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Promoting Environmental Justice Through Community-Based Participatory Research: The Role of Community and Partnership Capacity

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Community-based participatory research (CBPR) increasingly is being used to study and address environmental justice. This article presents the results of a cross-site case study of four CBPR partnerships in the United States that researched environmental health problems and worked to educate legislators and promote relevant public policy. The authors focus on community and partnership capacity within and across sites, using as a theoretical framework Goodman and his colleagues' dimensions of community capacity, as these were tailored to environmental health by Freudenberg, and as further modified to include partnership capacity within a systems perspective. The four CBPR partnerships examined were situated in New York, California, Oklahoma, and North Carolina and were part of a larger national study. Case study contexts and characteristics, policy-related outcomes, and findings related to community and partnership capacity are presented, with implications drawn for other CBPR partnerships with a policy focus.

Keywords: *community-based participatory research; environmental justice; public policy; community-academic partnerships*

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The disproportionate burden of environmental pollution and degradation borne by communities of color and low-income communities has been a focus of growing concern and action in North America and around the world (Brugge & Hynes, 2005; Morello-Frosch, Pastor, Porras, & Sadd, 2005; Shepard, Northridge, Prakash, & Stover, 2002; Wing, 1998). The resulting environmental justice movement has helped bring attention to the role that public policies, together with market forces and other factors, may play in the genesis or exacerbation of environmental inequities and their often attendant health inequalities (Morello-Frosch, Porras, et al., 2005; Shepard et al., 2002; Wing, 1998).

In recent years, community-academic partnerships using a community-based participatory research (CBPR) approach have played an increasingly important role in the area of environmental justice. With its accent on community-driven issue selection, community collaboration in the research process, and action to effect change as a part of the research process itself (Israel, Schulz, Parker, & Becker, 1998; Minkler & Wallerstein, 2003), CBPR is particularly well suited to collaborative efforts with communities to study and address environmental health disparities and to promote healthy public policies (Brugge & Hynes, 2005; O'Fallon & Deary, 2002; Themba & Minkler, 2003).

This article presents findings from a cross-site study of four CBPR partnerships in the United States that attempted to study and address environmental injustices. Situated respectively in Harlem, New York, South Los Angeles, California, the Tar Creek area of Oklahoma, and Tillery, North Carolina, the partnerships used a wide array of research methods and policy and educational approaches to help achieve their goals. A theoretical framework highlighting 10 dimensions of community and partnership capacity is used to guide our examination of factors across sites that appeared to facilitate efforts to promote environmental justice policy through CBPR.

THEORETICAL FRAMEWORK

A dynamic model of the dimensions of community and partnership capacity served as the overarching theoretical framework for this study. Building on Goodman and his colleagues' (1998) 10 dimensions of community capacity and their adaptation by Freudenberg (2004) to environmental health, we incorporate CBPR partnership characteristics and capacity into the model (see Table 1 and Figure 1) and further extend its systems perspective. As Freudenberg (2004) pointed out, although a number of the model's capacity dimensions are not mutually exclusive (e.g., leadership and participation), their conceptual distinctness offers utility to those interested in assessing capacity.

Figure 1 provides a graphic explanation of the theoretical model within which the 10 dimensions of community capacity are embedded. As Freudenberg (2004) noted, a variety of structural, economic, political, and cultural/ideological determinants, as well as factors related to science and technology, help shape and are influenced by the capacity dimensions. Each dimension further interacts with such community characteristics as the physical and social environment, population demographics, government, civil society, and markets. These broad contextual factors are shown on the right-hand side of Figure 1, with arrows representing their interactions with one another, the 10 dimensions of community/partnership capacity, and the behavioral manifestations of community/partnership capacity. The circles imply subsystems embedded within larger systems, each influencing the others, whereas the arrows depict dynamic and causal links as well as synergistic relationships that affect each system.

Table 1. Dimensions of Community and Partnership Capacity Relevant to Environmental Health

Dimension	Definition
1. Leadership	Presence of experienced, skilled leaders in the community and the CBPR partnership who are willing and able to address environmental health issues.
2. Participation	Extent to which partnership members and other community members and stakeholders participate actively in the CBPR project and in addressing environmental health concerns.
3. Skills	Level of relevant organizational, scientific, political, and information-seeking skills among CBPR partners and other community members.
4. Resources	Financial, human, and social resources available for addressing environmental health concerns.
5. Social and organizational networks	Horizontal and vertical linkages among CBPR participants and their organizations and other relevant local, regional, and national groups.
6. Sense of community and of partnership identity	Identification with the community as a physical and social environment and a willingness to take action based on that identity; for CBPR partnership members, identification with the partnership based on shared values, commitment to the community and to research and action to improve community environmental health.
7. Understanding of community/partnership history	Awareness of previous efforts by a community to address related problems and understanding of how the community fares relevant to others.
8. Community/partnership power	Ability to act within and beyond the respective community/institutions/organization/partnership to make or resist change that affects the community's environment.
9. Shared values	Shared norms and values of the community members and CBPR partners that are related to environment, social justice, and democracy.
10. Critical reflection	Ability to analyze successes and failures, to reflect on CBPR partnership's and community's experience, and to assess the arguments and motivations of other stakeholders.

SOURCE: Adapted from Goodman et al. (1998) and Freudenberg (2004).

NOTE: CBPR = community-based participatory research.

Freudenberg (2004) has suggested that behavioral manifestations of community capacity include the mobilization of a community by its leaders and the acquisition and use of power by residents who take part in environmental health organizing. As our expanded model illustrates, however, the activism of researchers and health professionals from their respective institutional bases also may be critical to partnership capacity. The specific sequence of actions taken by community/partnership groups attempting to

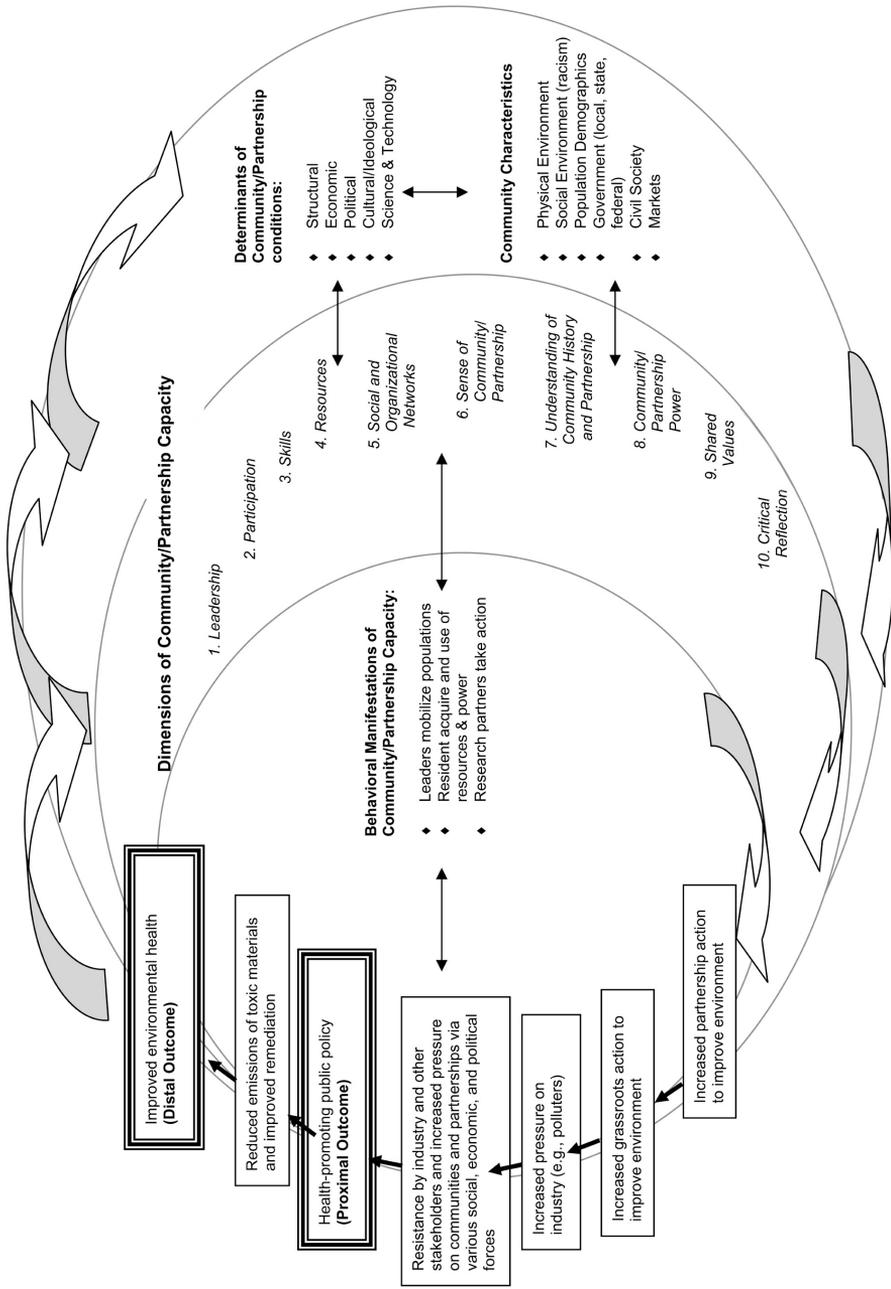


Figure 1 A dynamic model of the dimensions of community/partnership capacity, their contextual factors, and potential outcomes. SOURCE: Adapted from Goodman et al. (1998) and Freudenberg (2004).

change environmental policy are illustrated on the left side of the outermost circle in Figure 1. Taken together, these behavioral manifestations and actions are seen as increasing citizen and partnership power to achieve improvements in the environment and health. The proximal and distal outcomes of community/partnership capacity—health-promoting public policy and improved environmental health—are shown on the left side of the model. Consistent with a systems approach, community/partnership mobilization and action create feedback loops leading to additional expressions of community and partnership capacity through leader mobilization, problem solving, and action.

METHOD

Study Sample and Research Design

The community-academic partnerships analyzed for this article represent 4 of 10 CBPR partnerships that were studied in depth as part of a WK Kellogg Foundation–funded effort to document the impacts of CBPR on health-promoting public policy. Building on an extensive review of CBPR projects in English-speaking North America (Viswanathan et al., 2004), we examined the more recent literature and conducted an Internet search using 24 relevant list serves. Eighty possible projects were identified, 28 of which both met CBPR criteria and had a substantial policy orientation. A national community advisory board then worked with the research team in selecting a final sample that captured the range and diversity of cases examined.

The present analysis focuses on the four environmental justice (EJ) case studies included and addresses the research question “What dimensions of community/partnership capacity affect health-promoting policy change in environmental health?”

Research team members conducted three to five site visits at each of the four sites in 2003-2004. Twenty-three key source interviews with community and academic partners were conducted, using a pretested semistructured questionnaire addressing topics including partnership genesis and evolution, research aims and methods, individual and community capacity building, policy goals, actions and perceived outcomes, and factors contributing to or impeding the work. Four focus groups averaging 6 to 7 participants were conducted with community members identified by the community partners for their knowledge base and involvement and included questions about the roles members had played, training received, and other capacity and outcomes-related perceptions.

Follow-up in-person or phone interviews with seven relevant policy makers were conducted and focused in particular on their perceptions of the partnership’s visibility, effectiveness from a policy advocacy perspective, and perceived contributions in relation to particular policy efforts and outcomes.

The archival review conducted as part of the larger study tended to be less relevant to this article’s main area of focus (community and partnership capacity). However, we cite selected mass media articles and other written documents in the present article as these help illuminate issues such as community/partnership power and skills in media advocacy, which in turn relate to community and partnership capacity.

Data Analysis and Coding

Yin’s (2003) multisite case study methodological approach was used in our analysis, with each case study involving “the empirical investigation of a contemporary phenomenon

within its real life context [and employing] multiple sources of evidence” (p. 23). As Yin suggests, such designs are advantageous in that the evidence gathered is often considered more compelling than when single cases are explored.

Transcripts of audiotaped interviews and focus groups were coded independently by two to three research team members using a detailed, 46-item coding template with code categories corresponding to each major domain of interest included in the interview schedule. These included, for example, partnership formation and functioning, partnership roles in the research, contextual events, individual and community/organizational capacity building, policy steps and activities, perceived project impacts and effectiveness, and attribution of contribution. The complete transcripts, domain codes, and reviewer notes were entered into the qualitative software package ATLAS.ti to generate reports for each key domain. Using pattern recognition analysis (Boyatzis, 1998; Patton, 2002), individual team members first identified similarities and differences within different domain code categories and then looked across categories to coanalyze and combine and merge categories. Individual team members then compared and reconciled their results. Consistent with the spirit of CBPR, reconciled findings then were written up in case study reports that were shared with the partners at each site for member checking to help ensure the validity of data interpretation. Feedback from the sites was incorporated in a final round of analysis in which themes that emerged across at least three of the four sites were identified and examined in relation to one another.

OVERVIEW OF FOUR CASE STUDIES

As suggested by our theoretical model, the four case studies can only be understood within the context of broader environmental characteristics and structural and other determinants that influenced project developments and community and partnership capacity. Each project is summarized below with attention to its unique context, as a preface to our cross-site examination of dimensions of community and partnership capacity (see also Table 2).

WE ACT Partnership

Asthma morbidity and mortality rates in Harlem are among the highest in the nation, and residents have long believed that the high concentration of diesel bus depots and other polluting facilities in the area play a significant contributing role (Nicholas et al., 1995). In 1996, West Harlem Environmental Action (WE ACT), a nonprofit organization that uses community-based action to advance environmental health policy, public health, and quality of life (Shepard et al., 2002) formed a partnership with the Columbia Center for Children’s Environmental Health (CCCEH) to explore this problem. After receiving training from the academic partner, 17 high school-aged WE ACT “Earth Crew” interns wore personal air monitors and conducted traffic and pedestrian counts 8 hours a day for 5 days at sites designated by the Environmental Protection Agency (EPA) as “hot spots” that were near bus depots and had heavy foot and vehicular traffic (see Table 2).

Study findings showed that variations in the concentration of fine particulate matter (PM_{2.5}) were correlated with variations in local diesel pollution. They further revealed that PM_{2.5} concentrations in some areas were more than 200% above the EPA’s maximum contaminant level (MCL) standard of 15.1 ug/m³ (Kinney, Aggarwal, Northridge,

Table 2. Environmental Justice CBPR Partnership Summaries: Location, Partners, Research Aim, Research Methods, Policy/Educational Approach Used, Policy Goals, Policy Outcomes, and Related Outcomes

Partnership Name, Location, and Primary Partners	Research Aim	Research Methods	Policy/Educational Approach	Policy Outcomes ^a
<i>WE ACT partnership</i> Northern Manhattan, New York City West Harlem Environmental Action Columbia Center for Children's Environmental Health	To study community-level exposure to diesel exhaust emissions and related air pollution	Traffic and pedestrian counts Personal air monitoring	Media advocacy Testifying and briefing officials Filing legal complaints	Conversion of New York City bus fleet to clean diesel Establishment by EPA of permanent air monitoring in Harlem and other "hot spots" Adoption of statewide environmental justice principles
<i>Southern California EJ Collaborative</i> South Los Angeles, CA Communities for a Better Environment Liberty Hill Foundation Researchers at University of California, Santa Cruz, Occidental College, Brown University	To examine environmental inequality in air quality and toxic exposure levels in Southern California	Secondary data analysis using spatial statistics, multivariate, geographic information systems Creation of regional "health riskscape"	Tripartite approach of credible research, community organizing, and policy advocacy/law	Revision of a regulation (Rule 1402) tightening emission standards and lowering MICR by 75% Changing of policy language used by California EPA from individual to cumulative risk exposure
<i>Tribal Efforts Against Lead (TEAL)</i> Tar Creek, Northeast Ottawa County, Oklahoma Clan Mothers and Fathers University of Oklahoma, University of New Mexico, and Emory University Ottawa County Health Department	To assess lead exposure levels among local children and evaluate a lay health worker model	Childhood blood lead-level screenings Lay health worker intervention Home environment assessments	Garnering community support for routine lead screening Getting tribal resolutions for mandatory testing Working with County Commission to pass chat use regulations Creating public awareness and involvement in hearings and so on Forging organizational alliances Educating legislators	Helped get routine lead testing by Ottawa County Health Department and IHS for children in high-risk areas Helped stop use of chat (mine tailings) in construction and on roads without proper containment
<i>CCT Partnership</i> Tillery, North Carolina Concerned Citizens of Tillery (CCT) University of North Carolina Halifax County Health Department	To quantify disproportionate location of industrial hog operations in low-income/African American communities and their health effects	Spatial statistics GIS mapping Household water source study	Passage of an intensive livestock ordinance by the Halifax county commissioners Adoption of a statewide moratorium on corporate hog operations	

NOTE: Victories were not attributed entirely to the partnerships; rather, the partnerships were perceived to have had a significant impact on these policy outcomes.

Janssen, & Shepard, 2000). WE ACT helped raise broad public awareness of this problem through media advocacy and the filing of legal complaints (Cardwell, 2000; Mbugua, 2000). Consistent with a cross-site theme noted in Table 3, WE ACT also “did its homework,” identifying key decision makers and strategizing with its partners and the EPA about how to use the study findings to effect a variety of policy and practice changes. WE ACT and the partnership thus were widely credited with having played a major role in securing the conversion to clean diesel of existing city buses. Although not achieving its full policy goal—getting 300 buses converted to compressed natural gas and having all new buses use this technology (see Table 2), this change was nevertheless an important step forward. WE ACT was also credited with securing a key proximal health outcome when it successfully pressured the EPA to establish permanent air-monitoring stations in Harlem and other “hot spots” locally and nationally.

Southern California Environmental Justice Collaborative

Southeast Los Angeles is one of the largest manufacturing and industrial regions in the United States and houses approximately 200 toxic hazards and more than 60 EPA-designated Superfund sites (Los Angeles Department of City Planning, 2005; Sadd, Pastor, Boer, & Snyder, 1999). The largely low-income communities of color located in this densely populated region bear a disproportionate level of exposure to environmental contaminants associated with increased rates of cancer, asthma, and other health problems (Morello-Frosch, Pastor, et al., 2005).

The Southern California Environmental Justice Collaborative (the Collaborative) is a partnership among the grassroots organization, Communities for a Better Environment (CBE), a small philanthropy (the Liberty Hill Foundation), and researchers from the University of California, Santa Cruz, Occidental College and Brown University. Employing epidemiological methods and using secondary data analysis of existing government databases, the Collaborative developed and used a variety of indicators for measuring local and regional environmental inequalities. The research partners further created a “health riskscape” of South LA—a multi-level assessment of the “demographic and geographical distributions of pollution burdens” in the area (Morello-Frosch, Pastor, et al., 2005, p. 379).

A tripartite strategy of research, community organizing, and policy work formed the heart of the Collaborative’s approach. Their research helped debunk the “minority move-in theory” by showing that industry tends to locate in areas already heavily populated by low-income minority communities rather than the other way around. Strategic use of the mass media to publicize study findings (Pastor, Porras, & Morello-Frosch, 2000), the opening of a “policy window” when the relevant regulatory agency was made vulnerable by media exposure of a recent and much disliked policy decision, and the community partner’s leadership role in EJ mobilization were credited with having helped secure a dramatic revision in a regional regulation (Rule 1402) governing maximum lifetime cancer risk (MLCR) and emission standards. The MLCR level from stationary facilities thus was lowered by 75% in 2000 from 100 to 25 cases per million (Morello-Frosch, Porras, et al., 2005; Sadd et al., 1999). This health-promoting policy change and resultant reduced emissions should ultimately help achieve the distal outcome of improved environmental health. The Collaborative’s additional policy success in getting the California EPA to change its language and focus from “individual” to “cumulative” risk exposure also was identified as an important proximal health outcome (see Table 2).

Table 3. Key Themes: Factors Facilitating Efforts to Affect EJ Policy Through CBPR and Related Dimensions of Community/Partnership Capacity

Facilitating Factors	Community/Partnership Capacity Dimensions
Strong community base and opportunities for diverse levels and types of participation ^a	Leadership; social and organizational networks
Mutual appreciation of range of complementary skills among community members and CBPR partners ^a	Participation; community and partnership power; critical reflection
Leadership role of community partners in building strong collaborations and alliances with diverse stakeholders at multiple levels ^a	Skills; community and partnership power; social and organizational networks
Effective use of the mass media ^a	Skills; resources; community and partnership power
Mobilizes resources to focus on policy issues at multiple levels ^a	Community/partnership power; skills; resources
Evidence of, and plans for, sustainability of partnership and policy change efforts ^a	Resources; community and partnership power
Presence of strong autonomous community partner organization prior to the development of the partnership ^b	Leadership; sense of community and of partnership identity; community/partnership power; understanding of community/partnership history
Commitment to “doing your homework”—finding out what other communities have done, who holds decision-making authority, key leverage points, and so on. ^b	Critical reflection; skills; social and organizational networks
Perception of the partnership’s research as being scientifically sound and useful ^b	Community and partnership power; resources
Knowledge of, and ability to, attend to a variety of steps in the policy process, whether or not the language of policy was spoken ^b	Skills; resources
Adequate financial resources ^a	Resources

SOURCE: Goodman et al. (1998) and Freudenberg (2004).

NOTE: CBPR = community-based participatory research.

a. Themes across all four sites.

b. Themes identified across three sites.

Tribal Efforts Against Lead (TEAL)

Designated as a Superfund site in 1984, the Tar Creek area of Northeastern Ottawa County, Oklahoma, has long been concerned about contaminated soil and high blood lead levels, especially among Native American children who often were exposed to mine tailings or chat used in local construction and on roads (Kegler & Malcoe, 2004; Malcoe, Lynch, Kegler, & Skaggs, 2002). Because the sale of lead-laden chat constituted the bulk of the local economy in this resource-poor community, the state Department of Environmental Quality had been slow to pass guidelines regulating its use.

Designed to address the problem of lead exposure in the area’s Native American children, Tribal Efforts Against Lead (TEAL) involved a unique collaboration between

eight tribes and nations, as well as affected nontribal communities in the Tar Creek area, faculty from Emory University, the Universities of New Mexico and Oklahoma, and the Ottawa County Department of Public Health (see Table 2). The TEAL project employed study methods including blood lead screenings before and after a lay health adviser intervention, as well as survey research with caregivers and environmental home assessments (Kegler & Malcoe, 2004).

The role of cultural and ideological determinants of community/partnership conditions was particularly well illustrated in the TEAL case study. The community partners' experience of historical mistreatment based on race, for example, prompted them to strongly oppose the original research design, which would have precluded Whites from initial access to the study's intervention. When presented with this concern, the academic partners changed the study design, demonstrating their own understanding and appreciation of community history and further contributing to community power in the context of the partnership.

Complying with federal funding regulations, TEAL was careful not to be directly involved in policy-related work. However, community partners (Clan Mothers and Fathers) did act on their own in citizen capacities in letter writing and other advocacy activities. Outcomes attained by the TEAL partnership included raising awareness of lead exposure among community residents and local decision makers and helping to stop the use of chat in local construction and on roads without proper containment. The partnership was seen as having been instrumental in helping achieve a county-level policy under which the Ottawa County Health Department, in collaboration with the Indian Health Service, instituted a program of routine lead testing among children (see Table 2).

Concerned Citizens of Tillery (CCT) Partnership

The rapid proliferation of large-scale industrial hog operations disproportionately located in low-income, African American communities in rural North Carolina and the significant influence exerted by the powerful pork industry in the state form a crucial part of the sociopolitical and economic context in which the CCT partnership was examined. The large-scale hog operations have been of concern to residents because of these operations' odor problems, their contribution to loss of small family farms, and their perceived negative health effects (e.g., irritated eyes, sore throats, and other respiratory ailments).

The partnership between CCT and epidemiology faculty and students at the University of North Carolina, Chapel Hill, has sought to improve environmental health in this region by conducting relevant research and supporting grassroots leadership and community empowerment. The research methods employed included survey research, the use of geographic information systems (GIS) mapping, and spatial analysis to document racial disparities in the placement of industrial hog operations with their attendant adverse health outcomes (Wing, 1998, 2005).

Two factors appeared to have played a significant role in shaping community/partnership conditions in the Tillery case study. First, a history of institutionalized racism shaped not only land use policies by disproportionately siting industrial hog operations in predominantly African American communities but also influenced the creation and implementation of industry practice guidelines that failed to adequately protect the public's health. Second, the industry's powerful and wide-ranging influence on various public institutions, including the research partner's own university, presented major conflicts of interest. The North Carolina Pork Council's demand to see the researchers' confidential data provided a painful case in point (see Wing, 2005, for a full

discussion). Yet such opposition also helped catalyze powerful behavioral manifestations of community and partnership capacity (see Figure 1), cementing the sense of equal partnership between research and community partners whose names appeared side by side on the research report and who together confronted this external threat.

Despite its commitment to the long-term containment of environmental contaminants caused by the disproportionate siting of hog factories in African American communities, the CCT partnership did not identify concrete policy goals and frequently discussed its mission as being more education of key stakeholders, including policy makers, than policy advocacy. The partnership was successful, however, in getting county commissioners to pass an intensive livestock ordinance blocking the further expansion of hog operations in the county as well as the earlier (1997) adoption of a statewide moratorium on corporate hog industry expansion. As noted in Table 2, the adoption and implementation by the county commissioners of an "Environmental Justice Awareness Week," further mobilizing grassroots action to improve environmental health, also was largely credited to CCT and the partnership.

CONTEXTS AND DIMENSIONS OF COMMUNITY/PARTNERSHIP CAPACITY

As each of the four case studies and our theoretical model (Figure 1) illustrate, the dimensions of community and partnership capacity must be examined within the context of dynamic community characteristics and sociostructural determinants. At each site, for example, the immediate physical environment, and the disproportionate burden of pollution whether from hog factories, diesel buses, mine tailings, or stationary sources of emissions, represented a critical *raison d'être* for the partnership and its research. These environmental insults in turn helped foster shared values rooted in a concern with EJ and helped the partnerships, and particularly the community partners, network with other organizations that shared these values and concerns. CCT, for example, played a leadership role in convening a county-wide coalition to address environmental concerns, whereas WE ACT helped found a statewide environmental justice network (see Table 2).

Similarly, the role of markets, such as those supporting the pork industry in North Carolina and the profitable use of mine tailings in Tar Creek, Oklahoma, helped determine some of the resource needs and power issues likely to emerge in relation to the community/partnership capacity dimensions. Such contextual issues give added meaning to the themes that emerged in our cross-site analysis, 11 of which involved factors facilitating the partnerships' and the community partners' efforts to affect environmental health policy. As suggested in Table 3, these 11 themes frequently were illustrative of 1 or more of the 10 dimensions of community/partnership capacity highlighted in our theoretical model, and they therefore are discussed in conjunction with these model dimensions.

Leadership

The presence of a strong, autonomous community partner organization prior to the development of the CBPR partnership emerged as a critical facilitating factor across three of the four case studies. Each of these partnerships included a community partner (CBE, WE ACT, and CCT) whose wide recognition as a leader in EJ organizing predated its participation in the partnership. The community partners' histories of activism

and leadership enabled them to enter policy-related work from a position of strength. Policy makers interviewed at the three sites named the executive directors of these CBOs as having played a substantial role in furthering environmental justice policy at the state and local levels. Archival review further showed the community leaders' names appearing in media stories related to their respective EJ issues of concern (cf. Cardwell, 2000; Mbugua, 2000).

In the Oklahoma site, the Clan Mothers and Clan Fathers who served as TEAL's primary community partners also appeared to be widely respected for their leadership in and beyond their own tribal communities and had received a Public Health Excellence Award in 2000 for their contributions to the state. As a community partner at one site remarked with respect to this dimension of community and partnership capacity, there has to be a certain level of "organizational maturity and leadership," and the community partner has to "stand eye to eye, peer to peer with the professionals in terms of the goal of the project" if an equitable and effective collaboration is to take place.

Participation

In part because of their recognized leadership, the community partners at all four sites were able to exert considerable "people power," mobilizing a community base, and providing a wide range of opportunities through which community members could be involved in the CBPR projects. In the WE ACT partnership, community participation ranged from receiving extensive training as youth interns and conducting 40 hours of research in the field to simply turning out for a community meeting or sending a post card to the governor as part of a policy advocacy campaign. For TEAL, the Clan Mothers and Clan Fathers effectively tapped into their own networks so that 7 years after the research had begun, community members still regularly attend meetings.

Academic partners in South LA and Tillery both discussed with us and wrote about the substantial role of their community partners in setting the research agenda (Farquhar & Wing, 2003; Morello-Frosch, Porras, et al., 2005; Wing, 2005). Although the participation of the academic partners was most focused on the research aspects of the work, their commitment to turning the findings into action also was highlighted at each site. Whether testifying, meeting with community partners to discuss the pros and cons of potential policy alternatives, or working within their own institutions to help garner support for the work, these outside research partners thus participated well beyond their traditional scientific roles.

Skills

At each site, the pooling of diverse skills, mutual respect for the expertise of other partners, and a colearning environment in which additional skill building took place contributed to community capacity building and partnership development. Community partners' skills included being able to energize and mobilize "people power," providing in-depth knowledge about cultural and other values of the local community, and possessing an understanding of community history and current concerns. TEAL's Clan Mothers and Clan Fathers, for example, were able to share with the health department and academic partners a nuanced understanding of how to work effectively with tribal leaders. Community leaders at each site also demonstrated skills in organizing events,

such as legislative breakfasts and toxic tours, and community members were able to articulately “tell their stories” in formal hearings and other venues.

In all four sites, the researchers’ skills were recognized as including primarily the ability to conduct what a community partner called “science that could stand up to careful scrutiny.” But the research partners also proved skillful in communicating with power players and getting additional grants to further the work and provide for sustainability. Skills in media advocacy, or the strategic use of the mass media to advance a community or policy agenda (Wallack, 2004), were also well demonstrated by the partners. For the Collaborative, a strategically placed op-ed piece in the *Los Angeles Times* written by the academic partners (Pastor et al., 2000) was described by policy makers and others as having played a pivotal role in the successful campaign to change Rule 1402.

For two of the sites—the WE ACT partnership and the Collaborative—considerable skills in relation to the policy-making process were clearly in evidence and frequently discussed by those interviewed. A WE ACT community partner, for example, described the deliberate process through which her organization would map key actors, the types of policies being made by particular agencies, and the impacts those policies had on “our community, our organization, and our allies.” Through this process, three government entities with the power to make the relevant policy change were identified, and alternative policy scenarios were developed and weighed. Not all of the sites professed proficiency or a deliberate attempt to affect policy, however. A TEAL academic partner, for example, cited “lack of policy experience” as an obstacle in their work, whereas a community partner at CCT frequently stated that his partnership’s goal was not to change policy but to “educate legislators.” Yet, as Table 3 suggests, our analysis revealed that at all four sites, considerable skills in policy-related work had been demonstrated, whether or not the language of policy was explicitly spoken by the partners.

Resources

The skill sets of the community and outside research partners were complemented at each site by resources enabling their effective use. Skills in using the mass media to advance a community-supported policy thus were effective in part because of the social resources and access the community and/or academic partners had to key media outlets.

Financial support, particularly in the form of government or foundation grants, was a key resource identified at all four sites. The Collaborative’s unique relationship with a philanthropic partner and its access to a large foundation grant were described as major contributors to their research and policy accomplishments. The three other partnerships each had received federal support through the National Institute of Environmental Health Sciences (NIEHS). For TEAL, this funding made it possible to hire local staff, to provide stipends to Clan Mothers and Fathers for their long-term involvement, and to continually support the technical aspects of the project. Although the allocation of grant resources, which disproportionately favored the academic partner, was described at one site as having left the community partner with inadequate resources to do all that was expected, external funding was generally viewed as a critical building block for capacity building and project implementation (see Table 3).

Human resources were also identified, including strong community leaders, social and organizational networks with other key players, and a strong base of community support. For TEAL, the hiring of Clan Mothers and Clan Fathers by the health department both

reflected and further contributed to the development of these human resources, helping promote resource and project sustainability.

Social and Organizational Networks

Each of the four cases demonstrated a strong facility for building collaborations and alliances with numerous and diverse stakeholders beyond the formal partnership. Building on its history of coalition building, for example, CCT played a leadership role in the expansion of the North Carolina Environmental Justice Network, which helped stir a statewide EJ movement (see Table 2). For the Collaborative, the maintaining of a northern as well as a southern California office facilitated efforts to spur statewide policy, for example, by helping develop statewide EJ principles for the California EPA. Similarly, TEAL's participation in many local groups was seen as helping to keep the lead issue "alive and on the agenda." Each of the partnerships had also reached out to officials and others with power, meeting face-to-face with legislators and working in other ways to build linkages that included such potential allies. WE ACT's cultivating of a positive relationship with some key EPA officials and TEAL's alliance with a county commissioner working to stop the use of chat on rural roads were illustrative of this vertical network building.

Sense of Community and Partnership

The community and outside research partners in all four case studies demonstrated a strong commitment to the geographic communities in which their CBPR projects took place, with sense of community appearing particularly strong in the CBO partners. As a community member put it in describing the profound sense of community and equality within CCT, "When you come here, there are no big guys, no little geezers. Everybody is together . . . I feel stronger when I leave here after a meeting." In South Los Angeles, a strong sense of community helped the Collaborative to build a "motivated, organized base of people" committed to addressing local concerns. As a policymaker commented, "At strategic moments, [the Collaborative] has been able to bring literally hundreds of community voices into the public decision-making process" in part because of this shared identity. Similarly, sense of partnership identity also was strong at each site, with a community partner in Tillery thus pointing to jointly authored papers and the academic partner's comment that "we're in this together" as reflecting this sense of partnership.

Understanding of Community and Partnership History

A shared history of community activism and problem solving, which for CCT dated back to a successful 1978 effort to save the only local school for African American children, was mentioned at several of the sites. At the TEAL site, the shared sense among Tar Creek residents of having been ignored by the government in earlier cleanup efforts helped stimulate current community mobilization. And for both TEAL and the Collaborative, toxic tours arranged for policy makers and others were a potent means of sharing their history and current struggles with stakeholders who might then align themselves with local efforts to create the desired change.

Community/Partnership Power

Perceptions of the community partners at three sites as forces to be reckoned with by the powers that be were widely noted. As an academic partner with the LA Collaborative

remarked, “When CBE rolls into town, [industry and policy makers] say ‘okay, we might be in trouble here guys.’” Similarly, a high-level administrator at the EPA in New York named WE ACT as one of the two most powerful CBOs with which his agency had dealt and commented that the EPA’s decision to begin permanent air monitoring in Harlem and other “hot spots” was largely a result of WE ACT’s urging. Both he and a second policy maker interviewed referred to the partnership’s youth intern study as providing critical data for the tightening of air quality standards in the state, and both further referred to WE ACT as a key player in the EJ fight locally and statewide. Although, as noted above, a host of political, economic, and other structural determinants limited the extent to which community power could be translated into concrete policy changes, each site appeared to demonstrate considerable effectiveness in using its combination of solid research, community power and organizing, and advocacy and related skills to help achieve such proximal outcomes at the policy level (see Table 3).

Shared Values

Across each site, a strong commitment to the values of EJ and community self-determination was apparent, with the term *environmental justice* itself frequently invoked by the partners. A related commitment to fighting differential treatment on the basis of race also was widely articulated and took a particularly interesting turn at the Oklahoma site. As noted earlier, TEAL community partners thus objected to the exclusion of White children from their partnerships’ study intervention on the basis of race, and the study design was changed to honor this concern. At each of the four sites, a valuing of the rights of all people of color and other low-income people experiencing environmental injustices led to a sense of solidarity and shared values that broadened the focus of their work beyond their immediate communities.

Critical Reflection

Although the term *critical reflection* was not used explicitly in the interviews, written documents, archival, or other source materials, there was evidence at each site of this important dimension of community/partnership capacity. In Tillery, for example, much reflection took place around the role of individual and institutionalized racism as a significant barrier to change. For the Collaborative, annual retreats were held to carefully reflect on work and plan strategically for the year ahead. In the WE ACT partnership, an academic partner told of his meetings with community partners to reflect on developments and consider subsequent courses of action. Yet he also spoke of the personal reflection that enabled him to more deeply appreciate the community’s contributions to the research enterprise:

Sometimes as scientists we make assumptions and don’t rethink assumptions to see how they fit in a natural situation. I think community people, because they are looking at it from a fresh perspective, will question the assumptions in a way that actually improves the science. It may tailor things to the situation in a way we would not have thought of.”

STUDY LIMITATIONS

This study had several limitations among which were the small number of cases included and the cross-sectional nature of data collection that precluded an examination of changes over time beyond the recollection of participants and documents review.

The diversity of the selected sites, although a strength of this study in enabling us to examine a range of CBPR efforts focused on EJ policy, also was problematic in that the primary data collection instrument proved more effective in capturing informative data in some sites than in others. Additional intersite variation occurred in terms of the ability to have site visits coincide with relevant community events and in the quality and quantity of written documents available for review and inclusion in data analysis.

Without discounting the importance of these study limitations, however, the research did provide unique insights into each of the cases and offered a critical look at the similarities and differences across the sites on a number of dimensions of interest. As indicated below, the study also offered a number of implications for further partnership research and policy-focused practice.

IMPLICATIONS FOR OTHER CBPR PARTNERSHIPS

Several of the cross-site themes that emerged in this study and the theoretical context within which they were examined may offer useful lessons for researchers and for other CBPR partnerships interested in working to promote healthy public policy.

The 10 dimensions of community capacity outlined by Goodman et al. (1998) and tailored by Freudenberg (2004) to the area of environmental health action lent themselves to further adaptation as a theoretical framework for examining community/partnership capacity. The importance of strong community (and community partner) leadership, participation, skills and resources to support the work, an ability to form and maintain social and organizational networks and coalitions, and shared values thus were among the capacity dimensions that resonated well with the partnerships examined.

Similarly, and consistent with the literature (Blackwell, Minkler, & Thompson, 2004; Freudenberg, 2004; Milio, 1998; Longest, 2001) and our theoretical framework, the need to attend to a range of sociopolitical determinants, market forces, and other contextual factors is clearly underscored. Whether powerful corporate interests or small segments of the local community who profit from the status quo, stakeholders likely to resist or actively fight efforts to support health-promoting environmental policy need to be identified and carefully considered in charting policy and educational approaches. As the case studies similarly suggested, the mass media can be a valuable resource in helping fight entrenched interests and advance policy awareness concerning environmental justice (Cardwell, 2000; Lahiri, 2000; Pastor et al., 2000).

The importance of “doing your homework,” or finding out in advance who the key players are, what other communities have tried (Blackwell et al. 2004), and how a potential new policy may play out also frequently was stressed. As Kelly, Dassoff, Levin, Schreckengost, & Altman, (1988) have observed, the potential policy impacts of participatory research should be considered even before the research begins, with policy-focused strategic planning then continuing throughout the process.

All four of the case studies examined in this research were characterized by a high level of mutual respect among the partners and an appreciation of the complementary skills and resources that each partner brought to the table. Yet, as this study and others (Israel et al., 2003; Koné et al., 2000; Minkler, 2004; Wallerstein, 1999) also have suggested, differences may emerge between community and outside research partners in terms of level of commitment to policy change and/or different timetables with respect to the research or action components of the project. As suggested in Table 1, critical reflection and continued dialogue among partners, a shared sense of community, and a

commitment to shared values (e.g., environmental justice) underlying the project all may be critical to maintaining a strong and focused partnership in the face of such tensions. Tools such as Green, George, Daniel, Frankish, et al.'s (1994) guidelines for appraising CBPR partnerships and Maurana, Wolff, Beck, and Simpson's (2000) standards for the assessment of community-based scholarship also may be helpful to partnerships as a means of critically reflecting on the process dimensions of the work both early on and throughout their collaboration.

As noted above, each of the partnerships included in this study was selected in part because of its perceived role in helping to affect health-promoting public policy in the area of environmental health. Yet even among these partnerships, the need for improved skills and far more information about the policy-making process, and/or legal processes and issues, frequently was articulated. Partnerships interested in potentially including a policy component in the action phase of their work should consider taking part in trainings and other mechanisms to increase their capacity in this area. Linking early on with "policy mentors" willing and able to help partners understand and better navigate the policy process also may be useful, as may written or Web-based resources. Organizations like Community-Campus Partnerships for Health (ccphuw@u.washington.edu) may be particularly helpful in this regard and have developed and disseminated relevant resources, key among them Cassandra Ritas's (2003) *Speaking Truth, Creating Power: A Guide to Policy Work for Community-Based Participatory Research Practitioners*.

Planning for sustainability by seeking new funding streams, developing linkages with organizational allies and other stakeholders, and helping provide sympathetic policy makers with the rigorous research and community support they need to continue to advocate for change also appears critical to success over the long haul. Finally, and at the macro level, institutional support in the form of federal and foundation funding specifically targeting CBPR partnerships focused on environmental justice is a community and partnership resource critical to the sustainability of projects like those explored in this study.

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