

Use of Community-Based Participatory Research to Assess Environmental Determinants of Health: Challenges, Facilitators, and Implications for Universities

Shannon N. Zenk, Amy J. Schulz, Barbara A. Israel, James S. House, Alison Benjamin, and Srimathi Kannan

Abstract

The Healthy Environments Partnership is a community-based participatory research partnership investigating the contribution of neighborhood environments to racial disparities in cardiovascular health. HEP designed and implemented the Neighborhood Observational Checklist to document aspects of neighborhood physical and social environments. In this article, we use HEP's experiences with the checklist to discuss challenges and facilitators as well as benefits to universities involved in community-based participatory research. We identify strategies universities can employ to support community-based participatory research.

Universities are increasingly engaged in community-based participatory research efforts with community partners, combining resources, skills, and areas of expertise to understand and develop solutions for community challenges. One tool that can be used in this process is direct neighborhood observation, or systematic social observation. Direct observation of neighborhoods involves systematic documentation of neighborhood environments (Raudenbush and Sampson, 1999). It is frequently conducted using a checklist that provides operational definitions for each item and prompts observers to indicate whether items are present or absent (e.g., abandoned car, park, graffiti) or to rate items on Likert-type scales (e.g., quantity of strewn garbage as heavy, moderate, light, or none).

Community-based participatory research partnerships can use neighborhood observation to understand the contributions of neighborhood physical and social environments to health disparities. This is of critical importance in racially segregated urban areas with high concentrations of poverty where studies have documented high mortality among African-Americans and persistent health disparities between African-Americans and whites (Geronimus et al, 1996; McCord and Freeman, 1990). Understanding these relationships can help guide interventions and policy changes that are often central components of community-based participatory research efforts. There

are several advantages to using community-based participatory research approaches to develop and implement neighborhood observational tools. One of the most significant advantages is helping to ensure the collected data are relevant for community concerns.

In this article, we discuss how the Healthy Environments Partnership, a community-based participatory research partnership investigating the contribution of aspects of the social and physical environments to racial and socioeconomic disparities in cardiovascular disease risk in Detroit, Mich., designed and implemented the Neighborhood Observational Checklist. We use HEP's experiences with the checklist as a case example that provides a context for discussing challenges and facilitators, as well as benefits to universities involved in community-based participatory research. Following presentation of the case study, we discuss the pivotal role that universities can play in supporting community-based participatory research partnerships to address the excess burden of disease experienced by residents of impoverished urban communities.

Overview of the Healthy Environments Partnership (HEP)

The Healthy Environments Partnership (Schulz et al, Under review) grew out of the Detroit Community-Academic Urban Research Center, a partnership established in 1995, with initial funding from the Centers for Disease Control and Prevention. The URC is guided by a definition of CBPR as “a collaborative approach to research that equitably involves, for example, community members, organizational representatives, and researchers in all aspects of the research process” (Israel et al., 1998, p. 177). In 2000, some URC partner organizations decided to pursue funding through the National Institute of Environmental Health Sciences’ “Health Disparities Initiative.” They submitted a successful grant proposal to conduct HEP and were funded for five years. The involved partner organizations from the URC identified and engaged additional organizations from the study communities. Representatives of these partner organizations comprise the HEP steering committee, which guides all aspects of the project (see acknowledgements for list of organizations involved).

The conceptual framework that guides HEP's work proposes social and physical environments as intermediaries in the pathway through which race-based residential segregation and concentrated poverty influence more proximate factors (e.g., stress, social networks, physical activity) that ultimately influence physical indicators of cardiovascular health (Schulz et al, under review). The cardiovascular health of a probability sample of 919 community residents from three areas of Detroit was evaluated based on a number of self-report (e.g., diagnosis of hypertension), anthropometric (e.g., body mass index), and hemodynamic measures (e.g., blood pressure)(Schulz et al, under review). Aspects of the social and physical environments of the study communities were assessed using decennial census data, air quality data, and focus groups with residents of the study communities, a community survey (Schulz et al, in press), and the Neighborhood Observational Checklist. In the

following two sections, we describe how community, health service, and academic members of the HEP steering committee and other community residents designed and implemented the NOC. The design of the NOC included a review of previous research, formation of the NOC subcommittee, content discussions, and pilot testing.

Design of the Neighborhood Observational Checklist (NOC)

Review of Previous Research and Development of First Draft of the NOC

In August-November 2002, two academic partners of HEP (the principal investigator and a graduate student research assistant) reviewed observational tools available in the literature. Given that the Systematic Social Observation instrument from the Chicago Community Adult Health Study (CCAHS) was among the most comprehensive neighborhood observational tools (Morenoff et al, in preparation), its framework was used as the basis of the NOC. HEP focus group results were systematically compared to items on the CCAHS Systematic Social Observation. When topics were identified from the focus groups that were not included in the CCAHS Systematic Social Observation instrument, relevant items were identified from other observational tools or new items created. More specifically, we drew upon the Community Action Against Asthma Environmental Checklist (Farquhar, 2000), the Brief Observational Measure for Urban Neighborhoods (Caughy et al, 2001), and the Block Environment Inventory (Perkins et al, 1992). The end result of this process was a first draft of the NOC that extended the CCAHS Systematic Social Observation instrument based on the conceptual model that guides the project and HEP focus group themes (Schulz et al, under review).

Formation of the NOC Subcommittee

In October 2002, the entire HEP steering committee began concrete discussions about how to conduct neighborhood observation by reviewing the first draft of the NOC. Members of the HEP steering committee called attention to the uniqueness of Detroit, explaining that issues that were relevant elsewhere may not be in Detroit and vice versa. They noted the importance of both making comparisons with communities outside the city and gathering data that accurately capture the context of the study communities. Also, the HEP steering committee was interested in achieving a balance between assessing neighborhood resources and stressors in the NOC.

The HEP steering committee formed the NOC subcommittee to address these important issues. The NOC subcommittee was responsible for reviewing and making additions, modifications, and deletions to the NOC. Two academic partners (the principal investigator and graduate student research assistant) and four community partners comprised the NOC subcommittee. A post-doctoral fellow working with HEP and a Detroit resident hired as the NOC field coordinator also participated in several of these discussions.

The work of the NOC subcommittee unfolded as follows. In December 2002, the graduate student research assistant met with each other member of the NOC subcommittee to review the content of the first draft of the NOC and to identify revisions needed. The NOC subcommittee met in January 2003, after the graduate student research assistant had incorporated these suggestions, to discuss the new revised NOC and suggest additional modifications. A further refined version of the NOC was discussed with the entire HEP steering committee in February 2003. These discussions were invaluable in designing the NOC. Specifically, they helped to clarify the purpose of the NOC, probe the meaning of proposed NOC items, examine the appropriateness of items for Detroit and the study communities, and add items to capture more community assets. We describe each of these functions in the following section.

Content Discussions Among the NOC

Subcommittee Clarifying the Purpose of the NOC

One of the first issues that arose in these discussions was the need to clarify the purpose of the NOC. HEP academic partners represent, for example, health behavior and health education, environmental health sciences, and sociology. Community partners include members of community-based and health service organizations from three Detroit communities with unique histories, populations, concerns, and assets. This diversity of community and academic partners is a strength of HEP, but it also led to the identification of a wide variety of topics the NOC subcommittee deemed important and were interested in including in the NOC. The large numbers of generated topics made it clear priorities were needed. The NOC subcommittee reached consensus that the purpose of the NOC was to measure neighborhood conditions that create or protect against stress, influence social relationships, and affect health behaviors related to cardiovascular disease risk (i.e., diet, physical activity, alcohol consumption, tobacco use). This mutually agreed upon purpose served as a basis for decisions about which items to include and exclude from the NOC.

Probing the Meaning of NOC Items

The NOC subcommittee also probed the meaning of proposed NOC items. For example, some NOC subcommittee members suggested that the NOC include an item to assess the presence of “This Building is Being Watched” signs in the study communities. The signs are placed on abandoned houses and buildings in Detroit as part of a citywide effort to prevent vandalism and arson. Some members of the NOC subcommittee asserted that the signs reflect community mobilization, whereas others thought that the signs did not reflect community mobilization because they are placed on every abandoned house or building. After discussion, the NOC subcommittee omitted the item from the NOC because of the lack of clarity regarding the meaning of these signs.

Examining the Appropriateness of NOC Items for Detroit

The NOC subcommittee also examined the appropriateness of proposed NOC items for Detroit. As one example, focus group participants identified deteriorated housing as a neighborhood stressor, suggesting the importance of evaluating this aspect of neighborhood environments in the NOC. Existing observational tools assessed the overall condition within a given area (e.g., one side of the street on a block, or “block face”) of residential buildings and grounds. NOC subcommittee members, however, noted that the conditions of buildings and grounds within Detroit neighborhoods were often quite mixed. If the NOC assessed only the condition of “most,” we might fail to capture neighborhoods where some residents invested considerable energy in keeping up properties, though overall conditions were poor. Similarly, we might miss the effects of a few badly deteriorated homes in neighborhoods where overall conditions were fairly good. Ultimately, the NOC subcommittee decided to assess the condition of the “best,” “worst,” and “most” residential buildings and grounds on each side of the block.

Adding Items to Better Capture Community Assets

Given the interest in achieving a balance between assessing neighborhood stressors and resources in the NOC, the NOC subcommittee struggled with how to capture and operationalize aspects of the neighborhood they considered assets or strengths. In the end, several items were developed to tap positive social relationships and community capacity. For example, instead of only assessing the presence of vacant lots (which can be conceptualized as an indicator of neighborhood deterioration), three additional items were added to document signs that vacant lots were kept up and cared for by neighborhoods, turned into informal playgrounds, and transformed into places for socialization (e.g., set up with chairs).

NOC subcommittee members representing southwest Detroit, where 60 percent of residents are Latinos, described the vibrancy of the ethnic enclave as a community strength. They felt the neighborhood reflected and seemingly reinforced a sense of ethnic identity and connectedness among residents, provided some protection against discrimination, and offered services tailored to the needs of the large number of recent immigrants. The question of how to measure these dimensions of southwest Detroit neighborhoods sparked considerable discussion among NOC subcommittee members and project staff. Therefore, we added an item to the NOC assessing the presence of sayings, symbols, or murals that reflected Latino identity or pride, as well as several items intended to capture the presence of businesses and institutions with services or products oriented toward Latinos. Analogous items were developed for African-Americans as well, who comprise 70 percent to 90 percent of the other two study communities. The conversations leading up to this decision raised issues around the diverse histories and circumstances of Latinos, African-Americans, and whites in Detroit and questions about the meanings of ethnic symbols and businesses for African-Americans compared to Latinos. These discussions provided an opportunity to

talk directly about race and ethnicity in Detroit and helped to reinforce the HEP steering committee's common goals of understanding, and intervening to address, factors that produce racial disparities in health.

Pilot-Testing the Neighborhood Observational Checklist (NOC)

Following the approval of a draft of the NOC by the HEP steering committee in February 2003, we pilot-tested the instrument in two contexts over a four-month period. In March 2003, academic members of the NOC subcommittee and project staff pilot-tested the NOC on several practice blocks in each of the study communities and met to discuss what was learned. These discussions focused, for example, on which items were unclear and which response categories were difficult to differentiate based on operational definitions (e.g., sidewalks in "excellent," "good," "fair," or "poor" condition). The NOC was modified based on this feedback.

The NOC was also pilot-tested by community residents, all of whom lived in Detroit, as part of the observer training process in April-June 2003. We refined NOC items and operational definitions based on observers' feedback on practice blocks. Developing a common understanding of ratings and reaching agreement on operational definitions with the observers was a very important and time-intensive process. For example, the observers' feedback prompted the decision to reduce the number of response categories for the condition of residential grounds from four to three and was instrumental in refining the operational definitions for each of these categories.

The Final Product: The Neighborhood Observational Checklist

The end result of this collaborative process was the development of a 140-item NOC. The NOC covers a range of topics including land use; physical conditions of residential and non-residential buildings and grounds, sidewalks, and streets; types of businesses; alcohol, tobacco, and fast food advertisements; social and physical disorder; territoriality; residential stability; physical environmental exposures; activities of observed adults and teenagers; and symbols of ethnic identification. (See Zenk et al, in press, for the items included in the NOC.)

There were two major components of implementing the NOC: training of community residents as observers and data collection. The 35 hours of observer training took place over a seven-week period in April-June 2003. The training was held at the Detroit Department of Health and Wellness Promotion, one of the organizations involved in HEP and located fairly centrally between the three study communities. Of the 15 community residents who completed the initial training sequence, 11 were certified as observers and hired for data collection. The 11 certified observers collected data on 551 blocks across the three study communities over a 15-week period during the summer and early fall of 2003. The NOC field coordinator managed the day-to-day data collection from a field office set up at the Detroit Department of Health and Wellness Promotion and provided updates on data collection progress at the monthly HEP steering committee meetings.

Challenges and Facilitators in the Design and Implementation of the Neighborhood Observational Checklist

Several of the challenges HEP faced in designing and implementing the NOC were related to the use of a participatory process; others were related to the university's role in HEP. We discuss these challenges in this section along with the factors that helped us to address them.

Community Reservations About Neighborhood Observation and Data Sensitivity

Data collected with the NOC, as with most social science data, are subject to interpretation. As mentioned earlier, the NOC includes questions, for example, about the conditions of residential and non-residential buildings and grounds, the amount of litter, and the presence of graffiti, abandoned cars, and empty beer bottles. Community partners from the HEP steering committee and community residents later trained as NOC observers expressed concerns that findings from the NOC might contribute to negative representations of the study communities. These included, for example, a concern that signs of neighborhood deterioration might be attributed to residents themselves without recognition of the broader social and economic processes, such as institutional racism and economic restructuring, that contribute to those conditions. In addition, community residents living in the neighborhoods where data were being collected were understandably wary of observers' activities and motives; observers spent considerable time walking around and looking closely at each block, recording observations as they did. Observers were frequently approached by residents and questioned about their activities.

Several factors allowed these important concerns to be discussed openly and addressed. First, there was a history of positive working relationships among partners in HEP and community residents. When HEP began the development of the NOC, the partnership had been working together for almost two years, and some of the partner organizations had worked together since the URC began in 1995. These partners had established trust based on their previous and ongoing collaborations. Some of the community partners had worked with the graduate student research assistant who participated in the NOC development and implementation not only through HEP, but also through other URC projects and course fieldwork. In addition, several of the community residents hired as observers had previously worked with URC projects and thus were comfortable raising concerns and asking direct questions about how the data would be used, as well as contributing their own perspectives regarding the interpretation of NOC items. A history of positive working relations and established trust are recognized facilitators of community-based participatory research (Israel et al, 1998).

Second, several of the involved organizations jointly wrote and submitted the grant application for HEP funding. When writing the grant proposal, these partners decided to use neighborhood observation as a data collection method. Thus, community partners did not view the project as a whole and neighborhood observation in particular as university-driven. Instead, these decisions were made jointly and were perceived as contributing to improved community health.

Third, HEP is based on a conceptual model that explicitly recognizes relationships between fundamental social and economic processes and the neighborhood conditions assessed through the NOC (Schulz et al, under review). As a result, the HEP steering committee could discuss the NOC and its data in the context of the larger model. Given their familiarity with the conceptual model, HEP steering committee members and staff could also readily talk with community residents about the interpretation of NOC findings, emphasizing the conceptual links between structural inequalities and observed neighborhood conditions.

Fourth, project staff working with the observers during training encouraged dialogue about the observers' concerns. Those conversations led to modifications of items and data collection processes and allowed opportunities to consider how results might most effectively be presented. In addition, exchanges between observers and HEP steering committee members and staff helped academic members of the team build trust in the insights offered by community members and community partners to build trust in the research that they were helping to conduct in their communities.

Fifth, the identification and engagement of key community organizations, also recognized elsewhere as important for community-based participatory research efforts (Israel et al, 1998), in the HEP steering committee helped to allay concerns of residents whose neighborhoods were being observed. When approached by residents, the hired observers not only showed residents a copy of a letter sent to the local police precinct notifying them of the HEP data collection, but also informed residents that several well-known local community-based and health service organizations were part of the project collecting these data. Both helped to demonstrate the credibility of the study.

Finally, neighborhood observation was aided by the fact that it builds on the expertise of those living and working in the communities and offers tangible results to inform interventions. Community partners and residents were intimately familiar with the communities and could envision how NOC data could inform community change efforts. This allowed for meaningful community input into the design of the NOC — what to measure and how to measure it. Similarly, it provided additional insights into the application of results for potential change.

Broad Range of Interests Among Partners

The multidisciplinary team of community and academic partners that comprises HEP brings expertise and diverse perspectives on neighborhood environments and health that are tremendous assets. These multiple disciplinary backgrounds and perspectives enhanced the content of the NOC, and also created their own set of challenges. Based on the literature and their own experiences, partners identified numerous aspects of neighborhood environments that were relevant for cardiovascular health. Given limited time and funding, HEP needed to set priorities and make decisions about which items to include in the NOC. Consistent with community-based participatory research literature on the importance of mutually agreed upon goals (Israel et al, 1998), it was essential that HEP agree on the central purpose of the NOC.

Ensuring Community Participation

Throughout the Time-Intensive Process

Designing and implementing the NOC was time intensive. The NOC subcommittee invested considerable time to determine the content areas, create items, and develop initial operational definitions for the NOC. Community partners of the NOC subcommittee were less involved in the day-to-day activities of pilot-testing, training of community residents as observers, and refinement of items and operational definitions during the latter stages of the NOC development and implementation. The collaboration of the NOC subcommittee in establishing the content, parameters, and goals of the NOC allowed academic members of the NOC subcommittee and core staff who were part of those conversations to refine items and operational definitions during the pilot-testing with a clear sense of concerns and priorities. Facilitated by trust developed in the context of the HEP project, academic partners and core staff kept the HEP steering committee informed of any significant modifications that occurred by email and at monthly meetings.

Challenges and Facilitators Related to University Involvement

Physical Separation of the University From the Community

The University of Michigan School of Public Health is located in Ann Arbor, Mich., 45 miles from Detroit. This physical separation of the university from the community created challenges in designing and implementing the NOC. On the most basic level, academic partners and staff based at the university commuted for meetings and training sessions, which added significantly to the time involved. The commute, for which faculty and students received mileage reimbursement, also resulted in additional financial costs for the project. Handling some communications by e-mail and telephone helped. The willingness of not only the academic researchers, but also students hired as staff, to commute to Detroit speaks to the personal, professional, and community benefits they believe were gained from their involvement in HEP. The

Detroit Department of Health and Wellness Promotion's willingness to host a field office for HEP was critical in overcoming the university-community distance barrier. Also, hiring a field coordinator who lived in Detroit eased logistic difficulties due to the physical separation of the university from the community.

Hiring and Paying Community Residents through the University

Community residents hired as observers became employees of the University of Michigan, which served as the fiduciary for the project. The university payroll bureaucracy resulted in a several week delay before observers received their first paycheck, which was a source of frustration. Several of the observers had worked for other URC projects and were already on the university's payroll, easing their transition to this project. For those who were not, the active intervention of dedicated and experienced staff played an important role in ensuring that logistical challenges were resolved, bureaucratic systems were effectively navigated, and observers were paid.

Benefits of Designing and Implementing the Neighborhood Observational Checklist

Using a participatory process universities and communities derive numerous benefits from community-based participatory research. Community benefits have been discussed elsewhere (Israel et al, 1998). Given the focus of this special issue, we draw on our experiences with the development and implementation of the NOC to highlight some benefits for universities who become involved in community-based participatory research.

Improved Quality of the NOC: A participatory approach to the design and implementation of the NOC improved the quality and validity of the research tool, a benefit of community-based participatory research that has been previously recognized (Israel et al, 1998). Community partners and residents offered important insights into the meanings and relevance of aspects of their neighborhood environments. HEP's ability to pick up unique characteristics of the study communities and understand their potential importance for health was critically enhanced by community residents who were involved in designing the NOC. Continued involvement of members of the HEP steering committee who helped to develop the NOC as we proceed through data analysis and interpretation will allow HEP to further realize these contributions.

Ensured Relevance for Community Concerns: The engagement of community and health service organizations in designing the NOC helped to ensure its relevance for community concerns, interventions, and public policy. Universities, particularly public universities, are often asked to demonstrate their service to the larger community (Nyden, 2003). The participatory process we followed helped to ensure that the university was part of a team conducting socially relevant and applicable research.

Strengthened Relationships Among Partners: Our collaborative effort to design and implement the NOC strengthened relations between the participating community-based organizations, health service organizations, and academic institutions. A history of data collection in communities that do not learn the results or derive any meaningful benefits has contributed to community distrust of universities. In designing and implementing the NOC, members of HEP negotiated priorities, problem-solved issues such as how to best promote the safety of observers in the field, and talked openly about issues of race and poverty as well as power and privilege of universities in relation to urban communities such as Detroit. In the process, we built positive working relations among the involved representatives and their organizations. These relationships continue to build a foundation for community-based participatory research. As an example of the value members place in their collaboration, HEP has applied for supplementary funding to support additional analysis of the NOC data and the prioritization of issues for designing interventions based on the results.

Built Community Support: The engagement of community-based and health service organizations in the HEP steering committee conferred practical benefits for the research effort. Community-based and health service organizations involved in HEP provided a facility for the NOC training and field office and helped to identify and recruit community residents as observers. More importantly, the engagement of well-known local community-based and health service organizations as members of the research partnership helped to build community members' support for the collection of observational data in their neighborhoods.

Communities invest considerable energy in community-based participatory research efforts. Our experiences with the NOC illustrate that universities, as well as communities, reap many benefits from this involvement. In recognition of these benefits, there are a number of strategies universities can use to support extended involvement in such efforts. We discuss several of these in the following section.

Ways Universities Can Support Community-Based Participatory Research (CBPR)

Support CBPR as Valid Approach to Research

Even as universities increasingly recognize the value and contributions of CBPR, some continue to question the validity of community-based participatory approaches to research (O'Toole et al, 2003). Research, with ideas that originate from and that are implemented in conjunction with communities, can be conducted in a rigorous manner that contributes both to community health and to the broader development of knowledge about, for example, social inequalities (Nyden, 2003). By combining knowledge generation with action (Israel et al, 1998), CBPR offers an opportunity to conduct research that is relevant to community concerns, and to respond to funders' concerns that knowledge gained through research is disseminated to, and applied by, practitioners and policymakers

(Green 2003). It also provides a mechanism to implement interventions and pursue policy changes based on what is learned. Universities can demonstrate support for CBPR by adopting mission statements that support community engagement by faculty and recognize the connection of such engagement to teaching, research, and service (Seifer and Krauel, 2001). Supportive university leadership facilitates CBPR, and the importance of cultivating leadership among university administrators and faculty who have demonstrated their commitment to the community and CBPR specifically has been documented (Calleson et al, 2002).

Establish Institutional Base in the Community

Universities can establish an institutional base in the community as another mechanism of support (Israel et al, under review). As described earlier, the University of Michigan is 45 miles from Detroit, which created logistical challenges for designing and implementing the NOC and required considerable support for travel, staff time, and conference calls for communications between sites. Even in situations in which the university is located in the same city as the community with which they work, the university campus may not be accessible to community residents (Israel et al, under review). It may be difficult for community members to get to the campus by public transportation or the campus may be perceived as inhospitable. Thus, the establishment of an institutional base at an accessible location where community residents feel welcome can facilitate CBPR efforts.

Provide Graduate and Post-Doctoral Training in CBPR

Universities can foster CBPR efforts by providing graduate and post-doctoral training in CBPR. Not only are many students interested in community-based educational opportunities, but also influential academic organizations are increasingly recognizing the value of CBPR. The Institute of Medicine, for example, recently identified CBPR as one of eight priority areas for the education of all public health professionals (Gebbie et al, 2003).

In our case study, we described the importance of reaching consensus on the focus of the NOC amongst the HEP steering committee and on operational definitions for the NOC with community residents. We also pointed out several times that honest discussions around sensitive issues of race, power, and privilege were needed amongst members of HEP and with community residents participating as observers. Both required skills in-group process; understanding of inequalities, race, and power; and ability to listen and contribute to finding solutions. Universities can support courses in CBPR that build these types of competencies, knowledge, and skills (e.g., group process, community organizing, racism and inequality) (Israel, Schulz, et al, 2001). Field components of courses, in which students interact with community groups and organizations on a defined project or identified goal, also offer students opportunities to learn about community work, gain critical skills and knowledge needed for CBPR, and build relationships with communities.

Revise Standards for Faculty Tenure and Promotion

The academic reward system surrounding promotion and tenure is a significant barrier to faculty engagement in CBPR (Calleson et al, 2002; Israel, Schulz, et al, 2001; Nyden, 2003). Universities can support CBPR by revising standards by which faculty are evaluated. First, faculty review needs to factor in the time-consuming nature of CBPR. It takes considerable time for faculty to develop and maintain relationships with community partners. Moreover, conducting research collaboratively involves numerous meetings to get input from all members of the research partnership at each stage of the research process – defining the issues and formulating hypotheses, collecting data, analyzing data, and interpreting and writing up results for publication. Thus, the time frame for generating peer-reviewed publications is often substantial.

Second, in many disciplines the number and amount of grants received to support research weighs heavily into tenure and promotion. Federal funding is often the most highly regarded because of the peer review process, but also because of the indirect costs for universities that accompany such grants. While federal funding opportunities for CBPR initiatives have been increasing, universities can support CBPR by placing value in other funding sources. For example, several foundations are strong supporters of CBPR efforts, even though they use a different review process and generally have lower indirect cost rates. Universities could also revise review criteria so faculty receives credit for their role in obtaining funding for grants in which a community-based organization, instead of the university, is the fiduciary.

Third, the number and quality of publications in peer-reviewed journals and of presentations at professional meetings play major roles in the academic reward structure. As part of this review, the prestige of the journals and meetings in which faculty work is featured is taken into account. While respect for CBPR is growing, CBPR is still frequently marginalized in academia, and some journals considered among the most prestigious will not consider CBPR articles (Minkler and Wallerstein, 2003). This places faculty engaged in CBPR at a disadvantage in the review process. Expanding the pool of reputable journals can help to support faculty engaged in CBPR (Israel, Schulz, et al, 2001). Though traditionally the dissemination of research in academic circles and through peer-reviewed publications is considered in the review process, standards could be revised to also take into account the dissemination of research results through community presentations and products, such as reports and popular press communications.

Provide Funding to Support CBPR

Universities can also provide financial support for CBPR. One way universities can financially support CBPR is increasing faculty release time or cost-sharing faculty time on grant proposals. For example, a faculty member might designate 25 percent of his/her time on a CBPR project, in which the funding institution covers 15 percent and the university covers 10 percent. In addition, universities can provide direct expenditures as matching funds for some aspects of CBPR projects such as equipment and

staff support. Universities can also share indirect costs from grants with partner organizations by, for example, including indirect costs when subcontracting work to a community partner organization. Moreover, to promote more equitable sharing of financial resources, universities need to negotiate with community partner organizations an indirect rate that is fair to the partners involved. As done in HEP and other CBPR projects, providing stipends to compensate community partners for at least some of the time they invest in CBPR efforts and for the time taken away from grant proposal writing and other job responsibilities is another way universities can financially support CBPR (Parker et al, 2003; Seifer and Krauel, 2001). HEP also financially supports both community and academic partners to attend the annual meeting of the American Public Health Association and the annual cross-site grantee meeting. Universities can build this type of support into grant proposals. Given that graduate students make valuable contributions to CBPR efforts, universities can seek funding to support student participation. For example, HEP academic partners pursued and received a research supplement for underrepresented minorities from NIEHS to support graduate student time. Finally, universities can provide initial and transitional funding for personnel who support the infrastructure of CBPR efforts (e.g., project managers, university-community liaisons) (Israel, Lichtenstein, et al, 2001; Seifer and Krauel, 2001). These support personnel are critical for cultivating relationships with community partners initially and for maintaining long-term university-community relations during periods of funded research projects as well as in between grants.

Recognize Contributions of Community Partners

Community partners with the interest and time to work with faculty and students in CBPR efforts are essential to the success of such projects. Therefore, it is important that the time and resources that they spend working in partnership be recognized. In addition to providing stipends and other financial support, recognition can take the form of co-authorship on publications and co-presentations involving academic and community partners at national meetings. Some disciplines do not regard multiple-authored papers as highly as single-authored papers. Yet, this is critical to recognize community contributions and to share credit. Also, acknowledgement of community partners on all products produced by the research partnership (e.g., data collection instruments, reports) is another way to recognize their contributions. To illustrate one approach for recognizing community contributions, HEP includes at least one community partner on all partnership-related publications and presentations and identifies all partner organizations in the acknowledgements of publications and materials distributed by the partnership (e.g., community resource guide, focus group summary, community survey), in addition to the financial support discussed above.

Conclusion

Community-based participatory research can improve the quality and social relevance of research. Engagement of community and health service as well as academic researchers in designing and implementing the NOC enhanced the quality and validity of the data collection instrument, helped to ensure the relevance of the data for

developing interventions and public policy, helped to gain support for the data collection in the community at large, and provided practical assistance for implementation. This collaborative approach also strengthened relations between the involved community-based organizations, health service organizations, and academic institutions, thereby fostering additional CBPR projects in the future. These benefits of CBPR far outweighed the challenges we encountered. In recognition of the benefits that both universities and communities may derive from research undertaken collaboratively, we have described a number of strategies that universities can undertake to provide institutional support for academic researchers, community organizations, and health service organizations engaged in such efforts. These suggestions address barriers encountered by faculty engaged in CBPR (e.g., revising promotion and tenure standards, cultivating supportive leadership) as well as those that may challenge community organizations and community members participating in CBPR (e.g., providing stipends to community partners, including community partners as co-authors on publications and presentations). If we are to change the landscape of research to support the active engagement of diverse groups in framing research questions, implementing and interpreting results, and in applying those results to address very real health concerns within urban communities, universities must provide systematic institutional support for those efforts.

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Author Information

Shannon N. Zenk, Ph.D., is a post-doctoral research associate in Cancer Control and Population Sciences at the University of Illinois at Chicago Cancer Center. Dr. Zenk is interested in how places contribute to racial and socioeconomic disparities in health and was actively involved in a number of community-based participatory research efforts as a doctoral student at the University of Michigan School of Public Health: the Healthy Environments Partnership, the East Side Village Health Worker Partnership, and the Healthy Eating and Exercise to reduce Diabetes program.

Amy J. Schulz, Ph.D., is research associate professor in the Department of Health Behavior and Health Education and the Institute for Research on Women and Gender, and associate director for the Center for Research on Ethnicity, Culture and Health. Dr. Schulz is principal investigator for the NIH-NIEHS-funded Healthy Environments Partnership, serves as a board member for the Detroit Community-Academic Urban Research Center, and is actively involved with the East Side Village Health Worker Partnership and Promoting Healthy Eating in Detroit, two other community-based participatory research efforts in Detroit.

Barbara A. Israel, Dr.PH., is a professor, and former department chair, in the Department of Health Behavior and Health Education at the University of Michigan School of Public Health. With initial funding from the Centers for Disease Control and Prevention in 1995, she has worked together with academic and community partners to develop the Detroit Community-Academic Urban Research Center, and she is actively involved in a number of the affiliated community-based participatory research projects (e.g., Healthy Environments Partnership, East Side Village Health Worker Partnership, Community Action Against Asthma).

James S. House, Ph.D., is research professor and former director of the Survey Research Center in the Institute for Social Research, and professor and former chair of the Department of Sociology, at the University of Michigan. Throughout his career his research has focused on the role of social and psychological factors in the etiology and course of health and illness, initially on occupational stress and health, later on social relationships and support in relation to health, and currently on the role of psychosocial factors in understanding and explaining social inequalities in health and the way health changes with age.

Alison Benjamin, BA, in urban planning, is program manager for contaminated sites for Southwest Detroit Environmental Vision and has worked in southwest Detroit on issues related to land use and community development. Ms. Benjamin has been a member of the Healthy Environments Partnership (HEP) Steering Committee since 2001 and has represented HEP at the annual grantee meeting, contributed to the design of the HEP survey and neighborhood observational checklist, and assisted with the development of the Biomarker and Nutrition Feedback Forms.

Srimathi Kannan, Ph.D., is assistant professor of environmental health sciences at the University of Michigan School of Public Health and serves as co-principal investigator for the NIH-NIEHS funded Healthy Environments Partnership. Dr. Kannan's research interests are: oxidative stress and inflammation biological risk markers of acute and chronic exposure in humans to ambient airborne particle matter PM10 and PM2.5, micronutrients as protective markers of cardiovascular disease in response to air pollution, and development and validation of innovative biomarkers.

Shannon N. Zenk, Ph.D.
University of Illinois at Chicago
Health Research and Policy Centers
1747 W. Roosevelt Rd., M/C 275
Chicago, IL 60608
E-mail: szenk@uic.edu
Telephone: 312-355-2790
Fax: 312-996-0065