; Jones & Carter, 1994; Mohai, 2003; Taylor, 1989).

Based on claims by environmental justice advocates and bolstered by existing research, it seems reasonable to assume that African Americans are concerned about local environmental problems, feel that they may suffer from environmental health risks associated with them, and sense that they are being exposed to environmental injustices. The possible linkages between attitudes toward the environment and perceptions about environmental health and justice have yet to be examined within the general population or among racial and ethnic subgroups in the United States. The purpose of our study was to begin this research process by examining these theoretical linkages from data obtained from a survey of Blacks and Whites living in or around the Red River community (RRC) of Clarksville, Tennessee.

STUDY AREA AND ENVIRONMENT

Blacks came to middle Tennessee and Clarksville during the early 1800s as slaves who worked the tobacco fields. When anti-slavery sentiments rose during the mid-1800s, constables were hired in Clarksville to control slaves determined to gain their freedom (Dunn, 2002). As the Civil War raged, some Blacks from Clarksville joined the Union Army, and others created a shantytown along the Red River community (RRC). The RRC is a remnant of this shantytown. It is a poor, working-class community of color made up of 2,500 residents. It has the highest concentration of Blacks (49%), the highest rates of poverty (40%) and unemployment (25%), and the lowest median income (\$16,750) in Clarksville (Rainey, 2003). In contrast, the economic conditions in the rest of Clarksville are much better, as evidenced by a significantly higher median income (\$37,500) and significantly lower rates of poverty (11%) and unemployment (5%; Rainey, 2003). Residents of the RRC also face serious problems associated with poverty and urban blight. The RRC is plagued by decaying and dilapidated housing, abandoned houses and vehicles, and numerous vacant lots. Most of the available houses are rentals that are poorly maintained by the absentee owners. Many residents live in unfavorable and unsafe conditions with leaky roofs and faucets, pest-infested living quarters, broken air conditioners and heaters, and streets littered with broken glass and hypodermic needles (Rainey, 2003). Residents are also exposed to serious environmental health risks:

- Residents live next to one of the most polluted rivers (Red River) in Tennessee, which has high levels of polychlorinated biphenyls (PCBs), mercury, pesticides, fecal coliform bacteria, and other pathogens and pollutants (Finley, 2002);
- 23% of housing units have high risk of lead poisoning (U.S. EPA, 2001);
- The Lincoln Home housing project is built on an abandoned waste dump (Rainey, 2003);
- Several polluting facilities and brownfields exist in or around the RRC (Rainey, 2003);

- The RRC is located in Montgomery County, where there are more reported releases of zinc compounds (13 million pounds) than in any other county in Tennessee (EDF, 1999);
- The county faces a cancer risk more than 100 times the Clean Air Act goals (U.S. EPA, 2001).
- People of color are at higher risk from exposure and adverse health effect than other groups in the county (U.S. EPA, 2001).

BACKGROUND, THEORETICAL RATIONALE, AND HYPOTHESES

A major premise of the environmental justice movement is that a link exists between the location of environmental pollution and race. In particular, it is assumed that Blacks are exposed to more pollution and more serious environmental degradation than Whites. This disproportionate and unequal distribution of environmental hazards exposes them to greater health risks. During the past 15 years, researchers have used a variety of methods and measures to evaluate this and other claims of the environmental justice movement. Although this methodological diversity may account for some of the different conclusions reported in the literature, there is ample evidence to suggest that race and class are the most important determinants of the location of environmental risks, pollution, degradation, and associated health risks. These studies rely almost exclusively on objectively derived indicators of racial and community composition, proximity to environmental hazards and pollution, and epidemiological measures to determine if differential patterns of exposure and risks exist among Blacks and other disadvantaged groups.

The “differential exposure hypothesis” (see Jones, Fly, & Cordell, 1999; Lowe & Pinhey, 1982; Mohai & Bryant, 1998; Rainey, 2003) assumes that people who are exposed to greater local environmental degradation and pollution are more concerned about the environment. However, this rationale, and most research on environmental justice, fails to take into account *public perceptions* about environmental risk and injustice. In contrast, research on “environmental concern” is mostly based on subjectively derived indicators

gauging public perceptions and attitudes on a range of environmental issues and policies. Consequently, environmental concern researchers generally assume that human responses to environmental problems are *mediated* by interpretive processes that provide different meanings and impacts to different groups and people (see Hannigan, 1997; Kroll-Smith & Couch, 1993). Thus, research on the social bases of environmental concern (or social correlates of concern) tries to identify which groups are generally more concerned about the environment (e.g., younger, better educated, Democrats, liberals, and women) within the general population (see Jones & Dunlap, 1992). A small but growing number of these studies examine relationships between race or ethnicity and environmental concern, and most of them have focused their attention on comparing Blacks and non-Hispanic Whites.

Prior to 1990, researchers examining relationships between race and environmental concern employed theoretical rationales (see Arp, 1994; Hershey & Hill, 1977; Taylor, 1989) that were almost exclusively based on the presumption that Blacks were significantly *less concerned* about the environment than Whites (Jones, 1998; Parker & McDonough, 1999). But this and other myths about Black environmental concern were accepted with little or no empirical support (see Jones, 1998, 2002; Jones & Carter, 1994; Mohai, 1990, 2003). Many were found in the popular culture or uncovered in reviews of literature (see Adeola, 2004; Jones, 1998, 2002; Jones & Carter, 1994; Jones & Dunlap, 1992; Mohai, 2003; Taylor, 1989). They include the Whites-only hypothesis, the concern gap hypothesis, and the economic contingency hypothesis.

The so-called Whites-only hypothesis assumed that environmental values, and environmentalism in general, were the sole property of Whites—and that support for environmental protection was really only a “White thing.” Jones and Carter (1994) suspect this myth emerged during the early 1970s when some members of the civil rights movement thought that the emerging environmental movement might be a conspiracy aimed at diverting attention away from their own agenda. Others within the civil rights movement openly attacked ideas promoted by some early environmentalist such as “population control,” “lifeboat ethics,” and “no growth,”

because they were seen as being racist or contrary to the interests of people of color and the working class.

The energy crisis in the mid-1970s and its legacy of spiraling inflation, rising unemployment, corporate practices such as “job blackmail,” and a faltering economy seemed to put more pressure on Blacks than Whites to choose between jobs and protecting the environment (Jones, 1998; Kazis & Grossman, 1982). This jobs-versus-the-environment mentality spawned the economic contingency hypothesis (Jones & Dunlap, 1992). It assumes that economically vulnerable groups (e.g., those living in low-income households, Blacks, and women) are rather shallow in their support for environmental protection and this would become apparent during economic recessions and other periods of economic decline.

The concern gap hypothesis gained appeal in the late 1980s (see Jones, 1998; Taylor, 1989). It assumes Blacks are less concerned than Whites, but finally acknowledges that Blacks are actually concerned about the environment. During the past decade, the rapid growth of the environmental justice movement, a growing recognition of the strong environmental voting records of the Congressional Black Caucus, research on health and occupational hazards associated with differential exposure to pollutants, and critical reviews of earlier studies led to a major reassessment and reconceptualization of Black public opinion (Adeola, 2004; Jones, 1998; Mohai, 2003).

Although the accumulated empirical evidence is still limited, most studies suggest that Blacks remain firm in their support for environmental protection during periods of economic decline and are just as concerned as Whites, and in some cases more concerned, about environmental issues. Despite this evidence, popular myths continue to distort and devalue the views of Blacks within public policy debates and during the decision-making process (Jones, 2002). Moreover, public administrators, industry representatives, and the media are slow to challenge these faulty notions. They can also maintain them by actively promoting stereotypes about Blacks and their concern and support for the environment (Jones, 2002). Moreover, Blacks (and more generally, people of color and other disadvantaged groups) may feel that they are being exposed to

higher levels of environmental contaminants and associated health problems because their voices are rarely heard, their views are often distorted, and their values are rarely taken into consideration. Consequently, "environmental prejudice" toward Blacks may be yet another factor that can increase their exposure to unfair practices *and* to negative consequences associated with environmental pollution and risky technologies.

Within this context, we posit that public responses to environmental problems are mediated by interpretive processes that are significantly shaped by a variety of sociocultural, economic, and environmental factors (cf. Kroll-Smith & Couch, 1993). These processes create different meanings, social priorities, and public policies that can have real consequences to humans and the environment. We would assume that when all things are equal, the closer people live near serious environmental contamination, the more danger they are actually facing (Kroll-Smith, Couch, & Levine, 2002). Such a cautious social constructionist perspective recognizes the reality of environmental problems but focuses its analysis on how these problems are interpreted and framed by various groups (see Best, 1995; Hannigan, 1997; Shriver, in press).

Based on the claims of the environmental justice movement and on the cumulative research on environmental justice and concern, we expect that those who believe they are being exposed to more local environmental risks, associated health impacts, and environmental injustices are more concerned about their local environment than those who feel they are being less exposed and affected by these things. We call our theoretical rationale *perceived differential exposure to environmental risks*. Given this general premise, we postulate that African Americans living in highly polluted, poor communities of color are more concerned about local environmental problems than non-Hispanic Whites, because they feel that they suffer more environmental health risks associated with them and sense they are exposed to more environmental injustices. The following hypotheses were used to test these theoretical linkages among Blacks and Whites living in and around the RRC in Clarksville, Tennessee.

HYPOTHESES

Hypothesis 1: Blacks are more concerned about local environmental problems than Whites.

Hypothesis 2: Blacks perceive more health problems associated with poor local environmental conditions than Whites.

Hypothesis 3: Blacks are more likely than Whites to think public agencies and officials fail to deal with environmental problems in their neighborhood in a just, equitable, and effective manner.

Hypothesis 4: Public perceptions of environmental health and justice are related to environmental concern.

Hypothesis 5: Public perceptions of environmental health are related to perceptions of environmental justice.

METHOD

This study was part of a larger project conducted over a 2-year period (2001-2003). The first stage of this project consisted of in-depth interviews with long-term residents in the greater RRC (see Rainey, 2003). Information about the community, its history, its people, and the social and environmental problems affecting it guided the development of a mail survey of residents and helped ensure its findings are valid and reliable. The methods presented below, and the results that follow, are restricted to this mail survey.

The mail survey was implemented over a 6-week period (May-June) in 2002 using a four-wave mailing approach (see Salant & Dillman, 1994). An introductory letter was sent out to the heads of 1,000 households describing the study and encouraging participation. A cover letter and survey were mailed to these people during the second wave. A postcard reminder was mailed out followed by a second copy of the survey (fourth wave) to those residents who had not yet responded. The high number of contacts were necessary to increase the chances of getting a higher than average response rate for this population (young, high poverty, unemployment, minority, transient, and low formal education) and to limit potential sampling error. All surveys returned were tracked, reviewed, coded,

and entered into a digital file constructed with the help of staff at the Human Dimensions Laboratory at the University of Tennessee.

Those eligible to participate in the mail survey were adults 18 years of age or older and living in the RRC (Census Tract 1008) or in nearby census tracts (1001, 1007, and 1009). A total of 403 (40.3%) listed households from the RRC and 597 (59.7%) listed households located in adjacent census tracts was obtained from Survey Sampling Inc. of Fairfield, Connecticut. Each of the 1,000 households was subsequently sent a mail survey. The mailing closely matched the proportion of completed questionnaires obtained from the RRC (39%) and from the adjacent census tracts (61%). Seventy-nine potential respondents were eliminated from the initial sample because they were either deceased or ineligible. Of the remaining questionnaires received from potential respondents, 670 were not returned and 4 were sent back incomplete. The total of 247 completed and returned questionnaires represents a response rate of 27%. Although this rate would be judged rather low for a mail survey of the general public, it represents a higher than average response rate for the targeted population. Based on census figures and on previous survey research, it was estimated that about 42% of the completed questionnaires would come from Blacks, 51% would come from non-Hispanic Whites, and the rest (7%) would be from other groups (Native Americans, Asians, etc.). These estimates proved to be fairly accurate, as the actual figures obtained from the three groups were 39%, 50%, and 11%, respectively. Overall, it is apparent that the final sample of respondents closely matches the racial composition of the population living in and around the RRC.

Three separate, but substantively related, indicators of public concern for environmental problems (environmental concern) were developed and measured. An index gauging public perceptions about environmental health risks associated with these problems, one measuring public perception about environmental justice, were also developed. In addition, a single-item indicator of race was also constructed.

A 14-item Environmental Concern (EC) Index measured public concern for *specific environmental problems* in the neighborhood.

It was composed of Likert-type items that asked respondents their level of concern (very unconcerned to very concerned) about drinking water quality; waste dumps and landfills; litter, dirt and debris; waste and pollution exposure; loss of trees, green space, and wildlife; agricultural wastes and runoff; lead paint and lead poisoning; rats, mice, or cockroach problems; flooding and water damage; abandoned homes and empty lots; public buildings and facility condition; the condition of green areas and open spaces; and stream and river conditions. Index scores ranged from 14 to 70, with higher scores representing greater concern about environmental problems in the neighborhood. A reliability test performed on the 14 items yielded a very high reliability score (Cronbach's $\alpha = .96$). EC-II was a single-item question that estimated public concern (very unconcerned to very concerned) for the *overall environmental quality* in their neighborhood. EC-III was a single-item measure gauging public concern about the *seriousness of environmental problems* in their neighborhood (not serious at all to very serious). A 9-item environmental health index (EH Index) composed of Likert-type items was constructed. Items represented statements about *public perceptions of certain physical side effects* associated with environmental conditions. Respondents were asked to provide subjective estimates (very unlikely to very likely) about disorders and illnesses that they or any member of their current household had experienced as a result of poor environmental conditions in their neighborhood. These included stress or emotional problems, stomach or body aches, headaches, nervous disorders, loss of appetite, significant weight loss or gain, skin rashes or skin problems, memory loss or learning disabilities, breathing problems, asthma, and allergies. Index scores ranged from 9 to 45, with higher scores reflecting greater likelihood that the person believes she or he or a household member experienced health problems from exposure to environmental contaminants in their neighborhood. A reliability test on the items yielded a very high reliability score (Cronbach's $\alpha = .95$).

A 9-item Environmental Justice (EJ) Index was used to gauge *public perceptions about environmental justice*. Respondents were

asked their views about efforts by local public agencies and officials to improve environmental conditions in their neighborhood. Respondents were asked about the extent they agreed or disagreed that officials had informed residents about the problems, asked community members for their input, held meetings to address concerns of the residents, enforced environmental laws and regulations in their neighborhood, or exposed residents to more than their fair share of pollution and degradation. These activities reflect principles of procedural and distributive justice as well as basic democratic practices that provide citizens with access to public information, an opportunity to have their opinions heard, involvement in the decision making, and fairly distributing the benefits and risks associated with environmental degradation and protection (see Anand, 2004). Index scores ranged from 9 to 45, with higher scores reflecting a greater likelihood that respondents think local public agencies and officials failed to deal with environmental problems in their neighborhood in a just, equitable, and effective manner. A reliability test on the 9-item EJ Index yielded a very high reliability (Cronbach's $\alpha = .84$).

Race was a single item that asked respondents "What race or ethnicity do you identify with the most?" Only those responding African American/Black ($n = 94$, or 43.5%) or non-Hispanic White ($n = 122$, or 56.5%) on the survey were included in the analyses, and their responses were recoded into a dummy variable (Blacks = 0, Whites = 1). The majority (55%) of African Americans in our study are residents of the RRC (census tract 1008); most Whites (66%) live in adjacent census tracts (1001, 1007, 1009). Independent samples *t* tests were used to test for significant group differences between Blacks and Whites on indicators of environmental concern, health, and justice. Bivariate correlation analyses using listwise deletion of cases were used to test for relationships between these measures, and a series of exploratory stepwise regression analyses were used to predict environmental concern from indicators of environmental health, justice, and race.

RESULTS

The results presented in Table 1 suggest that as a group, Blacks are significantly more concerned than Whites about local environmental conditions (EC Index). Table 2 provides descriptive details supporting this general pattern. Blacks are significantly more concerned than Whites on 13 of the 14 items that covered a wide range of environmental problems affecting the neighborhood. There are significantly more Blacks than Whites who are *very concerned* about abandoned home and empty lots (61% vs. 18%), exposure to waste and pollution (58% vs. 16%), and the quality of the local drinking water (55% vs. 20%). There are also significantly more Blacks (62%) than Whites (26%) who are *very concerned* about the overall environmental quality of their neighborhood (EC-II). Blacks are also more likely than Whites (46% vs. 12%) to think environmental problems in their neighborhood are serious (EC-III). Together, the findings for the EC Index, EC-II, and EC-III lend strong support to our first assumption (Hypothesis 1) that Blacks are more concerned than Whites about local environmental problems.

The results presented in Table 1 also indicate that as a group, Blacks believe they have suffered more health problems from exposure to poor environmental conditions in their neighborhood than Whites (EH Index). Table 3 shows that more Blacks than Whites believe that it is *very likely* they (or someone else in their household) have experienced more breathing, asthma, and allergy problems (30% vs. 3%), stress and emotional problems (23% vs. 7%), and headaches (15% vs. 3%). These findings lend strong support to our second hypothesis, which assumes Blacks perceive more health problems associated with poor local environmental conditions than Whites.

The results presented in Table 1 also show that there is a greater likelihood that Blacks feel local public agencies and officials failed to deal with environmental problems in their neighborhood in a fair, just, and effective manner (EJ Index). Table 4 presents details supporting this general pattern. More Blacks *strongly agree* that public agencies and officials have spent more time and money

TABLE 1
Environmental Concern (EC), Health (EH), and Justice (EJ)

<i>Indicator</i>	<i>Group</i>	<i>Mean</i>	<i>Standard Deviation</i>	<i>t</i>	<i>Significance (1-tailed)</i>
EC Index	Blacks	56.2	13.7	6.2	<.001
	Whites	42.6	15.5		
EC-II	Blacks	4.4	1.0	5.6	<.001
	Whites	3.5	1.3		
EC-III	Blacks	3.4	1.1	6.7	<.001
	Whites	2.3	1.0		
EH Index	Blacks	23.0	10.5	5.1	<.001
	Whites	16.0	7.3		
EJ Index	Blacks	31.0	7.3	3.8	<.001
	Whites	27.2	6.3		

NOTE: Higher mean scores on the EC indicators reflect greater concern for environmental problems in their neighborhood. Higher mean scores on the EH Index reflect a greater likelihood that members of this group believe they have experienced health problems from being exposed to environmental contaminants in their neighborhood. Higher mean scores on the EJ Index reflect a greater likelihood that members of this group believe local officials and agencies have unfairly subjected them to a range of environmental injustices. Listwise deletion of missing values resulted in 192 total respondents, composed of 78 Blacks and 113 Whites.

improving environmental conditions in other communities (40% vs. 11%), did not spend enough time and money improving environmental conditions in their neighborhood (35% vs. 14%), ignored their environmental concerns (20% vs. 6%), and exposed them to disproportionate amounts of pollution and degradation (20% vs. 6%). More Blacks than Whites also *strongly disagree* that public agencies and officials informed them about local environmental problems (31% vs. 20%), held meeting about them (23% vs 11%), or enforced environmental laws and regulations (18% vs 7%). The above findings lend strong support to the assumption that Blacks are more likely than Whites to think public agencies and officials do not deal with environmental problems in their neighborhood in a just, equitable, and effective manner (Hypothesis 3).

TABLE 2
Environmental Concern (EC) Index Items:
Concern for Neighborhood Environmental Problems

<i>Concern Item</i>	<i>"Very Concerned"</i>		<i>Group % Difference</i>
	<i>% Blacks</i>	<i>% Whites</i>	
Abandoned home and empty lots	61	18	+43
Exposure to wastes and pollution	58	16	+42
Condition of streets and roads	55	15	+40
Rats, mice, and cockroach problems	55	18	+37
Waste dumps and garbage landfills	51	14	+37
Quality of the drinking water	55	20	+35
Lead paint and lead poisoning	46	14	+32
Litter, dirt, and debris	61	29	+32
Flooding and water damage	40	13	+27
Condition of streams and rivers	51	25	+26
Condition of public buildings and facilities	39	14	+25
Agricultural runoff	35	12	+23
Conditions of green areas and open spaces	36	24	+12
Loss of trees, green space, and wildlife	29	30	-1

TABLE 3
Environmental Health (EH) Index Items:
**Perceived Household Health Problems Linked to
 Poor Environmental Conditions in the Neighborhood**

<i>Health Item</i>	<i>"Very Likely"</i>		<i>Group % Difference</i>
	<i>% Blacks</i>	<i>% Whites</i>	
Breathing problems, asthma, or allergies	30	3	+27
Stress or emotional problems	23	7	+16
Headaches	15	3	+12
Stomach or body aches	13	2	+11
Skin rashes or skin problems	11	1	+10
Nervous disorders	10	2	+8
Significant weight loss or gain	11	2	+9
Memory loss or learning disabilities	8	2	+6
Loss of appetite	7	2	+5

TABLE 4
Environmental Justice (EJ) Index Items: Perceptions
About What Local Public Agencies and Officials Did or Did Not
Do to Improve Environmental Conditions in the Neighborhood

<i>Justice Item</i>	<i>"Strongly Disagree"</i>		<i>Group % Difference</i>
	<i>% Blacks</i>	<i>% Whites</i>	
Spent less time/money on environment in other communities	40	11	+29
Spent enough time and money improving our environment	35	14	+21
Addressed our environmental concerns	25	8	+17
Exposed us to more than a fair share of pollution/degradation	20	6	+14
Asked the community for its input	27	17	+10
Held meetings about these problems	23	11	+12
Informed us about the problems	31	20	+11
Involved us in the decision-making process	31	20	+11
Enforced environmental laws/regulations	18	7	+11

NOTE: Index items were rephrased in this table to enhance understanding and consistency of interpretation.

The results obtained from bivariate correlation analyses are presented in Table 5. They support our earlier findings that Blacks are more concerned about local environment problems and the overall environmental quality of the neighborhood and think these problems are more serious. The correlations also demonstrate that these types of environmental concerns are strongly linked to each other. They indicate that people who are more concerned about the local environment (EC Index) are more likely to believe that they (or a member of their household) experienced health problems because of poor environmental conditions in their neighborhood (EH Index). These people are more likely to be Black than White (race). The correlations suggest that public concern about the seriousness of local environmental problems (EC-III) is most strongly linked ($r = .55$) to heightened perceptions of environmental health problems (EH Index). These empirical linkages demonstrate that public perceptions of environmental health are related to environmental concerns (see Hypothesis 4).

TABLE 5
Bivariate Correlations: Race, Environmental
Concern (EC), Health (EH), and Justice (EJ)

	<i>EC Index</i>	<i>EC-II</i>	<i>EC-III</i>	<i>EH Index</i>	<i>EJ Index</i>
Race (Black, White)	-.41	-.37	-.45	-.38	-.21
EC Index		.74	.55	.32	.20
EC II			.57	.38	.25
EC III				.55	.37
EH Index					.32

NOTE: All correlations are significant ($p < .001$; 1-tailed test).

The bivariate findings also demonstrate that Blacks who are more concerned about environmental problems in their neighborhood (EC Index) and its overall environmental quality (EC-II) and think that these problems are serious (EC-III) are more likely to believe that local officials and public agencies are more likely than Whites to think public agencies and officials fail to deal with environmental problems in their neighborhood in a just, equitable, and effective manner (EJ Index). The empirical linkages between measures of environmental concern and environmental justice are weaker than for environmental health but are unlikely due to chance (1 out of 1,000). The bivariate results support our previous findings showing there is a greater likelihood that Blacks may feel that local public agencies and public officials have unfairly subjected them to a range of environmental injustices.

In the final bivariate analysis, we tried to determine if perceptions about environmental health are related to perceptions about environmental justice (Hypothesis 5). Our results ($r = .32$) suggest they are moderately related. Residents who perceive more environmental health impacts are more likely to think public agencies and officials have failed to deal with environmental problems in their neighborhood in a just, equitable, and effective manner (Hypothesis 3). Again, these people are more likely to be Black than White.

Our correlation findings on race, environmental concern, health, and justice lend moderately strong support for our theoretical linkages. Given this empirical support, we conducted a series of explor-

atory multivariate regression analyses to determine how well race and perceptions about environmental health and environmental justice predicted our measures of environmental concern. The first regression model used to predict public concern for local environmental problems (EC Index) employed race, environmental health (EH Index), and environmental justice (EJ Index) as independent variables. It explained 20% of the variance, but only race ($\beta = -.34$) and environmental health ($\beta = .20$) were significant predictors ($p < .01$) of local environmental concern. The second model tried to predict public concern for the overall quality of the local environment. This analysis led to similar results. Again, 20% of the variance was explained, but only race ($\beta = -.28$) and environmental health ($\beta = .26$) were significant predictors ($p < .001$). Though environmental justice was not a significant predictor, it did approach significance ($p < .06$). Thus, knowledge of public perceptions about environmental justice may help to better understand public concern for the overall quality of the local environment.

The last model tried to predict public concern about the serious nature of local environmental problems. This analysis lent empirical support to all of our theoretical linkages. It explained 37% of the variance, and race ($\beta = -.24, p < .001$), environmental health ($\beta = .40, p < .001$), and environmental justice ($\beta = .17, p = .005$) were all significant predictors of this indicator of environmental concern. This finding supports Arp and Kenny's (1996) argument that Black concern about the seriousness of local problems may be more strongly linked to environmental justice issues than more general measures of environmental concern.

CONCLUSIONS AND DISCUSSION

This study was the first of its kind. It integrated a set of issues traditionally separated into three areas of research: public concern for the environment, social bases of environmental concern, and environmental justice. It synthesized these issues into the theoretical rational: *perceived differential exposure to environmental risks*. This framework posits that responses to environmental conditions

are mediated by interpretive processes that are shaped by a variety of sociocultural, economic, and biophysical factors. These processes create different meanings, values, and social priorities for individuals that ultimately have real consequences to people and the environment. Thus, those who believe they are being exposed to more environmental risks, associated health impacts, and environmental injustices are going to be more concerned about their local environment than those who feel they are being less exposed and affected by these problems. The framework postulates that links between environmental concern, health, and justice are more salient for specific groups of people and/or more apparent under specific socioenvironmental conditions.

A series of analyses was conducted on survey data obtained from Blacks and Whites living in and around a poor, highly polluted, community of color in Clarksville, Tennessee. The findings support the assumption that public perceptions of environmental problems, environmental health, and environmental justice are linked, and that these linkages may be stronger for Blacks than Whites. Blacks are more likely than Whites to believe that they are being exposed to poorer environmental conditions, suffer more related health problems, and think that local public agencies and public officials failed to deal with environmental problems in their neighborhood in a just, equitable, and effective manner.

Although the measures used in the study were based on self-reports and other subjectively derived indicators, the findings provide a new perspective and evidence to the growing body of research that suggests Blacks are differentially exposed to environmental hazards, health risks, and environmental injustices. Differential perceptions of procedural, distributive, and administrative justice among Blacks and Whites also lend support to the core claims of the environmental justice movement. The findings may also reflect a general lack of trust and faith in the government by African Americans, and its ability to protect them from prejudice, discrimination, and racism that impacts them and their communities on a regular basis (Wright, 1995).

Blacks also seem to possess a detailed knowledge of the nearby Red River, the biophysical environment, and are painfully aware of

the link between poor local environmental conditions and poor health. On the other hand, local public officials and agencies apparently do not inform or educate the residents about these problems and seem unaware or unconcerned about the adverse health impact they have on Blacks living in this area (see Rainey, 2003; also see Bailey et al., 1992). These findings raise other social and environmental justice issues about regulatory compliance and enforcement of environmental laws and whether the federal government or the EPA is doing its job to protect communities of color and other at-risk communities. Regretfully, a recent draft report by the U.S. Commission on Civil Rights (2004) concludes that the EPA and the Bush administration are not. It concludes that the "EPA has failed to embrace the notion that poor and disadvantaged communities reside in higher concentrations of pollutants, or that the distribution of environmental burdens is based on race, income and political power." It also contends that the Bush administration has "failed to increase the participation of affected minority and low-income communities in information gathering and dissemination and decision-making processes." Both cases reflect policy reversals of the EPA and the Clinton administration.

The study also provides new evidence challenging claims that Blacks are less concerned about the environment than Whites (Jones, 2002). On the contrary, the findings indicate that Blacks are more concerned about local environmental problems and the poor environmental quality of their neighborhoods and are more troubled by the seriousness of them than Whites. These conclusions conform with recent research showing Blacks are just as concerned, and in some cases more concerned, about the environment than Whites (e.g., Jones, 2002; Mohai, 2003). Indeed, our study suggests that the government, not Blacks, cares less about environmental problems in Black communities. National trend studies also consistently demonstrate that Blacks are more likely than Whites to think the government is not doing enough to improve and protect the environment (Adeola, 2004; Jones, 1998; Mohai, 2003). Our findings also support Parker and McDonough's (1999) study suggesting the Black community is aware of environmental threats and the likelihood that they will be subjected to environmental injustice.

Researchers should be aware that the way environmental concern is conceptualized does make a difference (Dunlap & Jones, 2002; Van Liere & Dunlap, 1981). Earlier studies reporting that Blacks were less concerned about the environment tended to ignore environmental problems that are more salient to minorities and the poor. Like other studies addressing this methodological concern (Dunlap, Gallup, & Gallup, 1993; Mohai, 1990), ours tried to decrease potential measurement bias by including a wide range of items associated with both the built and natural environment, by pretesting our items, and by conducting tests of reliability (see Rainey, 2003). It is also important to recognize that what is considered an environmental problem or an environmental injustice is influenced by a variety of biophysical, sociocultural, political, legal, and scientific considerations. Researchers need to understand these dynamics and to be aware of potential sources of bias before they start constructing their survey items. We believe our efforts provide reasonable estimates of public perceptions and attitudes on this set of issues.

Additional methodological considerations and further analyses are necessary for a stronger foundation of future policy decisions. Future research should examine how race and ethnicity interacts with other sociodemographic characteristics (e.g., education, gender, age, income, length of residence, number of children) and how these interactions influence linkages between environmental concern and perceptions about health and environmental justice. Older Black residents who have lived all their lives in a highly polluted community may be more aware of problems, know how they were addressed in the past, and suffer more chronic health problems because of them. Black women who have young children may also be more environmentally concerned. Being Black and poor may also heighten perceptions of vulnerability to pollution and to discriminatory environmental practices more than just being poor.

It is obvious that knowledge of public perceptions is not enough to understand the complexity of these issues. Knowledge of government policies, political power, patterns of poverty, residential housing and lending practices, and other structural and systemic forces are also keys to better understanding the actual and per-

ceived barriers to social justice and a healthy environment (see Bryant, 1995; Bullard & Lee, 1994). But like a good doctor, one would rightfully assume that some patients—and especially poor Black ones—are more likely than others to face real barriers to both of them.

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