Health Equity Promotion, Measurement, and Evaluation in Community-Based Participatory Research Partnerships

by

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Dedication

I dedicate this work to my parents, Doris and Henry, whose unconditional love and faith in me fuels everything that I do.

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Abstract

Community-based participatory research (CBPR) approaches present meaningful opportunities to promote equity within communities facing social disadvantage. Through empowerment, co-learning, and capacity-building strategies, CBPR approaches aim to reduce health inequities by engaging members of marginalized communities in research, action, and decision-making processes from which they have been historically excluded. Equity promotion goals are embedded within CBPR principles, highlighting the need for evaluation measures and processes for assessing equity promotion efforts within partnerships. To facilitate more explicit consideration of equity in the study and evaluation of CBPR partnerships, I describe a conceptual framework linking equitable group dynamics within partnerships to specific intermediate and long-term indicators of equity promotion. I conducted three studies, grounded in indicators and relationships proposed in this conceptual framework. In Study 1, I use quantitative data to investigate the association between two dimensions of equity defined in the framework: community and partnership capacity for community change and equitable power relations in CBPR research processes. In Study 2, I conducted a qualitative analysis of conceptualizations of equity as a partnership evaluation outcome among members of long-standing CBPR partnerships. In Study 3, I used a mixed methods approach to assess four intermediate indicators of equity defined in the framework, drawing on the larger formative evaluation of a CBPR partnership engaged in efforts to reduce the adverse effects of air pollution in Detroit, Michigan. In Study 1, I found that community and partnership capacity are associated with equitable power relations within partnerships, when controlling for demographics characteristics of partners and

other covariates. Findings from Study 2 suggest that conceptualizations of equity among partners align with several constructs as currently defined in the conceptual framework, including a focus on addressing issues of equity, equitable partnership processes, shifts in power that benefit communities facing inequities, and reductions in health disparities. Findings also suggest that equity in group dynamics characteristics of partnerships may help to facilitate intermediate partnership outcomes such as a focus on equitable processes within partnerships. Additional measures of equity not defined in the conceptual framework were also identified, such as a sense of community ownership of a partnership's efforts, and the degree to which community partner identities are socially marginalized (i.e., by race, class, and other factors). Findings from Study 3 highlight the role that a formative evaluation approach can play in helping partners develop specific strategies to improve ongoing equity promotion efforts. These findings point to further research directions that might inform changes to the conceptual framework. These include linking community capacity and power relations and equitable group dynamics to a focus on equity in partnership processes, as well as the inclusion of additional equity measures identified in the qualitative data. Finally, results highlight potential strategies for evaluating and promoting equity within existing partnerships, including capacity building and community engagement approaches. Collectively, this work highlights the importance of establishing equity as an explicit goal within CBPR partnerships, and equitably engaging the knowledge and experiences of communities facing inequities. As members of academic institutions continue to study disparities rooted in systemic racism and institutionalized oppression, and seek partnership in research with community members, it is critical that all partners critically interrogate their efforts to challenge existing power dynamics and social processes that produce inequities both within partnerships in broader communities.

Chapter 1: Introduction

Dramatic differences in health outcomes between advantaged and disadvantaged social groups in the United States exist and have persisted over time (Devaraj et al., 2020; National Academy of Sciences, 2012; Stebbins et al., 2019; Xia, Braunstein, Wiewel, Hadler, & Torian, 2016). Differences in health outcomes have been widely documented across multiple dimensions of social identity such as race, ethnicity, gender, sexual orientation, socioeconomic status, disability status, and others (Cunningham et al., 2017; Frederickson-Goldsen et al., 2013; Joseph & Kazanjian, 2016; National Academy of Sciences, 2017; Xia et al., 2016). These differences have been widely documented across numerous health conditions (Braveman et al., 2010; Kreiger et al., 2005; Marmot & Bell, 2009; Williams, Priest, & Anderson, 2016). For example, nationally-representative studies find that life expectancy for Black Americans remains markedly lower than that of white Americans (Arias, 2016; Olshansky et al., 2012), despite overall improvements in life expectancy across the general population (National Center for Health Statistics [NCHS], 2017). Similar trends have been documented for rates of infant mortality, an issue that has received increasing attention in the media in recent years (Villarosa, 2018). Despite overall declines in infant mortality over the last decade, Black and Hispanic infants continue to face higher mortality rates compared to non-Hispanic white infants (Lorenz et al., 2016; Rice et al., 2017). Impoverished and low socioeconomic status groups also face greater rates of infant mortality in comparison to wealthier populations (Blumenshine et al., 2010; Elder, Goddeeris, & Haider, 2016).

Similar disparities based on social position have persisted across several leading causes of death in the United States. For example, while heart disease is the leading cause of death for adults across racial groups, Black adults are 30% more likely to die prematurely from heart disease compared to white adults (Department of Health and Human Services, 2016; National Academy of Sciences, 2017). Despite an overall decrease in death rates from heart disease at the population level between 1968 and 2015, there were smaller decreases among Blacks (2.2%) than whites (2.4%) (Van Dyke et al., 2018). The prevalence of type II diabetes has been found to be significantly higher for people of color and people with lower incomes and education levels (Towne et al., 2017). Type II diabetes rates among American Indian and Alaska Natives are twice as high as that of non-Hispanic whites (Centers for Disease Control and Prevention [CDC], 2020). American Indian and Alaska Natives are also more likely to be diagnosed at earlier ages (Dabelea et al., 2007). Black adults are also 80% more likely to be diagnosed with type II diabetes, 4.2 times more likely to develop end-stage renal disease, 3.5 times more likely to be hospitalized for lower limb amputations, and twice as likely to die from the disease compared to white adults (Heron, 2015).

Differences in health have persisted despite dramatic improvements in population health over time due to health promotion and disease prevention practices (Qasim & Andrews, 2013; Trivedi, Grebla, Wright, & Washington, 2011). Several scholars have theorized about this trend. Frolich and Potvin (2008) describe an "inequality paradox" which argues that although population-level interventions have resulted in significant health improvements overall, these approaches have not always benefitted vulnerable populations compared to the degree to which it benefitted socioeconomically advantaged groups. They suggest, for example, that people with greater socioeconomic advantage are able to uptake new information or interventions more

rapidly, thus improving health outcomes for this group. The differential uptake and subsequent differential health outcomes may contribute to the unintended consequence of exacerbating health disparities. Frolich and Potvin (2008) suggest that persistent health disparities can be explained by underlying, fundamental causes such as those theorized by Link and Phelan (1995), which link disparities in health risks to one's social and economic position in society. Despite changes in diseases and risk factors over time, racial and socioeconomic health disparities persist due to the inequitable distribution of resources such as money, power, prestige, and beneficial social connections that disproportionately benefit whites and higher socioeconomic status groups (Phelan, Link, & Tehranifar, 2010; Link & Phelan, 2015). These underlying disparities have been described as differences rooted in social disadvantage based on one's position in a societal hierarchy, and shaped by policies that govern the distribution of resources in society (Braveman et al., 2011), as discussed in more detail below. Underlying disparities stemming from social disadvantage create differences in the extent to which members of vulnerable groups "know about, have access to, can afford, and receive social support for their efforts to engage in health-enhancing or health-protective behaviors" (Phelan, Link, & Tehranifar, 2010, p. S30) ultimately producing disparities in health outcomes, findings for which Phelan and colleagues (2010) provide empirical support.

The persistence of disparities despite changes in diseases and risk factors over time (Link & Phelan, 1995; Phelan, Link & Tehranifar, 2010) has been made evident as the coronavirus disease of 2019 (COVID-19) pandemic continues to unfold. The Centers for Disease Control and Prevention (2020) has stated that, "Long-standing systemic health and social inequities have put some members of racial and ethnic minority groups at increased risk of getting COVID-19 or experiencing severe illness, regardless of age" (CDC, 2020, para. 1). As of June 2020, the age-

adjusted COVID-19 hospitalization rates for non-Hispanic Blacks and non-Hispanic American Indian or Alaska Natives were five times higher than that of whites, and the rate for Hispanic or Latino Americans was four times that of whites (CDC, 2020). Researchers acknowledge that racial and ethnic minority groups face a disproportionate burden of the underlying health conditions that make individuals susceptible to serious complications or death due to the disease (e.g., heart disease, diabetes, asthma, obesity, kidney disease, and others) (Hooper, Nápoles, & Pérez-Stable, 2020; Schulz, Medipanah, Reyes, Neblett, & Israel, 2020). Furthermore, the social and economic conditions that place people of color and low-income groups at disproportionate risk due to COVID-19 have also been acknowledged, which prevent them from practicing physical distancing (e.g., living in crowded conditions, employment in public-facing positions, the inability to isolate in a safe environment) (Hooper, Nápoles, & Pérez-Stable, 2020; Yancy, 2020). The persistence of disparities in the opportunity to engage in health-protective behaviors to prevent transmission of this emergent health risk may be due in part to disparities in social and economic conditions that shape these opportunities.

The persistent, underlying disparities that disproportionately burden socially disadvantaged groups with conditions such as COVID-19, heart disease, diabetes, cancer, and others can be linked to systemic forms of oppression that function to socially pattern disease and health risk (Bailey et al., 2017; Gee & Ford, 2011). Social disadvantage associated with systemic racism, poverty, discrimination, and stigma based on social identity are key factors which contribute to differences in health outcomes (Feagin & Bennefield, 2014; Matoba, & Collins, 2017). For example, scholars have noted that race-based residential segregation has been a pervasive and critical mechanism by which systemic racism shapes neighborhood conditions that concentrate health risks for communities of color (Gee & Ford, 2011; House & Williams, 2000;

Williams & Collins, 2001). Over time, race-related policies and institutions (e.g., discriminatory lending practices, disinvestment in minority neighborhoods), have worked to spatially isolate racial minorities in neighborhoods of concentrated poverty, thereby limiting access to educational and employment opportunities (Feagin & Bennefield, 2014; Williams & Collins, 2001). Segregation is a key driver of racial differences in education quality, as public education is primarily funded at the local level (Reardon et al., 2019; Sosina & Weathers, 2019; Williams and Collins, 2001). Black students living in segregated neighborhoods tend to drop out of high school at higher rates than Whites, further limiting economic opportunity and the concentration of poverty in predominantly Black neighborhoods (Quillian, 2016; Swanson, 2004). The isolation of low-income Blacks in residential communities also weakens their political influence, or their ability to impact policy decisions that affect their health (Schroedel & Hart, 2015; Schulz et al., 2005; Smith, 2018), limiting their collective influence over the addition of neighborhood resources that may help them to engage in health promoting behaviors, such as park space, supermarkets, businesses, and transportation infrastructure (Boone, Buckley, Grove, and Sister, 2009; Kwate, 2008). As a result of residential segregation and other structural determinants, disparities in resources that shape the ability to engage in healthy behaviors (e.g., money, power, beneficial social connections) (Link & Phelan, 1995) are produced, which give rise to socially patterned disparities in health outcomes.

The perspectives put forth by Frolich and Potvin (2008) and Link and Phelan (1995), and evidence of the persistence of health disparities, indicate that policies and interventions that rely primarily on individual behaviors and resources are less likely to reduce health disparities than those that do not entail or minimize the deployment of individual resources (Phelan, Link, & Tehranifar, 2010). This difference is apparent despite the potential of interventions that rely on

individual resources to shift the distribution of population-level risk exposure to one that is more favorable (Frolich & Potvin, 2008). Gee and colleagues (2009) describe a similar trend with respect to structural racism, employing an iceberg as a metaphor. The tip of the iceberg represents individual-level acts of racism, which are easily detected and prevented (such as cross-burning); whereas the segment of the iceberg beneath the water represents structural racism, which is more insidious and challenging to eliminate (such as residential segregation) (Gee, Ro, Sharrif-Marco & Chae, 2009; Gee & Ford, 2011). As Gee and Ford (2011) explain, "Policies and interventions that change the iceberg's tip may do little to change its base, resulting in structural inequalities that remain intact, though less detectable" (p. 116).

The empirical and theoretical literatures presented here suggest that approaches to reducing health disparities require attention to the structural mechanisms that shape health outcomes, beyond the influence of individual- or interpersonal- level factors (Phelan, Link, & Tehranifar, 2010). This includes a focus on the social, economic, and environmental contexts which operate to produce and reinforce these outcomes (Braveman et al., 2011; Gaskin et al., 2014; Thorpe et al., 2016), and efforts to challenge those forces. As discussed below, an approach rooted in health equity has the potential to explicitly emphasize the experiences, opportunities, and life circumstances of groups facing the greatest social and economic disadvantages.

Defining Health Equity

Several definitions of health equity have been put forth in public health and health promotion literature. In an influential paper on health equity, Margaret Whitehead (1992) defined health inequities as population level, systematic differences in health and mortality that are

unnecessary, unjust, and plausibly avoidable through changes in social policy. Determination of a health inequity, according to Whitehead, requires a moral judgement of fairness and consideration of human rights and social justice principles when examining health differences (Whitehead, 1992). Starfield (2001) developed an adapted definition that incorporates Whitehead's (1992) emphasis on policy, while also emphasizing that equity relates to the distribution of health outcomes in a population: "equity in health is the absence of systematic differences in one or more aspects of health status across socially, demographically, or geographically defined populations or population subgroups" (Starfield, 2001, p. 546). Starfield (2001) defines a conceptual model of health determinants, in which she notes that political context is likely to serve as a fundamental determinant of the distribution of health in populations, creating multiple pathways by which health, economic, social, and environmental policies impact health outcomes. Underpinning Starfield's (2001) framework is the notion that policy reflects a country's approach to the distribution of power. Whitehead (1992) and Starfield (2001) developed definitions pertaining to both equity in health and equity in health services. The focus of this work is on the former, with a particular focus on underlying social conditions and processes that contribute to inequitable health risks.

Seeking to reduce ambiguity among the terms "health equity" and "health disparities", Braveman and colleagues (2011) determined that both concepts are rooted in deeply held American social values and internationally recognized human rights principles, and cannot be defined without first defining social disadvantage. Social disadvantage refers to "unfavorable social, economic, and political conditions that some groups systematically experience based on their relative position in social hierarchies," (p. S151) and can work to restrict full participation in society and the ability to obtain the benefits of societal progress (Braveman et al., 2011).

Braveman and colleagues (2011) thus describe health disparities as systematic and plausibly avoidable health differences based on factors associated with discrimination or social marginalization. These differences reflect social advantage or disadvantage with respect to one's position within a social hierarchy (e.g., race, ethnicity, religion, gender identity, sexual orientation, socioeconomic resources, disability). Furthermore, health disparities do not refer to all observed differences in health, but instead to health differences that adversely affect socially disadvantaged groups, or those that stem from intentional or unintentional discrimination or marginalization and that reinforce social disadvantage (Braveman et al., 2011). Braveman and colleagues (2011) rely on the term "health disparity" to describe a systemic, socially patterned health difference rather than "health inequity." According to the authors, "health inequity" captures a moral component that is used to differentiate between health differences rooted in injustice from other health differences, implying a degree of causality that may be difficult to support, despite the term's importance (Braveman et al., 2011).

Braveman and colleagues (2011) assert that health disparities are metrics that can be used to assess progress toward achieving health equity (or inequity), while health equity itself reflects a social justice orientation to health (Braveman et al., 2011). With these considerations in mind, Braveman and colleagues ultimately defines health equity as "the principle underlying a commitment to reduce – and ultimately eliminate—disparities in health and in its determinants" (Braveman et al., 2011, p. S150). Like Whitehead's (1992) conceptualization, this principle is based on human rights considerations, evidence linking social disadvantage to poor health outcomes and death, and the plausibility that social and economic disadvantage can be alleviated by social policies (Braveman et al., 2014; Whitehead, 1992, World Health Organization, 1996). According to Braveman (2014), "Pursuing health equity means striving for the highest possible

standard of health for all people while giving special attention to the needs of those at greatest risk of poor health on the basis of their social conditions" (p. 4). She also argues that "A reduction in health inequalities (in absolute and relative terms) is evidence that we are moving toward greater health equity" (Braveman, 2014, p. 4).

To establish greater clarity and consensus around the term, Braveman and colleagues (2017) later developed definitions of health equity for various audiences, including explanations of the principles which guide efforts toward achieving health equity. The authors ultimately depict equity as both a process of reducing health disparities and their determinants, and an outcome of eliminating them, or achieving health equity. For example, equity in health is broadly defined as a fair and just opportunity for everyone to be as healthy as possible, through the removal of obstacles such as poverty, discrimination, and their consequences (Braveman et al., 2017). For the purpose of measurement, to achieve health equity means to reduce and ultimately eliminate disparities in health and its determinants that adversely affect marginalized groups (Braveman et al., 2017). Toward this end, Braveman and colleagues acknowledge that achieving health equity requires an ongoing cycle of improvement that meaningfully engages those most impacted by social and health inequities in the identification, design, implementation, and evaluation of health promotion efforts (Braveman et al., 2017). Guiding principles for achieving health equity thus emphasize: a specific focus on those with the greatest needs and least resources to improve their health; building upon and strengthening the existing strengths and assets of marginalized groups; addressing multiple factors and health determinants to both increase opportunities and reduce obstacles to health; and clear measurement and documentation of inequities (Braveman et al., 2017).

The conceptualizations summarized thus far characterize health equity as both: 1) a goal

to reduce or eliminate differences in health based on social disadvantage, and 2) a principle or process that meaningfully engages and focuses efforts and resources toward groups facing the greatest inequities in order to successfully reduce these differences. These ideas resonate strongly with other definitions of the concept, most notably that of Jones (2014). Jones argues that equity in health is "assurance of the conditions for optimal health for all people" (Jones, 2014, p. S74). Thus, "achieving health equity requires valuing all individuals and populations equally, recognizing and rectifying historical injustices, and providing resources according to need" (Jones, 2014, p. S74). In this work, I will use "health equity" when referring to the distribution of health outcomes and their social determinants (e.g., reducing or eliminating health disparities), and I will use "equity" when referring to the social processes that determine this distribution (e.g., processes that meaningfully engage communities, rectifying historical injustices).

Creating the conditions under which all people have a fair and just opportunity to be healthy requires approaches to public health research and practice that incorporate the processes that Braveman and colleagues (2017) and Jones (2014) describe. One such approach is community-based participatory research (CBPR). CBPR is a collaborative approach to research that involves equitable engagement of community members, academic researchers, and representatives of organizations (e.g., community-based organizations, health and human service agencies), in all aspects of the research process (Israel, Eng, Schulz, & Parker, 2013; Wallerstein, Duran, Minkler, & Oetzel, 2018). The approach builds upon participatory research (Dekoning & Martin, 1996), action research (Brown & Tandon, 1983), participatory action research (Fals-Borda & Rahman, 1991), and other approaches to collaborative research from multiple disciplines.

CBPR approaches present strong opportunities to promote equity by improving health and its determinants within low-income communities and communities of color. Evaluation of partnership processes and outcomes often plays a fundamental role in CBPR approaches (Israel et al., 2013). Israel and colleagues (2013) describe evaluation as one of the core phases of partnership functioning, which is one that starts at the beginning and occurs throughout the life of a partnership. As discussed further in the following sections, CBPR partnership evaluation efforts often involve assessment of a partnership's adherence to CBPR principles for working together (Braun et al., 2012; Israel et al., 2013), as well as intermediate and longer-term outcomes such as power relations and health outcomes. Evaluation processes within partnerships thus present opportunities to understand and address issues of equity both within partnerships and in communities more broadly.

The foundational emphasis on equity within CBPR principles signals that the evaluation of equity in partnership processes and outcomes is central to their work. Drawing on work by Israel and colleagues (1998), Schulz and colleagues (2003; 2014; 2017), Heller and colleagues (2014), and my own previous work (Ward et al., 2018), I describe in this dissertation a conceptual framework for CBPR evaluation that defines five dimensions of equity promotion, or efforts toward the achievement of health equity, in partnership processes and outcomes. Guided by this framework, I conduct three studies with the following goals: 1) investigate potential processes by which equitable outcomes may be produced in CBPR partnerships (Chapter 2); 2) explore how conceptualizations of equity promotion among longstanding community and academic partners of CBPR partnerships align with the dimensions of equity promotion defined in the framework, (Chapter 3); and 3) examine the use of indicators of equity within the context of a formative evaluation conducted by a longstanding CBPR partnership (Chapter 4).

Health Equity Promotion Within Community-Based Participatory Research

Foundational principles of CBPR are strongly consistent with the health equity promotion principles described by Braveman and colleagues (2017) and Jones (2014). CBPR principles emphasize collaborative and equitable partnership in all phases of research, as partners work together to take action on mutually-identified issues. Specifically, CBPR processes focus on: empowering and power-sharing in ways that attend to social inequalities; building on community strengths and resources to create solutions to public health challenges; co-learning and capacity building among partners to strengthen collaborative efforts to promote health and equity; emphasizing the local relevance of health problems; and applying ecological perspectives that address multiple health determinants (Israel et al., 1998). Due to its focus on equity and the social and environmental determinants of health, CBPR is a particularly appropriate approach for addressing health outcomes and health inequities in low-income communities and communities of color.

Traditional orientations to public health research have often been rooted in a positivist paradigm of science, which reflects the belief that researchers are able to study social phenomena in an objective and value-free manner based on natural laws guiding human behavior, and that the meaning of such phenomena is static and exists independently from the subjective experiences and interpretations of research participants (Israel, 1998; Wallerstein & Duran, 2018). Thus, traditional research processes have favored the presumed objectivity of knowledge generated through scientific methods over the presumed subjective knowledge of those who experience the phenomena being studied. In turn, academic researchers often determine research

questions, analyze and interpret study results, and develop interventions and programs (Gaventa, 1993: Wallerstein & Duran, 2008; 2017).

CBPR approaches to research are rooted in alternative, emancipatory forms of inquiry (e.g., post-positivism, constructivism, and critical social theories such as feminism and participatory inquiry), which challenge the core beliefs underpinning the positivist paradigm (Israel, Schulz, Parker, & Becker, 1998; Wallerstein & Duran, 2008). Broadly, these paradigms reflect the ideas that: there are multiple, socially constructed realities that are influenced by social, historical, and cultural contexts; research findings are mediated by values, researchers and research participants are interactively linked and research findings are not separable from this relationship; and thus, dialogue between researchers and research participants is critical to the construction of knowledge (Israel, et al., 1998).

CBPR approaches address the central role of societal power relations in the production of knowledge, including relationships between researchers, universities, and the communities in which research is conducted, and their degree of influence over the goals, approach, and purpose of the research, and context and conditions under which the research takes place (Wallerstein & Duran, 2008; 2017). CBPR approaches recognize that, due to imbalances of power and their role in shaping the distribution of social and economic resources that help to produce health inequities, marginalized communities have been historically underrepresented in research and knowledge creation, as well as policy- and decision-making processes that impact their health (Freudenberg, Pastor, & Israel, 2011; Israel et al., 1998; Wallerstein & Duran, 2008; 2018).

CBPR thus has the potential to promote equity by reducing disparities in the distribution of power and resources which adversely affect marginalized communities (Freudenberg et al., 2011; Israel et al., 1998; Wallerstein & Duran, 2018). Partnerships may do so by facilitating

knowledge creation that integrates and validates community knowledge and experience (Israel et al., 2013; Wallerstein & Duran, 2008; 2018). Meaningfully engaging community members in research processes and the development of programs and interventions based on co-created knowledge resonates strongly with the required processes that Jones (2014) describes for achieving health equity. Such practices within partnerships reflect an emphasis on valuing all partners equally, recognizing and addressing historical injustices (such as the historical exclusion of marginalized groups from research processes), and meaningfully involving those who represent communities with the greatest need (Jones, 2014).

CBPR principles are strongly aligned with those of health equity and its promotion described by Braveman and colleagues (2017) and Jones (2014). Both encompass a focus on challenging inequitable power dynamics and underlying inequities within the research process. Continual assessment of these efforts is critical to their realization. The societal power imbalances in which health disparities are rooted may be inadvertently reproduced within partnership settings when they are not adequately addressed (Schulz, Kreiger, & Galea, 2002). Wallerstein and Duran (2008) explain that even when partners strive for authentic and collaborative partnership in adherence to CBPR principles, power differentials can remain significant obstacles for partners, as academic researchers may maintain greater access to resources, scientific knowledge, staff, and time compared to the community-based organizations with whom they may work (Chataway, 1997; Wallerstein & Duran, 2008). Similarly, Chavez and colleagues (2008) discuss the implications of three levels of racism on power dynamics between academic and community partners, if they are not critically and continually examined: internalized racism (e.g., community partners undervaluing community assets compared to those of academia), personally-mediated racism (e.g., projection of stereotypes) and institutionalized

racism (e.g., the dominant culture and norms within academia that privilege white, academic researchers).

The ability to address potential oppressive power dynamics and other inequities within partnerships requires continual evaluation of partnership processes and outcomes, including reflection on issues of positionality, privilege, social identity (Muhammed et al., 2015), and the social context of health disparities. If they are not transparently evaluated and addressed, inequitable power dynamics and other underlying inequities may produce or contribute to inequities in partnership processes and outcomes. Studies of CBPR partnerships provide examples of the consequences of inequitable power dynamics, some of which are discussed in more detail in Chapter 2. For example, a lack of recognition of power imbalances hindered collaboration and the use of research findings in one partnership effort (Wallerstein, 1999). Findings from other studies suggest that oppressive power wielded through academic conventions (language, knowledge, etc.) serve to maintain existing power hierarchies (Wallerstein et al., 2019). In one study of a CBPR partnership by Travers and colleagues (2013), community partners were unintentionally disempowered during partnership research processes, as academic partners were positioned as project leaders and experts based on their academic status (Travers et al., 2013), rather than community partners with lived experience related to the issues being studied. On the other hand, studies have suggested that equitable power dynamics within partnerships may promote: the framing of research questions and interpretation and research findings in ways that are more relevant to community partners; the ethical conduct of research; external validity of studies (Wallerstein & Duran, 2018); and the selection and validation of community-relevant health outcome measures (Rose, 2012). More broadly, by promoting community leadership in knowledge production, CBPR approaches can improve the

relevance of research interventions to communities, thus increasing their likelihood of success (Minkler, Salvatore, & Chang, 2018).

Broader Implications of Equity Promotion in CBPR

Efforts to evaluate equity within partnerships have the potential to facilitate more equitable processes and outcomes in broader research contexts with socially marginalized communities. The need to recognize issues of equity and power in public health is particularly salient as translational research and implementation science have emerged as priorities in recent decades. These priorities include the adoption and integration of evidence-based health practice and interventions in various settings (health care, community, etc.), which often rely on scientific evidence from published research, clinical expertise, and the needs of clients or patients (McKibbon, 1998). Increasingly, efforts to promote translational research and evidence-based interventions are focused on community and social service settings, with the aim of developing comprehensive knowledge about interventions and their likelihood of improving health outcomes (Hausman, 2002). Scholars have documented barriers to the successful integration and implementation of evidence-based practices in community settings, including: lack of data that is applicable to local settings; limited analytic and research capacities of community organizations; conflicting practice goals between researchers and community organizations; and social and political contexts that influence program planning decisions (Hausman, 2002). Based on these issues, other scholars have acknowledged that the knowledge production process serves as a barrier to successful evidence-based practice in community settings (Burton & Chapman, 2004; Wallerstein & Duran, 2010). As Burton and Chapman (2004) explain, "When applied to community health and social services, the evidence based approach falters at each step – not

because the idea of basing practice on evidence is wrong, but because of conceptual and systemic problems on the road from knowledge production to practice" (p. 58). Burton and Chapman (2004) emphasize that evidence from local studies and practice, including lay knowledge, must also be incorporated in evidence-based practice. The systemic inequities and positivistic research paradigms discussed above are likely to have substantial bearing on the extent to which community perspectives are validated and integrated into knowledge production.

Forms of participatory and action research, including CBPR, have been acknowledged as potential approaches to improve evidence-based practice in community settings (Hausman, 2002). In response the concerns referenced above, some scholars have argued that CBPR is a useful strategy for generating "practice-based evidence," which acknowledges the need to understand challenges of those both delivering and receiving interventions (Green, 2005), through community engagement and attention to existing relationships, assets, and needs in a community (Ammerman, Smith, & Calancie, 2014). Wallerstein and Duran (2010) have described specific ways that CBPR addresses the challenges of translational research, including: engaging community stakeholders in adaptation within complex systems of organizational and cultural context and knowledge; creating a space for postcolonial and hybrid knowledge; sharing power through bi-directional learning and collective decision-making; and sustaining programs though integration with existing programs, local ownership, and capacity development. These processes reflect a commitment within CBPR principles to equity in knowledge production that is necessary to bridge gaps between research and practice in public health (Minkler, Salvatore & Chang, 2018; Wallerstein & Duran, 2010). Understanding and addressing issues of equity might deepen the analysis of broader social, cultural, economic, and political contexts in which interventions are implemented, thus shedding light on the reasons they achieve, or do not

achieve, intended outcomes (Baumann & Cabassa, 2020; Minkler, Salvatore, & Chang, 2018). CBPR approaches have been taken to develop adaptations to evidence-based interventions implemented in community settings, showing promise for improving outcomes related to HIV (Lightfoot et al., 2010) and chronic diseases (Minkler, Salvatore, & Chang, 2018).

Making the commitment to equity more clear within CBPR partnership evaluation may lead to findings and practices that not only help partnerships reach equitable outcomes, but that also provide models for translational research efforts that are rooted more strongly in the knowledge and experiences of communities facing inequities. Frameworks for studying CBPR partnerships reflect the inherent goal of promoting equity, which aligns strongly with the definitions and principles outlined by Braveman (2017) and Jones (2014). Further exploration and definition of specific constructs to assess equity are necessary can help to emphasize the centrality of equity promotion as a fundamental goal and principle of CBPR. In the following section, I provide an overview of existing conceptual frameworks for studying and evaluating CBPR partnerships. I then introduce a conceptual framework for evaluating equity promotion within CBPR partnerships, which guides the three studies that make up this dissertation.

Overview of CBPR Conceptual Frameworks

Based on literature that links partnership effectiveness in working together with partnership effectiveness in addressing identified health outcomes, several conceptual frameworks for studying and evaluating CBPR partnerships have been developed. Frameworks were developed in part to understand the functioning of CBPR processes and to evaluate the extent to which a given partnership adheres to CBPR principles and achieves desired outcomes. Across these frameworks, scholars have named measures within five major dimensions: 1) social

and contextual conditions within which the partnership operates; 2) group dynamics characteristics associated with equity and effective group functioning, such as open communication and shared power, decision-making, and leadership; 3) partnership programs and interventions; and 4) intermediate outcomes (e.g., capacity-building, synergies, empowerment processes); and 5) long-term outcomes (e.g., changes in policy, systems, capacity, and health that emerge from the partnership's efforts) (Cacari-Stone, Wallerstein, Garcia, & Minkler, 2014; Kastelic, Wallerstein, Duran, & Oetzel, 2018; Israel et al., 2013; Schulz et al., 2003, Schulz et al., 2017).

Schulz and colleagues (2003; 2017) developed a model framing the processes by which structural and environmental characteristics of partnerships, group dynamics, and partnership programs and interventions influence intermediate and long-term partnership outcomes. In this model, the programs and interventions developed by a partnership impact intermediate indicators of partnership success, which ultimately shape a partnership's ability to achieve its defined long-term goals. Both partnership programs and intermediate measures of success are shaped by group dynamics, or the partnership's effectiveness in working together. The extent to which partners work together effectively and equitably is shaped by structural and environmental characteristics, or context, of the partnership and its members (e.g., a history of collaboration with communities, geographic or cultural diversity, social and economic determinants of health). This framework builds on prior literature on community coalitions and partnerships, which posits that group dynamics characteristics, such as shared leadership, participatory decision-making processes, and mutual trust, play a significant role in the success of collaborative efforts (Butterfoss, 1996; Lasjer & Weiss, 2001; Kegler & Swan, 2011) Specifically, this work links factors such as shared decision-making and leadership roles, mutual trust, and constructive conflict resolution with

member satisfaction and participation, community capacity building, development of synergies among members, perceptions of the benefits and drawbacks of participation in partnerships, and other outcomes (Brakefield-Caldwell, Reyes, Rowe, Weinert, & Israel, 2015; Butterfoss, 1996; Lasker, Weiss, & Miller, 2001; Kegler & Swan, 2011; Schulz et al., 2017).

Wallerstein and colleagues (2008) developed a conceptual framework that similarly illustrates how contextual factors and structural, relational, and individual characteristics of partnership group dynamics influence long-term outcomes through changes in power relations and social and economic conditions. Building on previous models, such as that by Schulz and colleagues (2003), this model suggests that contextual factors shape various dimensions of group dynamics. Equitable processes for working together allow for meaningful engagement among all partners, which may then impact the nature of decision-making, research, programs, and interventions in ways that promote equity (Wallerstein et al., 2008). For example, effective group dynamics may improve the extent to which community partners have a voice in the development of research methods, data collection instruments, or the translation and dissemination of findings (Belone et al., 2016; Dutta, 2007). Ultimately, contextual factors, group dynamics characteristics, and the implementation of interventions and research promote both intermediate (systems, policy, and capacity changes) and longer-term health and social justice outcomes (Kastelic, Wallerstein, Duran, & Oetzel, 2018; Wallerstein et al., 2008).

In collaboration with Wallerstein, Cacari-Stone and colleagues (2014) adapted the model above in order to explore how CBPR efforts can promote health policy to reduce racial and ethnic health inequities. This model illustrates the pathways by which contextual factors, CBPR processes (such as the extent of democratic decision-making among partners), and policymaking influence policy change and health outcomes, including political action and changes in

procedural and distributive justice. Partnership dynamics facilitate civic engagement of communities most impacted by health inequities in order to shape policymaking processes such as: policy formulation, modification, implementation, and evaluation; agenda-setting; and defining public health problems. Specifically, partnership dynamics, such as democratic decision-making among partners and others involved in the policymaking process, and explicit roles for community partners in organizing and advocating around health issues ultimately contribute to the formation of public health policies and practices that promote equity (Cacari-Stone, Wallerstein, Garcia, & Minkler, 2014).

Across the conceptual frameworks described here, group dynamics characteristics play a crucial role in shaping equitable and effective partnership programs, interventions, and activities, as well as intermediate and long-term outcomes of the partnership's work (Cacari-Stone et al., 2014; Kastelic et al., 2018; Israel et al., 2013; Schulz Israel, & Lantz, 2003, Schulz, Israel, & Lantz, 2017; Ward et al., 2018). Effective group dynamics have the potential to influence intermediate processes and long-term outcomes which ultimately promote equity (Cacari-Stone, et al., 2014; Kastelic et al., 2018; Israel et al., 2013; Schulz et al., 2003; Schulz et al., 2017; Ward et al., 2018). Recent evaluation research suggests that equitable group dynamics and partnership processes promote individual-level motivation among community members to work with the research team, which ultimately contributes to intended research outcomes (Vaughn, Jacquez, & Vhen-Duan, 2018).

Working toward a conceptual model that further clarifies the manner in which partnerships explicitly promote equitable partnership outcomes, Ward and colleagues (2018) extended earlier models suggesting that intermediate measures of partnership effectiveness, shaped in part by group dynamics characteristics, ultimately influence long-term partnership

outcomes. Specifically, this framework adapts and integrates equity promotion principles from Health Impact Assessment (HIA) practice into an existing framework for assessing dimensions of group dynamics in CBPR partnerships (Schulz et al., 2003; Schulz et al., 2017). HIA is a systematic process that uses various data sources, analytic methods, and stakeholder input to assess the potential impacts of a proposed policy, plan, program, or project on the health of a population and the distribution of those impacts within the population (National Research Council on Health Impact Assessment, 2011).

HIA practice standards share principles of democracy and equity promotion in common with CBPR. Like CBPR, HIA practice calls for engagement of all stakeholders at each stage of the process, including communities that may be particularly affected by the decision in question. Thus, HIA principles emphasize meaningful engagement of communities by recognizing and addressing institutional barriers to community participation in decision-making processes (Iroz-Elardo, 2015; Kearney, 2004). This includes a focus on the importance of factors such as: shared leadership, resources, power, and decision-making; addressing the distribution of health impacts within populations; and promoting stakeholder participation in transparent processes for policymaking (European Centre for Health Policy, 1999; Heller et al., 2014; North American HIA Practice Standards Working Group, 2009; Partidario & Sheate, 2013). Given the intended focus on these factors in HIA practice, Heller and colleagues (2014) identified four dimensions to evaluate equity promotion in HIAs. These dimensions assess the extent to which the HIA: 1) focuses on equity in its process and products; 2) builds the capacity of communities facing health inequities to engage in future HIAs and decision-making; 3) results in a shift in power that benefits communities facing inequities; and 4) contributes to changes that reduce health

inequities and inequities in the social and environmental determinants of health (Heller et al., 2014; Jandu et al., n.d.).

As HIA principles for community engagement and democratic processes overlap with group dynamics characteristics defined in CBPR conceptual frameworks (Schulz et al., 2003; 2014) as well as CBPR principles (Israel et al., 1998), the evaluation dimensions include outcomes that are relevant to CBPR practice with respect to equity promotion. The conceptual framework adapts and integrates these dimensions into intermediate and long-term outcome measures of CBPR partnership effectiveness in order to bring to the forefront specific equity promotion goals. Evaluation measures proposed in the conceptual framework have the potential to address limitations of CBPR evaluation approaches with respect to equity. In the next sections, I briefly review approaches to CBPR partnership evaluation as they relate to equity promotion, and further describe the conceptual framework (Ward et al., 2018) that guides the three proposed studies exploring equity promotion in CBPR.

CBPR Evaluation Approaches and Measures

Various approaches have been taken to evaluate partnership processes and outcomes. As suggested by Israel and colleagues (2013), partnership evaluation plays a critical role in maintaining and sustaining partnerships by providing opportunities to assess partnership activities and progress toward achieving intended outcomes. Thus, evaluation of CBPR partnerships and outcomes may provide opportunities to examine issues of equity. Evaluation approaches commonly reflect partnership principles for working together collaboratively and effectively, which can promote equitable relationships, processes, and outcomes. For example, partnerships often take participatory or empowerment approaches to evaluation (Israel et al.,

2013; Wallerstein et al., 2017), which involve partners in the evaluation process (Springett & Wallerstein, 2008), including the design, interpretation, implementation, and dissemination of evaluation results. In accordance with CBPR principles, these evaluation approaches emphasize addressing inequitable power relationships within partnerships which otherwise prevent marginalized communities from participating in decision-making regarding partnership activities and knowledge production (Wiggins et al., 2017).

With respect to evaluation types, partnership evaluations may take various forms (summative, formative, process, and impact evaluation) (Sandoval et al., 2011). Evaluation approaches that allow for assessment of processes and outcomes throughout partnership efforts may be particularly well-suited to promoting equity. Formative evaluation, for example, is an approach in which a program is evaluated during its implementation in order to improve program design and outcomes (Patton, 1987). As a complement to summative evaluation, which centers on assessing program effectiveness after the program has been completed, formative evaluation typically involves the collection of evaluation data at multiple points in time throughout the partnership. Data are presented back to all partners in ways that are understandable and useful, and partners collaboratively discuss evaluation findings and make collective decisions toward improving partnership efforts (Lantz et al., 2001). Formative evaluation processes can thus offer critical opportunities to equitably engage community partners in decision-making around evaluation processes and partnership activities more broadly. Further review of the literature elaborating on formative evaluation in CBPR is presented in Chapter 4.

CBPR evaluation approaches have the potential to promote equity and inclusion of specific constructs developed to guide the measures of partnership processes and outcomes, which may contribute to an explicit emphasis on assessing equity. In terms of measuring

processes and outcomes, partnership evaluations have been guided by the operationalization of CBPR principles (e.g., recognizing community as unit of identity, fostering co-learning and capacity building) (Arroyo-Johnson et al., 2015; Braun et al., 2012; Israel et al., 2013) or conceptual frameworks which generally categorize constructs into five domains, as described above: Context; Group Dynamics; Partnership Programs Interventions, and Research; Intermediate Outcomes; and Long-Term Outcomes (Schulz et al., 2003; 2017; Kastelic et al., 2017; Wallerstein & Duran, 2008).

Like CBPR principles, existing constructs and measures for evaluating CBPR partnerships reflect an implicit goal of promoting equity within partnerships and in communities more broadly. Toward summarizing existing constructs and measures for CBPR evaluation, Sandoval and colleagues (2011) conducted a comprehensive review of the literature to identify process and outcome constructs for evaluating CBPR projects. The authors classified constructs identified in the literature with respect to the five dimensions of constructs referenced above. The greatest number of evaluation measures were categorized as group dynamics characteristics, while a smaller number were classified as intermediate outcomes and long-term outcomes. As described further below, group dynamic characteristics (such shared power, leadership, resources, and decision-making) (Schulz et al., 2003; 2017) exemplify a focus on equitable conditions and processes within partnerships. Many of the intermediate and long-term outcome measures identified in the study by Sandoval and colleagues (2011) also align with the goal of promoting equity, such as community empowerment, community capacity, changes in practice or policy, and health outcomes. More recent research has also identified constructs and measures that align with equity promotion goals among community-based and community-engaged partnerships, such as: the number of community members trained for research; the number of

collaborative grants written; the number of research projects that seek input from community members; changes in levels of trust between university and community members; and changes in collaboration of with community partners in research (Eder et al., 2018).

Group dynamics characteristics of partnerships, such as those which Schulz, Israel and Lantz (2003; 2017) integrated from group process literature (Johnson & Johnson, 1982; 1997; Sofaer, 2000) and adapted by Wallerstein and colleagues (2008), have included factors such as: shared leadership, two-way open communication, participatory decision-making, mutual trust, conflict management, and shared power and influence. Existing frameworks for studying and evaluating CBPR partnerships characterize group dynamics as central to a partnership's ability to successfully establish a culture of inclusion, in which community partners and members of communities facing inequities meaningfully engage with researchers in work on mutually identified goals. Equitable group dynamics may thus foster equitable community engagement and working relationships, ultimately contributing to research and interventions that better promote health equity (Israel et al., 2013; Schulz et al., 2003, 2017; Wallerstein et al., 2008; Ward et al., 2018). In accordance with the conceptual frameworks described in the previous section, effective and equitable group dynamics also ultimately help to facilitate equity in intermediate and long-term partnership outcomes (Schulz et al., 2003; 2017; Wallerstein et al., 2008).

Among intermediate and long-term CBPR partnership evaluation dimensions, there are a limited number of existing measures that strongly reflect a focus on equity. These measures span three areas: 1) community empowerment and power dynamics; 2) organizational and community capacity; and 3) equity in social conditions and health outcomes. Measures capturing empowerment and power dynamics and organizational and community capacity have been

commonly assessed as intermediate measures of partnership effectiveness (Schulz et al., 2003; 2014), while equity in social conditions and health outcomes has been assessed as a longer-term outcome (Belone et al., 2016; Wallerstein et al., 2008). Measures of community empowerment and power dynamics have included perceptions of empowerment within decision-making contexts (Schulz et al. 2003; 2014) and perceptions of power inequalities in partnership processes (Belone et al. 2016; Wallerstein et al., 2008). Measures of organizational and community capacity include perceptions of various individual and organizational capacities, including working with others and contributing to interventions (Schulz et al., 2014), a community's readiness for research (Wallerstein et al., 2008), and history of organizing for social change (Wallerstein et al., 2008). Finally, measures of equity in social conditions and health outcomes have included transformed social and economic conditions within communities and improvements in health or health equity (Kastelic et al., 2018; Wallerstein, Duran, Oetzel, & Minkler, 2018). These evaluation areas are further detailed in Chapter 3.

While the measures developed in prior studies and frameworks align with several aspects of equity promotion as conceptualized by Braveman and colleagues (2011; 2014; 2017), Jones (2014), and others, operationalizing these principles more explicitly may help partnerships clearly assess the extent to which they are, for example: validating and prioritizing community perspectives and knowledge in research, programs, and interventions; building capacity in ways that allow community partners to meaningfully engage in and lead within decision-making contexts; and contributing to specific changes in health and social outcomes that signify progress toward health equity (e.g., reductions in health disparities) (Braveman et al., 2017). Evaluating intermediate and long-term measures that explicitly emphasize equity may also further illustrate the manner in which equitable group dynamics characteristics facilitate a focus on equity

throughout partnership activities, as suggested in existing conceptual frameworks (Schulz et al., 2003; 2017; Wallerstein et al., 2008).

Perhaps most saliently, measures that make health equity an explicit orientation within CBPR partnership evaluation promote an explicit focus on assuring that the voices of the partners who face the greatest barriers to participation and leadership within research and decision-making contexts, and on the communities whom they represent. Namely, such an orientation would align more strongly with Braveman and colleagues' (2017) assertion that achieving health equity requires an explicit focus on the needs of groups facing the greatest inequities, and engagement with those communities in the process of identifying, developing, and assessing solutions to those inequities. They would also align with Jones's (2014) conceptualization of health equity as a process which requires allocating resources according to need, rectifying historical injustices, and valuing all individuals and groups.

Bringing equity considerations to the forefront of partnership evaluation efforts provides a mechanism for partnerships to reflect upon equity promotion explicitly critically and intentionally in internal activities and in their broader communities. Formally evaluating more explicit equity promotion constructs may help support strategic and intentional efforts to generate changes driven by members of marginalized communities. Evaluating equity can help partnerships further challenge and undo the history of systemic power dynamics that have delegitimized the perspectives, knowledge, and assets of communities facing inequities (Gaventa & Cornwall, 2008; Wallerstein & Duran, 2008). In the remainder of this introductory section, I present a conceptual framework which integrates constructs for studying and evaluating CBPR partnerships with an explicit emphasis on equity promotion.

A Conceptual Framework for Evaluating Equity Promotion in CBPR Partnerships

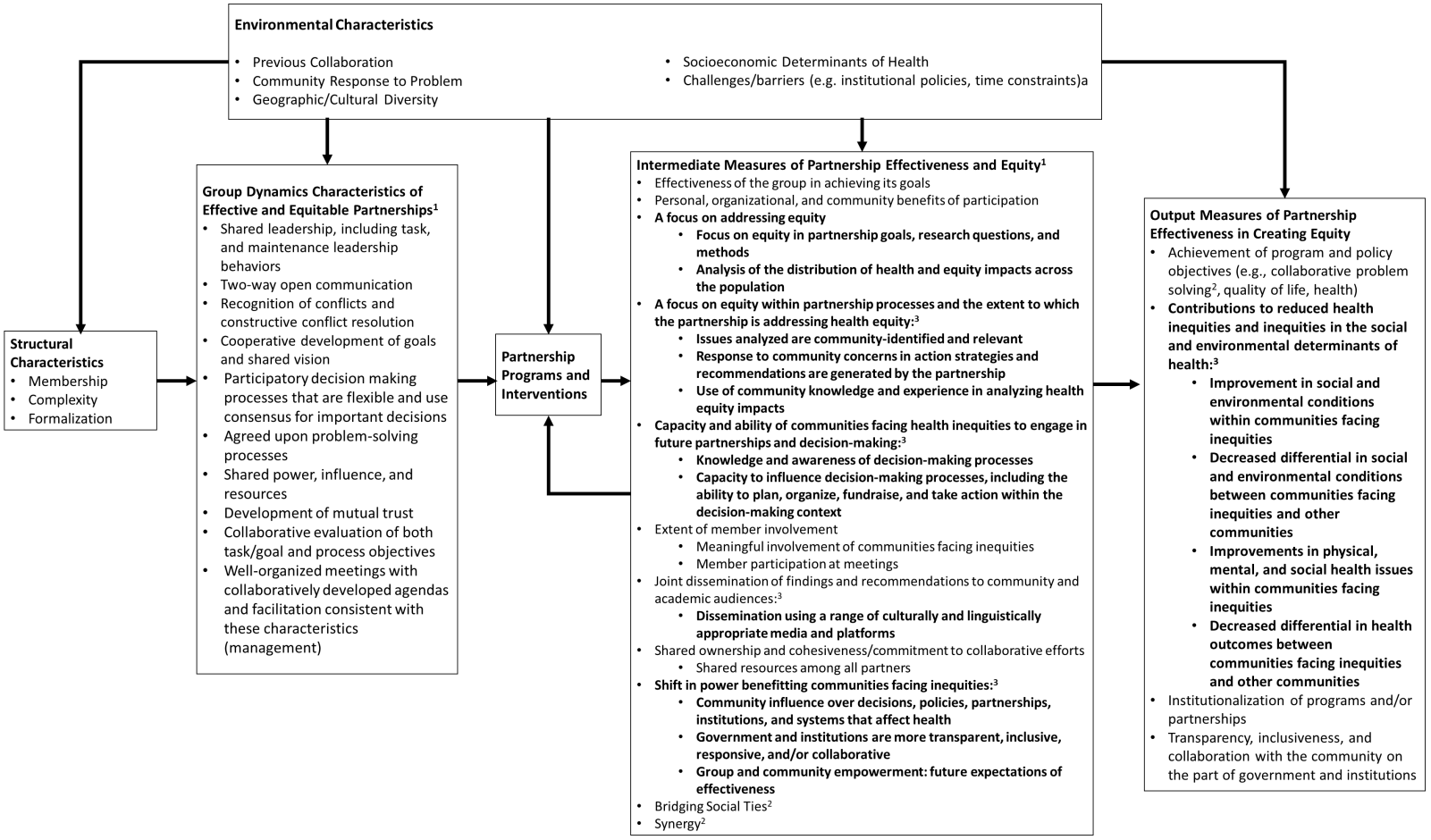
The conceptual framework (Figure 1-1-1), previously published by Ward and colleagues (2018), adapts and integrates the four equity promotion evaluation dimensions defined by Heller and colleagues (2014) with intermediate and long-term measures of partnership effectiveness in CBPR, previously defined by Schulz, Israel, and Lantz (2003; 2014; 2017). In the process of integrating these measures, Ward and colleagues adapted the first dimension defined by Heller and colleagues (2014) (focus on equity in HIA process and products) to refer to the extent to which CBPR partnerships foster a focus on equity in research and programmatic goals, in addition to a focus on equity in the processes by which work toward these goals is carried out. Thus, the conceptual framework, described below, consists of five dimensions: 1) a focus on addressing health equity; 2) a focus on equity in partnership processes; 3) capacity and ability of communities facing health inequities to engage in future partnerships and decision-making; 4) shift in power benefitting communities facing inequities; and 5) reductions in health inequities and inequities in the social and environmental determinants of health. In the following sections, I describe each of these dimensions in the context of the conceptual framework. The specific constructs within each of the five dimensions, listed in Figure 1-1 on the following page, are defined in detail in the subsequent dissertation chapters.

Intermediate Measures of Partnership Effectiveness and Equity

As shown in Figure 1-1, group dynamics, structural, and contextual characteristics of partnerships are hypothesized to shape intermediate measures of partnership effectiveness and equity. These measures shape changes in the nature of programs and interventions implemented throughout the partnership, which in turn promote equitable intermediate processes and outcomes within partnerships (described more specifically below). Equitable intermediate

outcomes are also facilitated by equitable group dynamics and relationships among partners (Duran et al., 2013). Four major categories or indicators of intermediate measures of equity are adapted here based on HIA equity evaluation metrics (Heller et al., 2014), together reflecting a partnership's ability to influence outcomes related to equity. These four indicators assess: 1) a focus on addressing equity; 2) a focus on equity in partnership processes; 3) capacity of communities facing inequities to participate in decision making; and 4) shifts in power to benefit communities facing inequities.

Figure 1-1: Conceptual Framework for Evaluating Equity Promotion Within CBPR Partnerships



1. As presented in Schulz, Israel, and Lantz, 2003, italicized and bolded items were derived from Johnson and Johnson (1982, 1997) and also includedin Sofaer, 2000. Other items were derived from Johnson and Johnson and not included in Sofaer's model.
2. Derived from Lasker and Weiss, 2003
3. Derived from Heller, Givens, Yuen, Gould, Jandu et al., 2014

A focus on addressing equity. As partnerships are often committed to addressing issues of equity and promoting equitable relationships among partners, partnership research, programs, and interventions may reflect this focus. Equitable groups dynamics within partnerships (e.g., shared leadership, open communication, and participatory decision-making) have the potential to shape the extent to which partners incorporate and prioritize the voices of underrepresented communities in the development and implementation of programs and interventions intentions in order to address health disparities. Evidence that partnership processes promote a focus on addressing equity can be indicated by the extent to which the goal of equity promotion is evident in partnership goals, research questions, and research methods, the extent to which partners analyze the distribution of health and equity impacts across the population (e.g., disproportionate or cumulative impacts on communities facing inequities), as shown in Figure 1-1 (Heller et al., 2014; Ward et al., 2018).

A focus on equity in partnership processes. In a similar manner, the conceptual model posits that equitable group dynamics established through partnership-building activities and processes that distribute power, leadership, and resources can promote equity in partnership processes (Duran et al., 2013). A focus on equity in partnership processes includes factors such as the degree to which issues analyzed by the partnership are relevant to and identified by the community, and the partnership's level of responsiveness to community concerns in action strategies and recommendations, as shown in Figure 1-1 (Heller et al., 2014; Ward et al., 2018). This focus also involves the use of community knowledge and experience as evidence in analyzing health impacts and inequities, which can reflect a partnership's work to prevent processes that reinforce inequities by delegitimizing or under-valuing forms of community

knowledge (Heller et al., 2014). These practices have the potential to strengthen the ways that partnership programs and interventions address health equity by challenging hierarchies of power which have historically excluded marginalized populations from decision-making processes and knowledge production (Muhammad et al., 2014).

Capacity and ability of communities facing health inequities to engage in future partnerships and decision-making. Processes that promote shared power, leadership, decision-making, and other equitable dynamics can facilitate partnership programs and practices that build individual and collective capacity for research and action (Becker et al., 2013; Schulz et al., 2003; Schulz et al., 2017; Ward et al., 2018). For example, academic researchers and other professionals who traditionally assume leadership roles must learn to share power with others in order to facilitate processes that equitably engage all partners (Johnson & Johnson, 2017). Moreover, it is important for partnerships to develop a shared understanding of historical contexts that currently influence power imbalances within the partnership, as this understanding may strengthen the capacity of marginalized communities to engage in future decision making and change efforts. Processes that work to disburse power and influence among partners can prepare community partners for leadership roles within and outside of the partnership context, thus strengthening their capacity to participate in and influence decisions that impact their health. The degree to which a partnership enhances the capacity of communities facing inequities can be captured by community partner knowledge and awareness of decision-making processes, and capacity to influence decision-making processes (e.g., the ability to plan, organize, fundraise, and take action within decision-making contexts) (Heller et al., 2014; Ward et al., 2018). As indicated by the feedback arrow in Figure 1-1 enhanced community capacity may also iteratively promote more equitable group dynamics and partnership programs (e.g., shared power,

leadership and resources between academic and community partners). This potential relationship is indicated by the bidirectional arrow in Figure1 linking equitable group dynamics characteristics to intermediate outcomes of effectiveness and equity.

Shift in power benefitting communities facing inequities. Equity in group dynamics and partnership programs can shift power in CBPR partnerships by integrating and legitimizing community knowledge and expertise, and empowering community members within decision-making processes both within partnerships and in broader settings (such as policymaking) (Corburn 2003; Coburn, 2006; Israel et al., 2013; O'Faircheallaigh, 2010; Schulz et al., 2003, 2017). By doing so, various dimensions of group dynamics promote changes in power both directly and by shaping the nature of partnership programs and interventions. This is shown by the arrow in Figure 1-1 linking equitable group dynamics characteristics to partnership programs and interventions. When programs are developed in ways that incorporate and prioritize the voice of communities facing inequities, for example, such programs might improve the degree of engagement and influence of community members and community-based organizations in policy and other decision-making process from which they have been typically excluded (Heller et al., 2014; Corburn, 2003). Theoretical frameworks for community change efforts, including CBPR, refer to the acquisition and use of power as a behavioral manifestation of built community capacities, suggesting that capacity-building efforts enhance the ability of communities to engage in decision-making, while the degree to which communities exercise these abilities is a reflection of power (Freudenberg, 2004; Minkler et al., 2008). In this framework, shifts in power can be assessed by: the degree of community influence over decisions, policies, partnerships, institutions, and systems that affect health; and transparency, inclusiveness, and collaboration with the community on the part of government and institutions (Heller et al., 2014; Ward et al.,

2018), as indicated in Figure 1-1 within the intermediate measures of partnership effectiveness and equity.

Long-term Outcome Measures of Partnership Effectiveness and Equity

Contributes to reductions in health inequities and inequities in the social and environmental determinants of health. Facilitated by equitable group dynamics, partnership programs, and contextual factors, intermediate measures of partnership effectiveness and equity have the potential to contribute to changes that reduce inequities in health outcomes and their social and environmental determinants (Cacari-Stone et al., 2014; Kastelic et al., 2018; Oetzel et al., 2018; Schulz et al., 2003; Schulz et al., 2017; Ward et al., 2018). Effective group dynamics and the integration of local beliefs into research practice have been linked to changes in policies and systems that shape health, and changes in health outcomes (Oetzel et al., 2018). As partnerships strengthen equitable internal processes, focus on addressing issues of equity, and improve the capacity and power of communities facing inequities, communities may be better able to influence policy and systems that ultimately impact health and the social and environmental conditions that produce differences in health outcomes (Cacari-Stone et al., 2014; Kastelic et al., 2018). As shown in Figure 1-1, this dimension can be assessed by evaluating the extent to which partnership efforts contribute to: improvements in social and environmental conditions within communities facing inequities; decreased differentials in social and environmental conditions between communities facing inequities and other communities; improvements in physical, mental, and social health issues within communities facing inequities; and decreased differentials in health outcomes between communities facing inequities and other communities (Heller et al., 2014; Ward et al., 2018).

Overview of Dissertation Chapters

The conceptual framework introduced above brings considerations of health equity to the forefront of evaluation approaches in CBPR, reflecting equity as both a process in which partnership efforts strive for equity across multiple dimensions, and as an outcome of reducing or eliminating differences in health. This framework resonates with CBPR's fundamental goal to promote equity through processes that include meaningfully engaging all partners in partnership research and activities. The constructs and relationships represented in the framework introduce implications for studying equity promotion, which may result in further refinements to the framework and recommendations for CBPR partnerships. Guided by the relationships and constructs within the framework, in this dissertation I conducted three studies with the following objectives: 1) assess the association between two intermediate measures of equity in order to understand potential processes by which equitable outcomes are promoted within partnerships (Chapter 2); 2) understand how equity is conceptualized as an evaluation measure among community and academic members of CBPR partnerships (Chapter 3); and 3) examine the use of indicators of equity within the context of a formative evaluation conducted by a longstanding CBPR partnership (Chapter 4).

In Chapter 2, I assessed the association between two intermediate measures of equity. Specifically, I quantitatively analyze a hypothesized association between two factors within the intermediate measures of equity promotion: community (and partnership) capacities, and power relations within partnership research processes. As explained earlier in this section, CBPR approaches to research challenge positivist paradigms of inquiry that privilege academic researchers and findings derived by scientific researchers in the context of knowledge production (Israel, et al., 1998; Wallerstein & Duran, 2008). This practice within partnerships is critical to

the validation and incorporation of community voices in the construction of new knowledge and in the development of power dynamics that position community partners to influence decision-making in research, policy, and other arenas that impact their health (Gaventa & Cornwall, 2015). Theoretical frameworks and findings from qualitative research indicate that the capacity of both communities and partnerships themselves may facilitate the acquisition and use of power among communities and community partners within CBPR partnerships (Freudenberg, 2004; Minkler et al., 2008). Findings from this analysis shed light on the extent to which community and partnership capacities for research and social change are associated with equitable power relations within partnership research processes, thus providing cross-sectional evidence for one theorized process by which intermediate factors within partnerships might function to promote equity.

In Chapter 3, I explored conceptualizations of equity as an evaluation measure among members of CBPR partnerships. Specifically, I conducted a qualitative study to explore conceptualizations of equity partnership evaluation indicator among academic and community members of long-standing partnerships, guided by the conceptual framework. While prior studies have been conducted to explore and validate constructs for studying and evaluating partnerships (Belone et al., 2016; Wallerstein et al., 2008), few studies have specifically examined how equity is conceptualized as an evaluation construct. Findings from this analysis shed light on the extent to which conceptualizations of equity promotion and its measurement among an expert panel of CBPR experts aligns with those put forth in the conceptual framework. Findings also serve to better contextualize intermediate and long-term measures within the current framework, and highlight potential new measures based on emergent themes related to equity that are not currently represented in the framework.

In Chapter 4, I examined intermediate measures of equity as part of a broader formative, participatory evaluation conducted by a long-standing CBPR partnership. This evaluation is intended to support partnership efforts to strengthen its processes and outcomes. Making the goal of equity a more explicit CBPR evaluation measure has the potential to enhance the extent to which partners explicitly engage with and incorporate considerations of equity into decisions and decision-making processes, the conception of research questions and analyses, and the development of interventions and programs geared toward improving the health of a community. More explicit considerations of equity may foster reflection and discussion around equity in all partnership activities, and facilitate more critical evaluation of the implementation of those activities and their outcomes. The equity metrics outlined here lend themselves strongly to formative partnership evaluation using a variety of data collection methods (Ward et al., 2018), in which evaluation results are fed iteratively back to partners to collaboratively discuss and integrate findings into strategies to improve equity promotion, among other indicators of partnership effectiveness. In addition to outcome evaluation, formative evaluation has the potential to capture the extent to which equity is promoted not only as a result of a partnership's work together, but also within intermediate processes and activities which are critical to equitable long-term outcomes. Thus, application of this framework to the formative evaluation of a CBPR partnership may shed light on the strategies and approaches partners use to evaluate equity, and on the processes by which partnerships achieve equitable outcomes.

In Chapter 5, I conclude with a discussion of the findings across the three studies. I highlight cross-cutting themes and areas for future study with respect to the measures within the conceptual framework and CBPR approaches more broadly. I also describe implications of these

overarching findings for the practice of evaluating CBPR partnerships with a focus on promoting equity in intermediate and long-term outcomes.

Chapter 2: Equitable Power Relations in Community-Based Participatory Research: The Role of Community and Partnership Capacity

Introduction

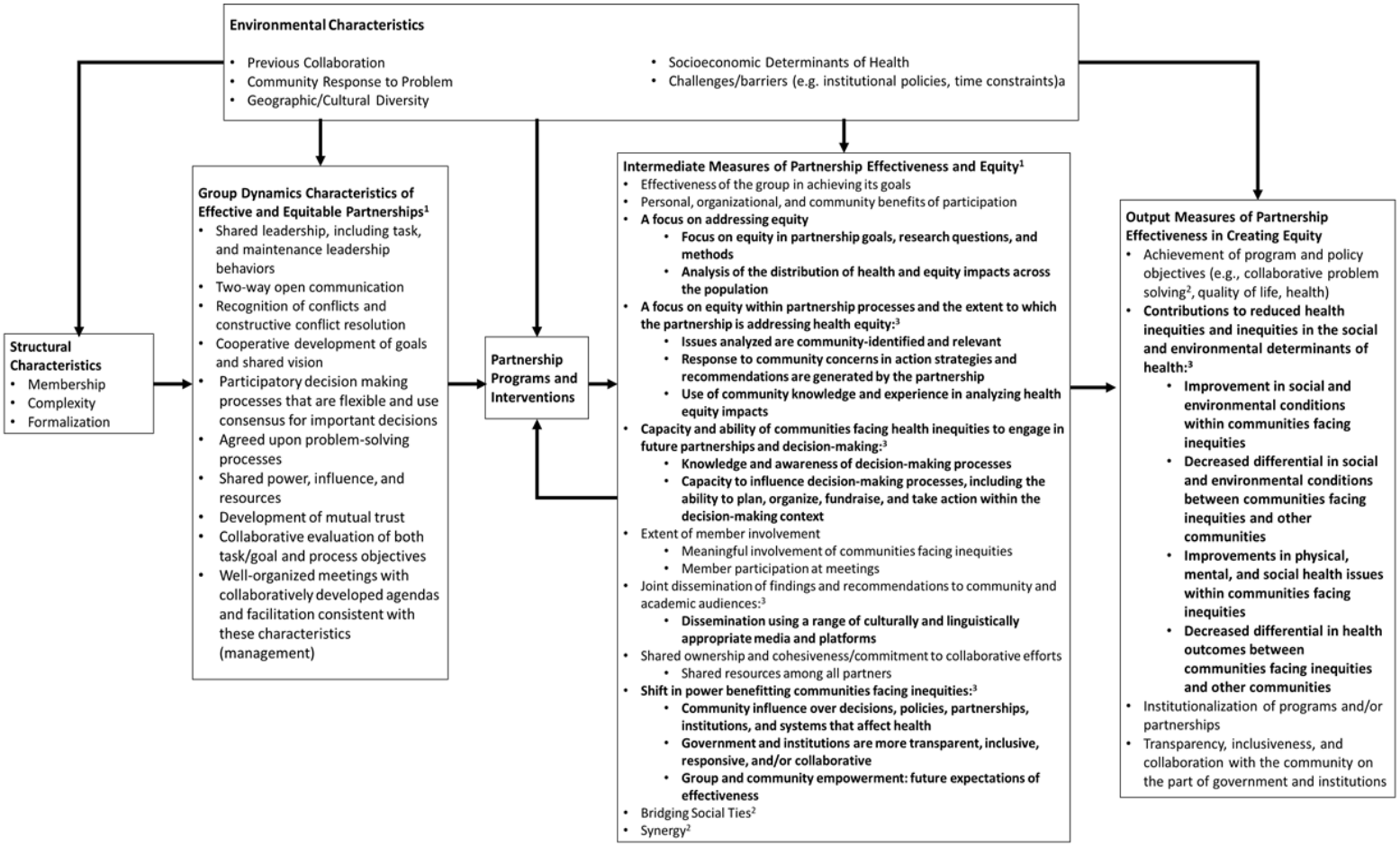
Health inequities persist in part due to imbalances of power that adversely affect marginalized communities on multiple fronts (Braveman & Gruskin, 2003; Starfield, 2001). Marginalized communities, such as low-income communities and communities of color, have been historically underrepresented in processes such as research (Gaventa & Cornwall, 2009; 2015) and policy-making (Corburn, 2015). The relative disenfranchisement of these communities limits their degree of influence to advocate for change in decision-making contexts, ultimately reinforcing the social and economic conditions that pattern social disadvantage (Corburn, 2015; Marmot et al., 2008; Schulz et al., 2005). Relative exclusion from research and knowledge production processes has particularly strong implications for power imbalances that disproportionately impact marginalized communities due to the critical relationship between knowledge production and power in society (Foucault, 1980; Gaventa & Cornwall, 2015; Fals-Borda & Rahman, 1991). Scholars of CBPR and other participatory and action research approaches acknowledge that "knowledge generation has the potential to exacerbate as well as address inequalities and injustices" (Mitlin et al., 2020, p. 546), calling for more equitable processes of knowledge production to achieve transformative, social justice-oriented outcomes (Mitlin et al., 2020). CBPR partnership approaches provide opportunities to disrupt power imbalances by promoting equitable engagement in research and knowledge production processes within partnerships. By centrally involving marginalized communities in research processes, and recognizing and valuing the knowledge and experiences of these communities, CBPR partnership processes may help to disrupt broader societal power imbalances that serve to

reinforce health and social inequities (e.g., exclusion from decision-making contexts, barriers health promoting behaviors).

Knowledge production is a mechanism by which power is exercised and power relations are reinforced in society (Foucault, 1980; Gaventa & Cornwall, 2015). Gaventa and Cornwall (2015) describe various conceptualizations of knowledge production and power, citing knowledge as a resource “that determines definitions of what is conceived as important, as possible, for and by whom" (p. 469) and as a resource that can be used to inform decision-making on public issues. Groups who hold societal power play a predominant role in producing knowledge, setting public agendas, and in the inclusion or exclusion of other groups from multiple forms of decision-making processes (Gaventa & Cornwall, 2015). Stoeker (2009) applies Foucault's (1980) concept of power-knowledge to participatory research approaches, noting that "the exercise of power, or action, creates the very knowledge needed to maintain power" (Stoeker, 2009, p. 398). According to Stoeker (2009), participatory research gives community partners access to a "knowledge-power loop" that allows them to be creators of knowledge rather than passive recipients of knowledge produced by expert academic researchers -- a process which may otherwise reinforce oppressive societal power dynamics (Stoeker, 2009; Travers et al., 2013).

As shown in Figure 2-1, on the following page, power dynamics that benefit community partners refer to the degree of influence that community partners hold within decision-making contexts, including the extent to which community partner knowledge and experiences are meaningfully incorporated in research processes within partnerships, and in broader partnersh

Figure 2-1: Conceptual Framework for Evaluating Equity Promotion Within CBPR Partnerships



1. As presented in Schulz, Israel, and Lantz, 2003, italicized and bolded items were derived from Johnson and Johnson (1982, 1997) and also included in Sofaer, 2000. Other items were derived from Johnson and Johnson and not included in Sofaer's model.
2. Derived from Lasker and Weiss, 2003
3. Derived from Heller, Givens, Yuen, Gould, Jandu et al., 2014

activities. Within CBPR partnerships, power dynamics rooted in personal and historical relationships between marginalized communities and academic researchers have strong potential to influence research priorities and approaches (Wallerstein & Duran, 2017). Academic researchers, who are disproportionately white and male in the U.S., can experience privilege due to their relative positions of power at academic institutions and in the context of scientific knowledge production, which has traditionally centralized white Eurocentric worldviews (Kubota, 2019). Thus, researchers' positions of privilege have the potential to reproduce power inequities in ways that disadvantage community partners (Muhammad et el., 2015), in part through knowledge production. For example, institutional, interpersonal, and internalized racism and other biases based on social identity (e.g., gender, socioeconomic status, religion) have the potential to reinforce power dynamics in ways that exclude or delegitimize the knowledge and lived experience of members of marginalized communities (Chavez et al., 2008). In a qualitative study, Wang and colleagues (2017) found that community and academic members of CBPR and community-engaged research recognize the importance of the historical impacts of power and privilege on research relationships, and community partners particularly recognize the centrality of power relations to the quality of research relationships. In a multiple-case study of power dynamics in CBPR partnerships, Wallerstein and colleagues (2019) found that in some partnerships, a "covert form of oppressive power was exerted through academic language and knowledge, which can maintain hierarchies even within well-intentioned partnerships" (p. 22S). In a CBPR initiative addressing social exclusion and health disparities among trans communities, Travers and colleagues (2013) found that power differences pose a significant challenge within CBPR research processes. The authors note that academic researchers derive power from existing systems designed to support research, and that these systems often position

academic researchers as project leaders and experts in areas that do not reflect their lived experience (Travers et al., 2013).

In general, CBPR processes that promote equitable power have the potential to influence the focus, framing, implementation, interpretation, and other aspects of research projects in ways that reflect and promote community priorities, knowledge, and experiences (Rose, 2018; Wallerstein et al., 2019). Ensuring that community partners have meaningful influence over decisions within partnerships can shape the framing of research questions, data collection methods, intervention design, and interpretation of findings in ways that better reflect community knowledge and concerns (Israel et al., 1998; Wallerstein & Duran, 2017). Specifically, equitable power relations and power sharing structures within partnerships can promote: the development culture-centered interventions based on community knowledge (Barnett et al., 2018; Wallerstein et al., 2019), and strengthened community leadership, ownership, and decision-making (Wallerstein et al., 2019). Rose (2018) found that efforts to share power equitably between researchers and community members influenced the selection, construction, and validation of health outcome measures and the extent to which such measures were relevant to the concerns of local communities. In order to facilitate equitable power relations within CBPR partnership research, greater understanding of specific factors that influence power dynamics among partners is needed.

Capacity and Power Relations in CBPR Partnerships: Power as Actualized Capacity

Theoretical frameworks and qualitative empirical studies suggest that community capacity and partnership capacity are critical to the acquisition and use of power by community members in community-based and community-engaged research (Freudenberg, 2004; Freudenberg, Pastor, & Israel, 2011; Minkler, Vásquez, Tajik, & Petersen, 2008). Goodman and

colleagues (1998) define community capacity as both a set of characteristics, such as "the characteristics of communities that affect their ability to identify, mobilize and address social and public health problems" (p. 259), as well as processes, such as "the cultivation and use of transferable knowledge, skills, systems and resources that affect community and individual-level changes consistent with public health-related goals and objectives" (p.259). The authors define ten dimensions of community capacity (e.g., leadership, skills, resources, community power) which provide a framework for its operationalization and measurement) (Goodman et al., 1998). In keeping with the two complementary definitions offered by Goodman and colleagues (1998), Freudenberg (2004) integrates these constructs into a logic model for understanding relationships between community capacity and citizen action to improve environmental health, in which community capacity is conceptualized in two forms: latent and actualized.

The two forms of capacity Freudenberg defines highlight the distinction between a community's capacity level and a community's actualization or realization of that capacity (Freudenberg, 2004). As a *latent* potential within a community, capacity interacts with community conditions (such as physical and social environment, local government) and their structural determinants (such as economic and political systems, culture, ideologies), that form what Freudenberg calls "a particular configuration of community capacity" (Freudenberg, 2004, p. 475) that a community may use to effect change. *Actualized* capacity refers to community action to contribute to improvements in health, based on the activation of latent capacity. Freudenberg conceptualizes several "behavioral manifestations of community capacity," that signify that capacity has been actualized (Freudenberg, 2004). Specific behavioral manifestations include: the acquisition and use of power among participants in environmental action to achieve health promotion goals; residents applying skills to solve environmental problems; and residents

finding and applying resources needed to solve environmental health problems (Freudenberg, 2004).

Notably, Freudenberg defines community power as both a component of community capacity, in accordance with Goodman and colleagues' (1998) conceptualization, and a behavioral manifestation of it. Findings from qualitative case studies guided by Freudenberg's model suggest that communities exercise a continuum of power, where power is broadly defined as the ability to realize a right (Freudenberg, 2004). Freudenberg thus defines a continuum of community power which includes: the right to be informed (e.g., to be knowledgeable of laws and policies), the right to sit at the decision-making table, and the right to frame issues and identify options, which is defined as "participatory processes in which citizens have equal voice with other players and ongoing role in planning processes" (Freudenberg, 2004, p. 484). The latter definition aligns most strongly with the acquisition and use of power as actualized capacity, which lies a step beyond the concept of community power defined by Goodman and colleagues (1998) as the ability to create or resist change.

Minkler and colleagues (2008) extend this work to identify dimensions of both community capacity and partnership capacity that contribute to policy changes that promote health. Building on the framework by Freudenberg (2004), Minkler and colleagues (2008) developed a conceptual model for environmental justice promotion in the context of CBPR. The model characterizes dimensions of both community capacity and partnership capacity, the structural and contextual factors which shape them, and potential outcomes (e.g., changes in public policy, improvements in health). In the model (Minkler et al., 2008), the ten dimensions of community capacity defined by Goodman and colleagues (1998), and their behavioral manifestations defined by Freudenberg (2004) are attributed to partnerships themselves in

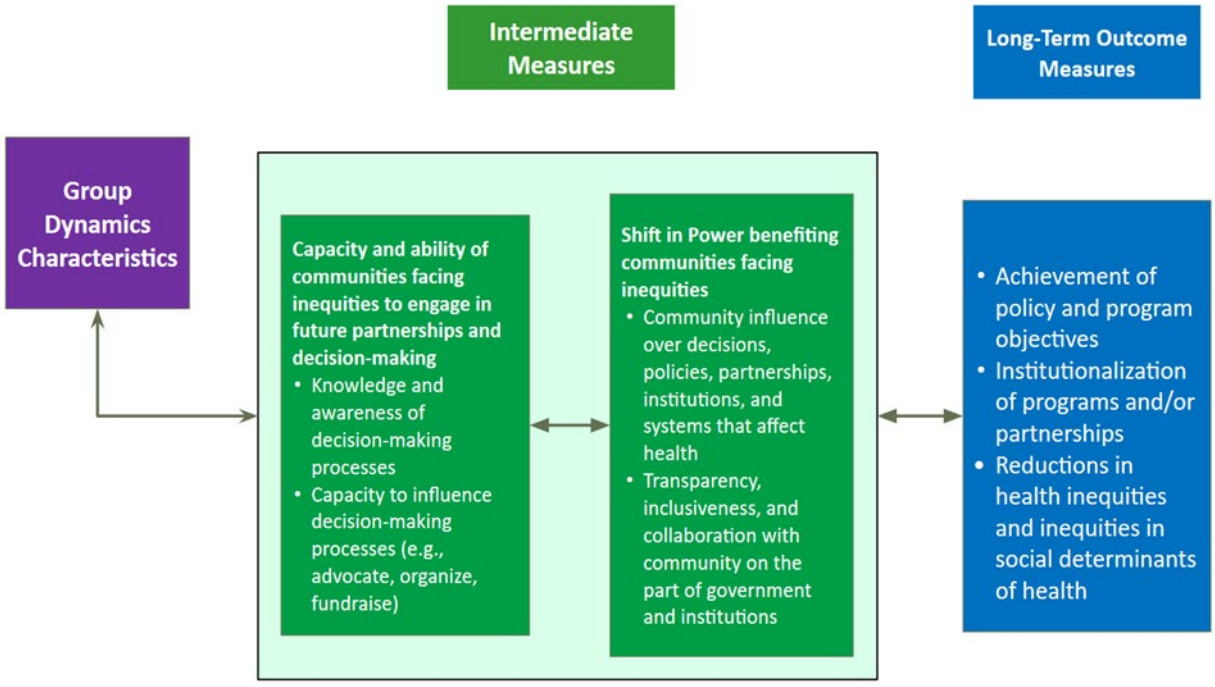
addition to communities. Partnership capacity is defined as partnership efforts, along with contextual factors related to the structure of partnerships and community social and environmental characteristics, that shape the ability of the partnership as whole to make change (Minkler et al., 2008). Other scholars have also defined partnership capacity in conceptual models, alongside community capacity, in reference to all partners building skills and expertise, social and organizational networks, and other dimensions of capacity (Kastelic et al., 2018; Wallerstein et al., 2018). The framework by Minkler and colleagues (2008) posits that both community and partnership capacity facilitate the acquisition and use of power by community members (e.g., a shift in power), which ultimately help to improve the ability of partnerships and communities to achieve distal health and environmental outcomes.

Extending this work further, Freudenberg, Pastor, and Israel (2011) developed a conceptual model delineating the role of community capacity and participation in influencing environmental health exposures through CBPR and other approaches. Power among low-income communities and communities of color is conceptualized as a critical determinant of exposures to environmental stressors and health disparities, as underlying power differentials drive political and institutional decision-making that influence these outcomes (Freudenberg, Pastor, & Israel, 2011). In this framework, existing community capacities facilitate opportunities for more meaningful and authentic participation of communities in government and institutional decision-making processes, which can in turn promote changes in community power that ultimately influence health outcomes and health disparities (Freudenberg, Pastor, & Israel, 2011). Authentic participation processes are described as those that "improve community capacity by getting people involved early, providing them with information and resources for full participation, and ensuring that outcomes reflect their participation" (Freudenberg, Pastor, & Israel, 2011, p. S124).

The degree to which community partners influence decision-making with respect to framing research questions and directions, collecting and interpreting data, and disseminating research findings represents a form of power, or actualization of the capacity to conduct research in the context of the partnership, according to Freudenberg's (2004) and Minkler and colleagues' (2008) conceptualizations. The extent to which community partners are able to lead and influence research initiatives in this manner may also be associated with the degree of decision-making power of community partners in multiple domains in addition to research and knowledge production, as community partners might utilize research capacities to influence public health policy or practice.

The conceptual and qualitative work described above suggests that community and partnership capacities are associated with power dynamics that benefit community partners through various potential processes (e.g., framing research questions and making decisions in the context of research, ability to mobilize resources for change). The conceptual model in Figure 2-2 on the following page highlights these theorized associations. Based on the relationships represented in Figure 2-2, this research tests the hypothesis that community capacity and partnership capacity are associated with equitable power relations in research processes within CBPR partnerships.

Figure 2-2: Conceptual Model of Selected Intermediate Measures of Equity Promotion in CBPR Partnerships



Data and Methods

I conducted a cross-sectional, secondary analysis of data from the Community Engagement Survey of the Engage for Equity partnership. "Engage for Equity: Advancing Community Engaged Partnerships" is a partnership of the University of New Mexico Center for Participatory Research, the University of Washington, Community-Campus Partnerships for Health, the National Indian Child Welfare Association, University of Waikato NZ, Rand Corporation, and a Think Tank of Community and Academic CBPR Practitioners (https://cpr.unm.edu/research-projects/cbpr-project/cbpr-e2.html). The partnership seeks to extend the science of community-based participatory research and community-engaged research by developing measures and tools to strengthen partnership and engagement processes. Engage for Equity builds upon an earlier national study, Research for Improved Health, which tested the

partnership's conceptual model (Oetzel et al., 2018), developed and validated outcome measures, and identified promising practices associated with CBPR outcome measures. Building on this work, the Engage for Equity partnership reconvened a national Think Tank of academic and community members of CBPR and community-engaged partnerships to refine, translate, and test finalized measures with a national sample of federally-funded partnerships. Data collection for the project included a national survey of CBPR and community-engaged partnerships, designed to assess the measures in the partnership conceptual model, described in more detail in the sections below.

Survey Recruitment and Analytic Sample

The Community Engagement Survey (CES) is a web-based survey that seeks to understand perceptions of partnerships, including characteristics such as trust, power-sharing, governance, and multiple CBPR and health outcomes, among members of federally funded CBPR and community-engaged research partnerships (Principal Investigators, community partners, and academic partners). The study team identified eligible partnerships using public, online data repositories for federally funded projects, and subsequent review of project-level abstracts. Inclusion criteria for the survey requires that projects: 1) be a research study involving human subjects, 2) be active in March 2015, 3) have funding through June 2018 or beyond, 4) use community partnership, CBPR or significant community-engaged research approaches, and 5) be located in the U.S. This recruitment process resulted in an initial sampling frame of 384 projects. Principal Investigators of the projects in the sampling frame were invited to participate in both the CES and a key informant survey to obtain details about the project and partnership, with recruitment occurring between September 2016 and March 2017. A total of 199 partnerships initiated this process. Of these, 179 cases (partnerships) were used for analyses after

screening to determine whether partnerships had community partners who could complete the survey.

Principal Investigators completed the CES at the same time as the key informant survey. As part of the key informant survey process, investigators could nominate up to six partners (two academic and four community) to also complete the CES. These partners completed the CES upon invitation between November 2016 and July 2017. Invitations were sent to 631 participants of the 179 partnerships, with 11 indicating by email or phone that they were not part of CBPR or community-engaged research projects, and 429 initiating the survey. The final sample consists of 381 surveys that were deemed at least 75% complete, submitted by participants from 139 partnerships. I received a de-identified data set containing this sample, under a data use agreement with Dr. Nina Wallerstein, the principal investigator of Engage for Equity, and the research team at the University of New Mexico.

To obtain an analytic sample for this analysis, I selected cases for which participants provided responses for each variable to be included in regression models. Due to the relatively small number of participants who identified as Native Hawaiian or other Pacific Islander (8), I omitted these observations from the analysis. The final analytic sample thus consists of 361 participants from 134 partnerships. Preliminary descriptive statistics (frequencies, range, mean, and standard deviation, where appropriate) and Cronbach alpha calculations for scale variables are shown in Table 1 for power relations in research, primary independent variables, and covariates. All scale measures (power relations in research, community context and capacity, partnership capacity, and community engagement) were created in accordance with those developed in the previous Research for Improved Health study (Oetzel et al., 2018) and the Engage for Equity Community Engagement Survey (Wallerstein, Oetzel et al., forthcoming). I

conducted exploratory factor analyses for all scale variables in order to verify that selected items share a relationship with the construct of interest (Gorsuch, 1997).

Outcome Variable: Power Relations in Research

To measure power relations in partnership research, participants were asked five closed-ended survey items. Participants were asked to rate the extent to which they agree or disagree that community members: "Have increased participation in the research process;" "Are able to talk about the project with groups or in other settings, such as community or political meetings;" "Can apply the findings of the research to practices and programs in the community;" "Can voice their opinions about research in front of researchers;" and "Have the capacity or power to promote research in front of researchers." Responses were reported on a seven-point Likert Scale consisting of the following responses: Completely disagree (1); Mostly disagree (2); Slightly disagree (3), Neither agree nor disagree (4), Slightly agree (5), Mostly agree (6), and Completely agree (7). As shown in Table 2, a composite measure of power relations was developed by taking the average of the responses to the five items ($M=5.72$, $SD=0.94$, $\alpha=0.88$).

Key Independent Variables: Community Capacity and Partnership Capacity

Community capacity was assessed using a composite scale calculated from the average of three items. Participants were asked to rate the extent to which they agree with the following statements: "The community or communities participating in this project have a history of organizing services or events;" "The community or communities participating in this process have a history of advocating for social or health equity;" and "By working together, people in the community or communities participating in this project have previously influenced decisions that

affected their communities." Responses were reported on a five-point Likert Scale consisting of the following responses: Not at all (1); To a small extent (2); To a moderate extent (3); To a very great extent (4); To a complete extent (5). A composite measure of community capacity was developed by taking the average of the responses to the three items (M=4.70, SD=0.92, α =0.78).

Partnership capacity was also assessed using a composite scale calculated from the average of five items. Participants were asked to rate the extent to which their partnership has any of the following features related to achieving project aims: skills and expertise, diverse members, legitimacy and credibility in the community, ability to bring people together for meetings/activities, and connections to relevant stakeholders. Responses were reported on a five -point Likert Scale consisting of the following responses: Not at all (1); To a small extent (2); To a moderate extent (3); To a very great extent (4); To a complete extent (5). The composite measure of partnership capacity was developed by taking the average of the responses to the five items (M=4.71, SD=0.90, α=89).

Covariates

Regression models were used to control for demographic factors and partnership characteristics that may be associated with perceptions of power relations in research or perceptions of community and partnership capacity. Specifically, models control for: partner demographics (race, gender, socioeconomic status) (Chavez et al., 2008); participants' role in the partnership (community or academic partner); the length of time that participants were involved in the partnership; and participant perceptions of community member level of engagement in research (Khodyakov et al., 2011). These covariates are further described below.

Partner Demographics. To determine participant race, participants were asked "Which of the following racial or ethnic groups are you a member of? Please check all that apply."

Participants selected from: American Indian or Alaska Native; Asian; Black or African American; Asian; White; and Hispanic or Latino. To obtain information about gender identity, participants were asked, "What is your gender identity?" Participants selected from: male, female, or different gender identity. To obtain information about participant socioeconomic status, participants were asked, "Which of the following population groups are you a member of?" Participants had the option to select one item: "Low socioeconomic status." For each of the items described in this section, responses were coded "0" if participants did not check each respective box, and "1" if participants checked the box.

Role in the Partnership. In addition to demographic information, partners were asked to indicate their role in the partnership. Participants were asked, "In [project name], do you primarily consider yourself a community partner or an academic partner?" Participants selected from: "Community partner (representing voices, perspectives, and knowledge of communities as individuals or organizations);" and "Academic partner (representing research knowledge as individuals or organizations associated with universities, research Think Tanks, or other institutions that house research)." Responses were coded as "1" if participants selected "community partner" and "2" if participants selected "academic partner."

Community Member Level of Engagement in Research. Community member level of engagement in research was assessed using a composite scale calculated from the average of fourteen items. Participants were asked to rate the extent to which community partners have been involved in the following research activities (and for those which have not yet happened, to what extent they will be involved): "integrating community understanding into the research question or approach;" "grant proposal writing;" "background research;" "developing sampling procedures;" "recruiting study participants;" "designing and implementing the intervention;"

"collecting primary data;" "interpreting study findings;" "writing reports and journal articles;" "giving presentations at meetings and conferences;" "informing the community about research progress and findings;" "informing relevant policy makers about findings;" "sharing findings with other communities;" and, "producing useful findings for community action and benefit." Responses were reported on a five-point Likert Scale consisting of the following responses: Not at all (1); To a small extent (2); To a moderate extent (3); To a very great extent (4); To a complete extent (5). The composite measure of engagement in research was developed by taking the average of the responses to the fourteen items (M=3.55, SD=1.13, α=0.94). In their prior empirical test of the CBPR framework for which these items were developed (Oetzel et al., 2018; Wallerstein, et al. 2020). Wallerstein and colleagues (2020) divided these items into 3 subcales: background research, data collection, and analysis and dissemination. For the purpose of this study of power relations and capacity, and based on the results of the exploratory factor analysis I conducted (Appendix A), I did not create subscales for this item.

Table 1: Characteristics of community and academic members of federally funded CBPR and community-engaged research partnerships

Variable	%(N)	M(SD)	Min - Max	Cronbach Alpha
Dependent Variable				
Power Relations in Research		5.72 (0.94)	1-7	0.88
Independent Variables				
Community Capacity		4.70 (0.92)	1-6	0.78
Partnership Capacity		4.71 (0.90)	1-6	0.89
Covariates				
Race				
American Indian/Alaska Native	16.3% (62)			
Asian	8.4% (32)			
Black or African American	12.1% (46)			
White	59.6% (227)			
Hispanic or Latino	7.35% (28)			

Gender Identity				
Male	26.3% (95)			
Female	73.5% (266)			
Socioeconomic Status (SES)				
Low SES	10.5% (40)			
Role in Partnership				
Community Partner	41.6% (150)			
Academic Partner	58.4% (211)			
Length of Time Involved in the Partnership (years)		5.44 (4.86)	0-45	
Community Engagement in Research		3.55 (1.13)	1-6	0.94

n=361

Analytic Plan

Mixed-effects linear regression models were used to assess the associations of interest. All data was analyzed using STATA version 15. Prior to conducting the regression analysis, I performed multicollinearity diagnostics in order to confirm assumptions of independence using standard cutoffs for the variance inflation factor (VIF > 10) (Cohen, Cohen, Aiken, & West, 2003), and found no multicollinearity between variables. Analysis of the distribution of the dependent variable revealed a degree of non-normality, with left skewness of -1.06 ($p<0.001$). To account for potential bias in results due to the effect of skew, I performed alternative regression models in which the dependent variable is transformed according to guidelines for analyzing left-skewed data (e.g., squaring, cubing) (Manikandan, 2010). The results of regression models with the transformed variable yielded results similar to those of the original variable; therefore, the results reported in this chapter pertain to the original

mixed-effects regression model. Appendix A includes results from models with the transformed dependent variable.

Bivariate Analysis. As shown in Table 2, I calculated Pearson product-moment coefficients, or Pearson's r, to measure linear correlations between power relations and continuous variables: community capacity, partnership capacity, number of years involved in the partnership, and level of community member engagement in research. To assess bivariate relationships among demographic variables and role in the partnership, I conducted independent sample t-tests. For all statistical tests, results are considered significant at a level of $\alpha = 0.05$.

Multivariate Analysis. Initially, I estimated mixed effects linear regression models to analyze the potential association between the independent variables and the outcome variable, power relations in research, controlling for race, gender identity, socioeconomic status, role in the partnership, length of time involved in the partnership, and level of community engagement in research. The mixed effects linear model accounts for potential dependence between individual participants who are clustered within the same partnership (Murray, 1998). I also generated intraclass correlation coefficients for each model in order to determine the percentage of the variation in the outcome that is explained by the correlation of responses among participants within the same partnerships (Killip et al., 2004).

In each of these models (Appendix A), the random effect parameter accounting for the partnership grouping variable was not significant, and the intraclass correlation coefficient for each model was less than one percent, suggesting that a very small percentage of the variation in the power relations scale score is explained by the clustering of participants within partnerships. Based on the results of the likelihood ratio test (Appendix A), I failed to reject the statistical hypothesis that the mixed effects model does not provide a better fit than a linear regression

model. Accordingly, the results of these models similar to those of linear regression models that do not include a random effect parameter accounting for partnership clustering.

Therefore, the results presented here include linear regression models with cluster-robust inferences. Because the precision of coefficient standard errors may be overestimated when data are grouped into clusters (partnerships) (Cameron & Miller, 2015), this approach generates conservative, yet more reliable standard errors by accounting for the correlation of error between participants within the same partnership (Cameron & Miller, 2015). Results of these models are presented in the following section, and the full results of the mixed effects linear models can be found in Appendix A.

Results

Bivariate analysis. Results from Pearson's product-moment coefficients and independent-sample t-tests are shown in Table 2. Community capacity ($r=0.37$, $p<0.0001$) and partnership capacity ($r=0.40$, $p<0.001$) had positive correlations with the power relations scale score. Community member level of engagement in research also had positive correlation ($r=0.54$, $p<0.001$). Number of years partners were involved in the partnership had a positive correlation with power relations ($r=0.22$, $p<0.001$). Independent sample t-test showed a significant difference between community partner ($M=5.64$, $SD=0.88$) and academic partner ($M=5.83$, $SD=0.92$) scores on the power relations scale, in that community partners had a lower score, $t(359) = 1.95$, $p=0.05$. There were no significant differences in perceptions of power relations by race, gender, or socioeconomic status.

Table 2: Bivariate statistics for power relations in research among community and academic members of federally funded CBPR and community-engaged research partnerships

Variable	Mean (SD)	Correlation Coefficient	t-statistic (df=359)	p-value
Dependent Variable	5.72 (0.94)			
Power Relations in Research				
Independent Variables				
Community Capacity		0.37		<0.001
Partnership Capacity		0.40		<0.001
Covariates				
Race				
American Indian/Alaska Native	5.69 (0.82)		-0.45	0.66
Asian	5.79 (0.97)		0.17	0.86
Black or African American	5.77 (0.86)		0.02	0.98
Hispanic or Latino	5.53 (0.92)		-1.27	0.21
White (ref)	5.77 (0.90)			
Gender Identity				
Male	5.68 (0.93)			
Female	5.77 (0.90)		-0.83	0.40
Socioeconomic Status (SES)				
Not Low SES	5.77 (0.90)			
Low SES	5.60 (0.98)		1.05	0.29
Role in Partnership				
Community Partner	5.63 (0.88)			
Academic Partner	5.82 (0.91)		1.95	0.05
Length of Time Involved in the Partnership (years)		0.22		<0.001
Community Engagement in Research		0.54		<0.001
n=361				

Multivariate Analysis. Results from linear regression models are shown in Table 3. In Model 1, community capacity was positively associated with power relations in research (β= 0.13, p<0.001), when controlling for identification as a community partner (β= -0.22, p<0.01), number of years involved in the partnership (β= 0.01, p=0.016), level of community member engagement in research (β=0.35, p<0.001), socioeconomic status (β= 0.11, p=0.51), gender (β=0.05, p=0.63), and race (American Indian: β= -0.13, p=0.19; Asian: -0.16; p=030; Black: 0.02; p=0.86; Hispanic: -0.22, p=0.09).

In Model 2, partnership capacity was positively associated with power relations (β= 0.20, p=0.001), when controlling for identification as a community partner (β= -0.15, p=0.07), number of years involved in the partnership (β= 0.02, p=0.002), level of community member engagement in research (β= 0.34, p<0.001), socioeconomic status (β= 0.09, p=0.59), gender (β= 0.03, p=0.73), and race (American Indian: β= -0.11, p=0.25; Asian: β=-0.09; p=0.59; Black: β=0.02; p=0.88; Hispanic: β=-0.24, p=0.06).

In Model 3, both community capacity (β= 0.09, p=0.05) and partnership capacity (β= -0.14, p=0.04) were positively associated with power relations, after controlling for identification as a community partner (β= -0.20, p=0.018), number of years involved in the partnership (β= 0.015, p=0.06), level of community member engagement in research (β= 0.32, p<0.001), socioeconomic status (β= 0.11, p=0.48), gender (β= 0.03, p=0.74), and race (American Indian: β= -0.12, p=0.21; Asian: β= -0.12; p=0.33; Black: β=0.02; p=0.90; Hispanic: β=-0.27, p=0.04).

Table 3: Power relations in research among community and academic members of federally funded community-engaged research partnerships regressed on community capacity, partnership capacity, and covariates

	Model 1				Model 2				Model 3			
Variable	Estimate	Std err	95% CI	p-value	Estimate	Std err	95% CI	p-value	Estimate	Std Err	95% CI	p-value
Community capacity	0.13	0.04	(0.06, 0.21)	0.00					0.09	0.04	(0.002, 0.18)	0.05
Partnership capacity					0.2	0.06	(0.10, 0.31)	0.01	0.14	0.07	(0.01, 0.28)	0.04
Community engagement in research	0.35	0.05	(0.25, 0.45)	0.00	0.34	0.05	(0.23, 0.45)	0.00	0.32	0.05	(0.21, 0.43)	0.00
Community partner (ref= academic)	-0.22	0.09	(-0.39, -0.05)	0.01	-0.16	0.09	(-0.32, 0.01)	0.07	-0.20	0.08	(-0.37, -0.004)	0.02
Number of years involved	0.01	0.01	(-0.00, 0.03)	0.02	0.02	0.01	(0.01, 0.03)	0.002	0.02	0.01	(-0.004, 0.03)	0.01
Gender (ref= male)	0.05	0.1	(-0.14, 0.23)	0.63	0.03	0.1	(-0.16, 0.22)	0.73	0.03	0.10	(-0.15, 0.22)	0.74
Socioeconomic status (ref= high)	0.11	0.16	(-0.21, 0.42)	0.51	0.09	0.16	(-0.23, 0.41)	0.60	0.11	0.16	(-0.20, 0.43)	0.48
Race												
American Indian	-0.13	0.11	(-0.36, 0.09)	0.19	-0.11	0.10	(-0.33, 0.11)	0.25	-0.12	0.11	(-0.31, 0.07)	0.21
Asian	-0.16	0.16	(-0.45, 0.12)	0.30	-0.09	0.16	(-0.36, 0.19)	0.54	-0.15	0.16	(-0.50, 0.16)	0.33
Black	0.02	0.13	(-0.22, 0.26)	0.87	0.02	0.12	(-0.22, 0.26)	0.88	0.02	0.13	(-0.23, 0.26)	0.90
Hispanic	-0.22	0.13	(-0.51, 0.06)	0.09	-0.24	0.13	(-0.53, 0.05)	0.06	-0.27	0.13	(-0.52, 0.01)	0.04

Discussion

The findings presented are consistent with the hypothesis that community and partnership capacity are positively associated with equitable power relations in research processes within CBPR and community-engaged research partnerships. The findings align with prior theoretical frameworks and qualitative research suggesting that community capacity and partnership capacity are associated with the acquisition and use of power on the part of community members or community partners (Freudenberg, 2004; Minkler et al., 2004, Freudenberg, Pastor, & Israel, 2011). Findings from prior research help to contextualize these findings, discussed below.

Community and Partner Capacities and Power Relations Results of this study suggest that community and partnership capacity are independently and jointly associated with power relations in research processes within CBPR partnerships. These findings align with relationships described in conceptual frameworks positing that the capacity of communities (Freudenberg, 2004, Freudenberg, Israel, & Pastor, 2011) and of partnerships (Minkler et al, 2008) can facilitate the acquisition and use of power on the part of communities engaging in health promotion efforts. Dimensions of community capacity captured in this study (e.g., community history of organizing for change), as defined by Goodman and colleagues (1998) and Freudenberg (2004), may contribute to power relations that better enable community members to drive or contribute to partnership research processes. Likewise, dimensions of partnership capacity assessed here (e.g., collective skills, expertise, social networks, and diversity) may also be associated with this ability, as Minkler and colleagues (2008) extended the capacities defined by Goodman and colleagues (1998) and Freudenberg (2004) to capacities of partnerships in addition to communities. While literature suggests that community and partnership capacities often complement each other as partnerships build collective capacity among all partners for

research and change (Coombe et al., 2018; Minkler et al., 2008), the joint associations in Model 3 suggest that both forms of capacity may be associated with equitable power relations.

The stronger magnitude of association between partnership capacity and power relations compared to that of community capacity may reflect the great extent to which partnerships focus specifically on building the capacity to conduct collaborative research and meaningful participation in research processes among all partners (Coombe et al., 2018). Therefore, partners who perceive that research capacities exist within a partnership as a whole may perceive that power relations in research processes are more equitable. In some cases, community and academic partners bring different types of skills and resources to partnerships, which may complement each other in ways that benefit or advance the work of the partnership as a whole (Cashman et al., 2008).

On the other hand, there may also be differences in capacity among communities (skills, knowledge, resources, etc.) compared to partnerships as a whole, which may be associated with power relations in differential ways. Many of the processes by which this may happen reflect the often-unintentional reproduction of power dynamics which privilege academic researchers culturally and institutionally (Chavez et al., 2008; Wallerstein & Duran, 2018). Evidence from a multiple-case study analysis of power dynamics within CBPR partnerships by Wallerstein and colleagues (2019) suggests that government funding mechanisms, which partnerships often obtain, can hinder equitable power dynamics through differences in capacity. Differential capacities among partners (e.g., experience and training to meet federal research grant requirements) may act as a barrier to conducting CBPR, as it prevents power from being shared equitably (Wallerstein et al., 2019). In a qualitative analysis of a capacity-building training program within a community-engaged partnership by Rubin and colleagues (2016), power

dynamics emerged as a central theme throughout the analysis. Specifically, community partners acknowledge that being explicitly informed about research processes in academia (such as grant application processes, the role of institutional review boards, and study design) makes it easier for community partners to acquire power and reduce power imbalances, which members of academia have the ability to perpetuate through the predominant cultural rules and language of the academy (Rubin et al., 2016). Further analysis may be necessary to understand potential differences in existing capacities and capacity needs between academic and community partners, and the extent to which these differences influence power dynamics.

The negative association between identification as a community partner and perceptions of power relations across all three models, when adjusting for multiple covariates, may reflect the reproduction of societal power dynamics within partnerships. Numerous scholars have highlighted the need to continually challenge and work to transform power relations within partnerships, and to avoid assumptions that partnership formation in itself equalizes power dynamics (Aldred, 2011), and that CBPR operates independently of societal power relations (Golob & Giles, 2013). The practice of CBPR is under-girded by empowering processes that aim to legitimize the knowledge and experiences of members of marginalized communities (Israel et al., 1998; 2013; Wallerstein & Duran, 2017). Simultaneously, dynamics within partnerships continue to be influenced by the social, economic, and political contextual conditions in which partnerships are situated (Chavez et al., 2003; Paradiso de Sayu & Chanmugam, 2016). Academic partners carry power and privilege based on positivistic notions of how knowledge is produced and which members of society are qualified to produce knowledge, and on processes in which racism and oppression are institutionalized in society and internalized among individuals (Chavez et al., 2003).

Travers and colleagues (2013) found that despite their partnership's prioritization of community capacity building, power differences were a substantial challenge between academic and community partners, including unintentional disempowerment during the technical stages of research. Specifically, community partners noticeably withdrew from research processes, particularly quantitative analyses, when the project required a high level of technical expertise, finding it difficult to add to discussions. Moreover, community partners questioned their role in the process and their ability to contribute to the research (Travers et al., 2013). As community partner knowledge of data analysis and other aspects of the research process are aspects of community capacity, these findings suggest that strengthening specific dimensions of community capacity (e.g. research skills, capacity to lead research activities) may need greater emphasis in order to improve power dynamics in some partnerships.

Community partners may also consciously allow power imbalances to persist due to the perceived benefit of a partnership to the community overall. In a dyadic study of perceptions of empowerment among academic and community members of CBPR partnerships, Paradiso de Sayu & Chanmugam (2016) found that community partners who perceived imbalances of power regarding whose knowledge and participation were valued in research were often willing to "give up their own power with the hope that conforming to the preferences of academic partners might result in gains and opportunities for the community in the long term, even if losses to personal esteem and value are at stake" (p. 113). In order to understand differences in perceptions of power relations between community and academic partners, future quantitative and qualitative studies might examine other factors that shape partnership power relations (e.g., perceived discrimination, other aspects of social identity, partnership structure, community contextual

factors). They might also consider potential differences between community and academic partner perceptions of how equitable power relations are achieved within partnerships.

It is important to note that the variables in this study were assessed as cross-sectional constructs, which characterize power as a more static measure than that defined in the conceptual framework ("shifts in power benefitting communities facing inequities"). Thus, while this study demonstrates an association, it is unable to establish the direction of the effect – that is, the extent to which changes in capacity or capacity-building activities leads to an increase in power among communities facing inequities. Assessing the extent that this relationship is causal may provide stronger support for the relationships characterized in conceptual and logic models by Freudenberg (2004) and Minkler and colleagues (2008), which frame community and partnership capacity as determinants of the acquisition and use of power by communities. Alternatively, future studies might also explore whether the construct, as currently defined, adequately characterizes equity in power relations within partnerships. Given that partners may enter partnerships with varying degrees of power or influence within the contexts in which they operate, it is possible that a measurable shift in power relations may not be necessary in all partnerships to facilitate power relations that benefit communities facing inequities. The qualitative study in Chapter 3 sheds further light on how equitable power relations are defined and measured among CBPR partners.

Community Engagement in Research

While not a central focus of the research question, power relations in research had the greatest magnitude of association with community engagement in research. Prior research on community engagement within CBPR and other forms of participatory and action research contexts may shed light on this finding. A strong degree of engagement in research processes has

the potential to invoke a sense of ownership and control over the research among community partners (Walker et al., 2017), as well as self-determination among community members (Salsberg et al., 2017), which may contribute to more equitable power dynamics throughout the research process. As noted by Wallerstein and Duran (2010), community ownership and control may be particularly powerful characteristics of participatory research with tribal communities due to their sovereign status. In CBPR with tribal communities, partnership principles allow tribes to determine the extent to which research is conducted in accordance with cultural values and priorities (Wallerstein & Duran, 2010).

In a study exploring the effect of community engagement in research on outcomes of CBPR partnerships focused on mental health services, Khodyakov and colleagues (2011) found that community engagement was positively associated with partnership functioning measures such as decision-making, financial and nonfinancial resources, and governance mechanisms, all of which have implications for partnership power dynamics. Community engagement in research was also associated with community capacity , defined as "the ability of communities to identify, mobilize, and address pressing health problems through planning, developing, implementing, and maintaining effective community programs" (Khodyakov, 2011, p. 198; Poole, 1997). It is possible that community or partnership capacities to conduct collaborative research and other partnership activities facilitate community engagement in research processes, and community engagement in research may support positive power dynamics through a sense of community ownership and control. Thus, community engagement may mediate the association between community and partner capacity and power relations in research. Future research studies might investigate this potential mediation, taking both community and partnership capacity into account.

Strengths and Limitations

This study uses data from a large, national sample of members of community-based participatory and community-engaged partnerships to test the hypothesis that community and partnership capacity are positively associated with changes in power relations in partnerships in ways that benefit community partners. Findings from this study contribute valuable quantitative empirical support for associations that have been highlighted in qualitative studies and theoretical frameworks for partnership research approaches. By highlighting factors associated with power relations within partnerships, this study highlights characteristics of community and partnership capacity and community research engagement that may contribute to equitable power relations.

There are limitations to this study. First, the cross-sectional nature of the data precludes conclusions that changes in community or partnership capacity directly cause changes in power relations in research. Second, while I am able to control for multiple potential confounding variables that may help to explain the relationship between capacity and power relations, there may be other factors, particularly factors related to social identity, that also explain the relationship (e.g., age, religious affiliation, sexual orientation, citizenship status) that are not adjusted for in this study. I am also not able to account for other factors that shape power dynamics within partnerships, such as institutionalized or internalized racism and discrimination, and other social, economic, or political contextual factors within which partnerships are situated. Furthermore, while the concept of community capacity encompasses multiple dimensions, the measure used in this study incorporates only a few. In order to further measure and understand the relationship between community capacity and power, it may be necessary to study specific

dimensions of capacity (e.g., skills, resources, leadership, social connections) in relation to power relations

Conclusion

This study investigates the association between community and partnership capacity and power relations in partnership research processes. This work contributes to qualitative research and theoretical frameworks that indicate that various capacities of communities and partnerships may shape the extent to which communities use power to achieve health promotion goals (Freudenberg, 2004; Minkler et al., 2008). Findings of this work point to potential opportunities for members of CBPR partnerships to facilitate more equitable power relations by focusing attention on the capacities of community partners and of the partnership as a whole, and by meaningfully engaging community partners in multiple phases of the research process. Future research might further address the nature of this association in order to more clearly depict the relationship between capacities and power in CBPR frameworks, including the extent to which intermediate factors within partnerships function to promote longer-term CBPR measures of effectiveness and equity.

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Chapter 3: Equity Promotion as an Outcome of Community-Based Participatory Research Partnerships: Findings from an Expert Panel

Introduction

Health equity refers to the idea that all people have a fair and just opportunity to be as healthy as possible (Braveman et al., 2017). A health equity approach reflects a commitment to reduce and ultimately eliminate health disparities, or differences in health that are unjust, systematically patterned, and plausibly avoidable (Braveman et al., 2011; Whitehead, 1992). Building on the body of literature conceptualizing health equity and health disparities discussed in Chapter 1, health equity promotion requires an iterative process that meaningfully engages communities most impacted by social and health inequities in strategies to reduce health disparities, with the ultimate goal of eliminating health disparities (Braveman et al., 2017). As described by Jones (2014) this process requires valuing all individuals and populations equally, recognizing and rectifying historical injustices, and providing resources according to need.

Community-based participatory research (CBPR) represents one approach that addresses equity promotion both as a process and outcome, in that CBPR partnerships meaningfully engage communities facing inequities in research and practice in order to reduce or eliminate health disparities (Israel et al., 1998). Several CBPR principles reflect a commitment to equity promotion, including its focus on: empowerment and power-sharing in ways that attend to social inequalities; building on community strengths and resources; co-learning and capacity-building; addressing issues of race, ethnicity, and social class; and applying ecological perspectives that address multiple health determinants (Chavez et al., 2008; Israel et al., 1998; Israel et al., 2019,

Wallerstein & Duran, 2008; 2018). In order to evaluate and study CBPR partnerships, many studies have identified and defined process and outcome measures across multiple dimensions (e.g., social and contextual conditions, group dynamics, programs and interventions, intermediate and long-term outcomes) (Belone et al., 2016; Kastelic et al., 2018; Sandoval et al., 2011; Schulz et al., 2003; 2017). While health equity and related concepts have been identified in prior studies as an outcome of CBPR partnerships (Kastelic et al., 2018; Wallerstein & Duran, 2018), models for studying CBPR may benefit from a stronger understanding of how equity is conceptualized as a partnership outcome across both intermediate partnership processes and longer-term partnership outcomes. In the following sections, I provide an overview of equity promotion measures in the current literature, and introduce evaluation constructs developed to explicitly assess equity promotion in partnership processes and outcomes.

Equity Promotion in the Current CBPR Evaluation Literature

Toward the development of conceptual frameworks and measurement instruments for evaluating and studying CBPR partnerships, multiple scholars have defined measures that reflect an emphasis on equity promotion. As discussed in Chapter 1, existing frameworks incorporate group dynamic characteristics (Schulz et al., 2003; 2017; Wallerstein et al., 2008), which have the potential to facilitate equity in intermediate and long-term partnership outcomes (Ward et al., 2018). For example, factors such as shared leadership, shared power and influence, mutual trust, and participatory decision-making can facilitate conditions under which members of communities facing inequities can equitably participate in partnerships and contribute meaningfully to decision-making, research, and interventions (e.g., dispersed power and leadership, shared understanding of power dynamics) (Corburn, 2003; Heller et al., 2014; Ward

et al., 2018). As suggested by Ward and colleagues (2018) and explained in Chapter 1, there is a need for intermediate and long-term partnership evaluation measures that reflect the explicit focus on equity which equitable group dynamics characteristics help to facilitate.

In existing conceptual frameworks for studying and evaluating CBPR partnerships, intermediate and long-term measures that most clearly connote a focus on communities facing inequities fall into three broad domains, described in detail below: 1) community empowerment and power dynamics, 2) community and organizational capacity, and 3) equity in social conditions and health outcomes.

Community empowerment and power dynamics. Schulz, Israel, and Lantz (2003) defined intermediate measures of partnership effectiveness, including empowerment among community partners and empowerment of the partnership as a whole. Group and community empowerment refers to the extent to which partners perceive that they have influence over decisions made within the group and collectively can influence decisions in the community, and the degree to which they believe that community members are able to influence decisions that affect the community (Schulz et al., 2003). This degree of empowerment can be facilitated by group dynamics characteristics such as shared power, shared leadership, and participatory decision-making processes (Schulz et al., 2003; 2017). In a survey instrument for evaluating group dynamics, the authors developed items designed to assess the distribution of power and influence among group members (Schulz et al., 2004). Building on this and other work in the area, Wallerstein and colleagues (2008) developed a conceptual framework defining power relations between academic and community partners as an intermediate measure of partnership effectiveness. Belone and colleagues (2016) later examined the face validity of constructs in the model by Wallerstein and colleagues (2008) using focus groups among community partner

consultants, in which expanded or new constructs were identified, including specific elements of power dynamics (e.g., accountability for leveraging power for community interests, perception of power inequalities and ability to express opinions).

Community and organizational capacity. Sandoval and colleagues (2012) note that many existing measures of community capacity stem from interests in health education literature in measuring the role of community capacity in community change efforts more broadly (Goodman et al., 1998). As a measure of personal, organizational, and community benefits of participation in CBPR partnerships, Schulz and colleagues (2003; 2013) developed survey items to assess the extent to which partnership participation has influenced the capacity of individual partners and community-based organizations across various dimensions (e.g., to work with others, contribute to interventions). In a study by Wallerstein and colleagues (2008) community capacity was identified as a CBPR evaluation measure to assess contextual characteristics of partnerships. In this model, community capacity refers to a community's capacity or readiness for research and, more broadly, to create change, including community history of organizing and advocating for health and social change, and the community's history of influencing decisions that affect them (Freudenberg, 2004; Goodman et al., 1998). Building on this work, Belone and colleagues (2016), conducted a study leading to further refinements related to capacity, such as the role of education as a pathway to capacity building. While evaluation studies of CBPR partnerships have assessed specific forms of community capacity, including capacity to advocate for policy change and to participate in policy change efforts (Cheezum et al., 2013; Coombe et al., 2017), and capacity to conduct various research activities (Hicks et al., 2013; Tumiel-Berhalter, Mclaughlin-Diaz, Vena, & Crespo, 2009), CBPR conceptual frameworks may benefit from integrating community capacity measures that indicate more strongly the extent to which

community partners are meaningfully engaged and able to contribute to specific decision-making contexts within partnerships.

Equity in social conditions and health outcomes. Intermediate and long-term outcomes defined by Wallerstein and Duran (2018) include changes in policy environments, cultural reinforcement, and social justice. Further refinements of the model revised by Belone and colleagues (2016) led to the inclusion of factors such as transformed social and economic conditions within communities and improvements in health or health equity (Kastelic et al., 2018; Wallerstein, Duran, Oetzel, & Minkler, 2018).

While many existing CBPR constructs align with health equity promotion goals, current studies have not specifically investigated conceptualizations of equity promotion as an evaluation outcome across intermediate and long-term CBPR partnership processes. Understanding how partners perceive equity as a partnership outcome may improve the extent to which partnerships promote equitable outcomes by making equity a more explicit consideration within the evaluation process. Investigating these conceptualizations may help partnerships to assess their progress toward equity more critically, and develop strategies to address inequities (e.g., redressing or preventing power imbalances, distributing resources according to need, valuing community knowledge and perspectives, ensuring equitable opportunities for leadership and participation) (Braveman et al., 2017; Wallerstein & Duran, 2008; Jones, 2014) . The conceptual framework by Ward and colleagues (2018) (Figure 2-1) incorporates intermediate and long-term indicators of equity promotion designed to evaluate equity-related measures across multiple dimensions. Guided by this framework, I explore conceptualizations of equity as a partnership outcome among academic and community members of long-standing partnerships.

Intermediate and Long-Term Measures of Partnership Effectiveness and Equity

The following sections briefly define each of the five dimensions of equity within CBPR partnerships and their corresponding constructs, as defined in the conceptual framework by Ward and colleagues (2018) and in the development of equity promotion metrics for Health Impact Assessment practice by Heller and colleagues (2014). Each of the following subheadings were adapted from these metrics.

Theme 1: A focus on addressing health equity

As shown in Figure 2-1, equitable group dynamics characteristics in part shape intermediate measures of partnership effectiveness and equity, including the extent to which a partnership exhibits a focus on equity in its overarching goals and research projects. As described by Ward and colleagues (2018), equitable processes for working together have the potential to shape the nature of partnership activities, programs, and interventions and in ways that reflect a focus on addressing equity. This focus is indicated by a focus on equity in partnership goals, research questions, and methods, and in the analysis of equity-related health outcomes.

Focus on equity in partnership goals, research questions, and methods. This construct assesses the extent to which promoting equity, within partnerships or in broader communities, is named as a goal or intention of a partnership. Such goals might include reducing health disparities or obstacles for health for communities facing inequities, or fostering equitable relationships or group dynamics within partnerships. This construct also refers to the extent to which research questions and methodologies developed within partnership research address

issues of equity (e.g., research questions which focus on communities facing inequities, or consideration of equity in data collection procedures and other research processes).

Analysis of the distribution of health and equity impacts across the population. This construct refers to the extent to which partnership research prioritizes the analysis or measurement of health inequities, including disparities or differences in health outcomes and their social determinants, between communities facing inequities and other communities.

Theme 2: A focus on equity in partnership processes

In a similar manner to Theme 1, the conceptual framework suggests that efforts to foster equitable group dynamics within partnerships facilitate the development of partnership processes and activities that reflect a focus on equity. Factors such as mutual trust, collaborative decision-making, and shared vision and goals for the partnership's work have the potential to create equitable processes and relationships within partnerships (Schulz et al., 2003; 2013). A focus on equity in partnership processes is indicated by the analysis of community identified and relevant issues, and the extent partnerships are responsive to community concerns in their actions and recommendations.

Issues analyzed are community-identified and relevant. This construct represents the degree that community partners or members of communities facing inequities have identified or driven the selection of the issues that a partnership addresses, and the extent that those issues reflect the concerns and interests of those communities.

Response to community concerns in action strategies and recommendations. This construct reflects that the actions taken and recommendations made by a partnership, both within the partnership itself and in broader settings (e.g., community, policy), are responsive to

community concerns and interests. The construct is most applicable to actions and recommendations made beyond the research context; for example, action or policy recommendations made in response to research findings generated by the partnership, or actions taken to address group dynamics, operating norms, partnership structure, or other factors within partnerships.

Community knowledge and experience are used in analyzing equity impacts. This construct refers to the degree to which a partnership prioritizes the knowledge and experience of community partners or communities facing inequities in order to study equity-related outcomes, such as health disparities or disparities in the social determinants of health. The construct also refers to the extent that community knowledge and experiences, including alternative knowledge epistemologies, inform the research process, including the analysis and interpretation of research data. Here, the descriptor of the construct is modified slightly from the publication by Ward and colleagues (2018) to reflect a broader conceptualization of the use of community knowledge and experience in analyses.

Capacity and ability of communities facing inequities to engage in future partnerships and decision-making.

As suggested in the model by Ward and colleagues (2018) and the work from which it builds (Schulz et al., 2003; 2013), efforts to share resources, decision-making, and opportunities within partnerships may also enhance the capacity of communities facing inequities to engage in decision-making processes within the partnership and in broader settings. Group dynamics characteristics and aspects of partnership structure (e.g., shared leadership and participation, collaborative decision-making, co-facilitated meeting structures) provide opportunities to build

capacity of community academic partners. Indicators of the capacity of communities facing inequities to engage in future partnerships and decision-making are described below.

Knowledge and awareness of decision-making processes. This construct refers to community partners' or community members' degree of knowledge about decisions and decision-making processes that impact health, that may better enable them to participate in those processes (such as relevant public or institutional policies and decision-making processes that shape them).

Capacity to influence decision-making processes, including the ability to plan, organize, fundraise, and take action within the decision-making context. This construct refers to the extent to which community partners or members of communities facing inequities have the ability, opportunity, or invitation to participate in or lead decision-making processes. Decision-making processes refer to those both within partnerships (such as those pertaining to partnership operations and research activities) and in broader settings (such as policy-making, community organizing, grant-making).

Shift in power benefitting communities facing inequities

Equitable group dynamics and capacities among community and academic partners also contribute to power dynamics that benefit community partners more equitably (Minkler et al., 2008; Ward et al., 2018). Opportunities for leadership, agenda-setting, and meaningful participation among community partners may empower community partners within decision-making contexts. A shift in power benefitting communities facing inequities is indicated by the degree to which communities might influence decisions that impact health, and the degree to

which government and institutions are more transparent, collaborative, and inclusive of communities facing inequities.

Community influence over decisions, policies, partnerships, institutions, and systems that affect health. This construct refers to the extent to which community partners or community members participate in or lead activities or decision-making processes both within the context of the partnership and in communities more broadly, including the extent to which community members drive those processes. In accordance with conceptualizations of power defined in Chapter 2, the construct refers to the acquisition and use of power as a behavioral manifestation of built community capacities (Freudenberg et al., 2004).

Government and institutions are more transparent, inclusive, responsive, and/or collaborative. This construct refers to the extent to which governments and institutions collaborate with and are increasingly more responsive to community members on issues that affect their health, including the extent to which government and institutional designs or infrastructure promote or support those efforts (e.g., working groups, committees, formal requirements).

Contributions to reductions in health inequities and inequities in the social and environmental determinants of health

Intermediate equity-related partnership outcomes (e.g., a focus on addressing equity, shifts in power benefitting communities facing inequities) ultimately shape longer-term partnership outcomes, such as reduced health disparities (Schulz et al., 2003; Wallerstein & Duran, 2008; 2018; Ward et al., 2018). These changes may be achieved through intermediate processes within partnerships or as a result of partnership programs or interventions. Indicators

include improvements in health outcomes and their determinants, and decreased differentials in outcomes between communities facing inequities and other communities.

Improvement in social and environmental conditions within communities facing inequities. This construct refers to the degree that partnership efforts contribute to overall improvements in social and environmental conditions that influence health in communities facing inequities, such as housing, poverty, employment, neighborhood safety, toxic exposures, health care access and quality, and other factors.

Decreased differential in social and environmental conditions between communities facing inequities and other communities. This construct pertains to the extent that partnership efforts contribute to reduced differences in social and environmental conditions, such as those referenced above between communities facing inequities and other communities.

Improvements in physical, mental, and social health issues within communities facing inequities. This construct refers to the extent to which partnership efforts contribute to overall improvements in physical, mental, or social health outcomes in communities facing inequities.

Decreased differential in health outcomes between communities facing inequities and other communities. This construct refers to the extent to which partnership efforts contribute to reduced differences in physical, mental, or social health outcomes between communities facing inequities and other communities.

While these constructs have been integrated into an existing framework for evaluating CBPR partnerships (Ward et al., 2018) based on their alignment with group dynamics characteristics of partnerships (Schulz et al., 2003; 2017), an empirical study has not been conducted to assess the alignment of these constructs with conceptualizations of equity

promotion in CBPR partnerships. In this deductive qualitative study, I examine conceptualizations of equity as an evaluation indicator among members of long-standing CBPR partnerships. The goal is to develop a stronger understanding of equity promotion as a partnership outcome and to inform potential refinement or study of the current conceptual framework.

Data and Methods

I conducted a deductive analysis using secondary data from key informant interviews collected by the Measurement Approaches to Partnership Success (MAPS) study (https://www.detroiturc.org/affiliated-partners/maps.html). MAPS is a CBPR study of the Detroit Community-Academic Urban Research Center (Detroit URC), a CBPR partnership that involves a decision-making Board comprised of representatives from multiple Detroit community-based organizations, the local health department, an integrated health care system, and academic researchers from the University of Michigan. The MAPS partnership aims to develop a clear definition of success in long-standing CBPR partnerships, including identifying specific factors that contribute to partnership success, and developing and validating an instrument for measuring these factors that CBPR and community-engaged initiatives can use to assess and strengthen their own partnership efforts to achieve health equity (Israel et al., 2020)

To develop a clear definition of CBPR partnership success and its intermediate and long-term contributing factors, investigators in the MAPS study established and engaged a sixteen-member Expert Panel of 8 academic and 8 community members actively involved in long-standing (operating for six years or longer) CBPR partnerships. The panel was selected through reputational sampling by the academic research team and the Detroit URC Board, based on long-term experience in CBPR, contributions to the peer-reviewed literature, and diversity with

respect to geography, race and ethnicity, and area of research. During the first year of the study, investigators conducted in-depth, semi-structured key informant interviews with members of the Expert Panel (approximately 45 minutes long). Interviews were designed to identify relevant dimensions, indicators of, and contributing factors to partnership success, including: costs and benefits of participation; sustainability; synergy; and equity. To explore conceptualizations of equity, panel members were asked two questions: "In thinking about long-standing CBPR partnerships, how would you define equity within the partnership?" and "What would tell you or indicate to you that a partnership has achieved equity?" Responses to interview questions regarding each of the contributing factors to partnership success were analyzed: costs and benefits of participation, sustainability, synergy, and equity.

Analytic Plan

Coding Framework. I conducted a deductive analysis to assess intermediate and long-term measures of equity. A deductive approach is one that begins with an initial conceptualization, such as a conceptual framework, theory, review of the literature, or hypothesis, which is used to guide the focus of the research (Gilgun, 2015). The approach differs from inductive analytic approaches such as grounded theory, in which the development of a coding frame is driven by codes identified within qualitative data, toward the development of theory from the data (Corbin & Strauss, 1994). Deductive approaches commonly involve theory-driven coding frames, in which a set of a priori codes is developed and brought to the data, guided by a theory or framework (Fereday & Muir-Cochrane, 2006). Deductive processes often integrate opportunity to develop new codes to reflect emergent concepts within the data, however (Miles, Huberman, & Saldana, 2014). Because my objective for this study was to explore the alignment of the dimensions of equity specified in the conceptual framework (Ward et al., 2018),

with CBPR partner conceptualizations of equity, I conducted a deductive analysis driven by this framework, integrating opportunity to integrate emergent codes related to equity as they arose.

The analysis was guided by the intermediate and long-term measures of equity promotion presented in the conceptual framework described in detail in the sections above: 1) a focus on addressing health equity; 2) a focus on equity within partnership processes; 3) building capacity of communities facing health inequities to engage in future partnerships and decision-making; 4) shifts in power in ways that benefit communities facing inequities; and 5) reductions in health inequities and inequities in the social and environmental determinants of health. Codes were developed using a provisional coding approach, which is a deductive, exploratory method of coding in which an a priori set of codes are developed based on prior literature and empirical studies, including conceptual frameworks, research questions, and researcher hypotheses (Miles, Huberman, & Saldana, 2014). A priori codes and code categories constitute a "start list" that may be revised or expanded as the data is coded and analyzed (Miles, Huberman, and Saldana, 2014).

To develop the initial codebook, each of the five dimensions of equity listed above was defined as a theme. Within themes, each construct defined in the conceptual framework was defined as a code category. For each code category, one to four codes were defined to apply to the data. For example, the equity dimension, "focus on addressing health equity," was defined as a theme; "focus on equity in partnership goals, research questions and methods" was defined as a code category for that theme, and four codes were defined to apply to the data. The finalized codebook listing all themes, code categories, and codes is found in the Appendix.

Coding Process. After developing the initial codebook, I worked with a research assistant to analyze the 16 transcripts using the derived codes to label data segments, including appropriate measures to create new codes or code categories representing those not currently

defined in the framework, or make modifications to existing codes where applicable. All transcripts from community and academic partners were analyzed. I used a random number generator to select each new transcript to code, alternating between transcripts from community and academic partners. Using the initial codebook, we independently coded a randomly selected transcript, and met to discuss similarities and discrepancies in coding, making revisions to codes and code definitions as necessary. We then re-coded the same transcript using the revised codebook and engaged in additional discussion to address further coding discrepancies, until we reached 80% consensus across coded text segments. We then randomly selected a new transcript to code until all 16 transcripts were coded. Analytic memos were written throughout data analysis to interpret data segments and synthesize decision-making processes with respect to codes, categories, and themes (Birks, Chapman, & Francis, 2008).

Throughout this process, the codebook was adapted incrementally to reflect: 1) revisions to code definitions to clarify their meaning and highlight distinctions between codes; 2) new codes for emergent concepts related to health equity but not represented by the existing constructs; and 3) one case in which conceptually similar codes were combined. Of note, two additional codes were developed within Theme 4, "Shifts in Power Benefiting Communities Facing Inequities," as explained in the following sections. Additionally, Theme 3 consisted of two initial code categories: 1) knowledge and awareness of decision-making processes; and 2) capacity to influence decision-making processes, including the ability to plan, organize, fundraise, and take action within the decision-making context. During the coding process, a strong degree of overlap was found between the coded segments for the two constructs. Specifically, because partners referred to knowledge and skills developed more broadly within

partnerships, rather than in particular decision-making processes, the single code developed for the former construct (1) was ultimately combined with a code for the latter (2).

Identification of Partners. Throughout the results and discussion to follow, I identify key informants in the study as "community partners" or "academic partners" when providing illustrative quotations and examples. The intent of this approach is not to systematically compare community and academic perspectives, nor to homogenize the two groups or over-simplify their differences. This transparency is intended to provide a degree of context for the social positions from which key informants respond, and to highlight perspectives and strategies that actors from various social positions use to discuss and promote equity.

Results

Of the 25 codes initially developed across the pre-defined code categories, 22 codes were applied to data segments, representing all five code categories. Two additional codes were developed to reflect equity promotion concepts that were not represented within the initial codebook, as explained in the following sections. These codes are represented in the codebook under the theme from which they emerged (shifts in power) and are discussed in the relevant section below. Findings from the coded data in accordance with each construct in the conceptual model are summarized in the sections below.

Theme 1: Focus on addressing health equity.

Partners discussed the extent to which a focus on addressing health equity, including the acknowledgement of equity as a shared, long-term goal of a partnership's efforts. Specifically, partners described indicators of equity as a goal at the community level (e.g., equity as a desired result of a partnership's efforts). Data coded within this code category related primarily to a

focus on equity in partnership goals, including a focus on equity as a broader goal of the partnership's activities, rather than in research questions or methods.

Focus on equity in partnership goals, research questions, and methods.

Goal for Equity at the Community Level. While the focus on the key informant interview was primarily on evaluation outcomes within intermediate partnership processes, partners acknowledged equity within the communities with whom they partner as a broader goal or vision of a partnership's work overall. One academic partner viewed the research conducted in the partnership context as a means of achieving a "bigger vision…which is about creating a space where we can think together and work together towards health equity…" Another academic partner referred to the partnership space as a place to work "towards similar goals," and "towards equity for tribal people and for other people who have been historically oppressed and partly on the back of Western science." A third academic partner emphasized that despite receiving funded research grants or other metrics of success, those achievements should serve as a reminder, "…that we are here for a specific outcome, you know which is the health equity, and it could be for any disease or whatever, but that we are together, and the mission that we have means it can't be accomplished in five years."

These findings reflect a shared goal or intention to promote equitable outcomes as a result of a partnership's work. Such shared goals a "bigger vision" of achieving health equity may be rooted in equitable group dynamics characteristics of partnerships (such as the cooperative development of goals and shared vision (Schulz et al., 2003; 2013). The model by Ward and colleagues suggests that equitable group dynamics may facilitate a collective focus on addressing issues of equity within partnerships (Ward et al., 2018).

Theme 2: Focus on equity in partnership processes

Partners discussed in detail the importance equity within partnership processes and activities including: studying and addressing issues that have been identified by community partners, addressing issues that are relevant to community partner concerns, and ensuring equity in partnership structure and processes. Each of these subthemes is discussed below.

Issues analyzed are community-identified and relevant

Community-Identified Issues. Several partners discussed the importance of prioritizing issues identified by communities as an important evaluation outcome. One academic partner highlighted the importance of communities identifying priorities and "using those priorities to connect to researchers," a process which may promote further engagement of community partners. In this way, community partners "come in with a level of kind of buy-in, in a way, because it was their idea to bring in somebody to address that priority."

Both community and academic partners discussed community-identified issues in the context of barriers to such issues being prioritized or acted upon. Partners highlighted differences in research interests and priorities between academic and community partners as a barrier to conducting research on community-identified issues, for various reasons. In some cases, partners noted that partnerships may not ultimately research or act upon issues initially identified by communities due to a lack of evidence in the literature to support pursuing the topic in a formal proposal. In other cases, academic partners may have a particular research focus that does not align with those of the community. One community partner described their experience sharing priorities with academic partners, stating, "we were approaching them with our ideas, and my sense is that it just did not…it wasn't a tight nexus with what they were interested in… And one thing that we have found is that it is very difficult with researchers to pull them into a project, if

it's not their passion." One academic partner described a situation in which potential community partners were interested in a health issue that was different from the academic's focus area. In that situation, the partner weighed the priorities of the community against their own, stating, "In that moment, I had to outweigh the benefit for sustainability. There was no synergy, and it was an interesting equity question in other ways, but the cost was to me not getting to do things the way that I'd like to, the partnership." In this situation, the academic partner decided to continue working with community members in the context of the partnership, but pursued research in their area of interest outside of the partnership.

Community-Relevant Issues. Relevance of the issues that a partnership addresses to community partners and communities facing inequities was also discussed as an evaluation indicator. Specifically, partners referenced the need to determine the extent to which partnership research, programs, and interventions align with the contexts and cultures of both communities themselves and the community-based organizations participating in the formal partnership. In reference to programs or policies stemming from partnerships, one academic partner noted that, "an additional outcome is that it reinforces the cultural values and knowledge and traditions that they want to have reinforced," going on to highlight the importance of understanding:

> "…what the nature of the research was and whether it fits within the context of the partnership agency, and whether you know the ideas about what research should be done, whether it's intervention research or epidemiologic research…whether the data to be collected or the intervention to be developed really fits within the cultural landscape of the community-based organization."

The same partner also acknowledged the need to consider or weigh the priorities of community and academic partners if they differ, noting the need to determine, "likewise, whether what the community wants to do fits within the intellectual landscape of Higher Education." Related to this idea, some partners reported that community and academic partners may have

conflicting priorities or issues of relevance to them. These differences highlight a potential need to evaluate the extent to which partnerships address issues that are relevant to community partners specifically. The tensions discussed above suggest that while partners believe that the community relevance of an issue is an important partnership outcome, differences in research interests and goals may serve as a barrier to a partnership addressing issues that are community identified and relevant. How and whether partnerships select and study community-driven issues may be shaped in part by the degree to which they address these potential differences.

Equity within Partnership Structure and Process. As described earlier, a new category was developed to reflect partner's descriptions of equitable partnership structure and processes as a partnership outcome. Specifically, partners emphasized intentionality in structuring partnerships to promote equitable participation and contributions from all partners. One community partner referred to such a structure as a "true CBPR kind of relationship" in which partners developed standards for communication, conflict resolution, and other operating principles. Both community and academic partners also discussed intentionally creating conditions under which there is "equitable respect," "equal partnership," "benefits are equitably distributed," "people feel that their contributions have been acknowledged equitably," and "burdens have been differentially experienced."

Partners emphasized the importance of identifying inequities within partnerships early on and structuring partnerships with the goal of minimizing them. Early recognition of existing inequities that have the potential to influence partnership dynamics, such as disparities in power, resources, and capacities to engage in the partnership, was identified as a partnership outcome. A community partner expressed the hope that CBPR partnerships have a structure or process in

place to identifying which partners need more resources at a given time and attending to those needs equitably. The partner also referenced the need for recognition that:

> "…partners are at different stages and so their needs are different, and we can't fall back on the whole fairness question or the equal. If we're gonna sign for equity, then that's what we need to do. We cannot use the equal as a de facto point, meaning that 'Okay, well we already know that this group is at this stage, and so they need more resources,' 'but we really can't because we want to treat everybody equal,' but you can't have it both ways."

Some partners particularly expressed the need for academic partners to make this recognition clear. Along these lines, one academic partner suggested:

> "…that the Academic Partner acknowledges and maybe even talks about what we are the legacy of, and we are often the legacy of really bad science and unethical science and science meant to oppress people, and to essentially create inequities...So I think it's important for Academics to really acknowledge that in the beginning and say you know, 'This is a different time, and we vow not to continue that.'"

Partners pointed to ways of mitigating inequities within partnerships by developing specific rules and operating norms for this purpose early in the life of the partnership. Examples included co-leadership structures for meetings and committees and guidelines for distributing resources equitably. Formally, these stipulations are often written into research grants or partnership bylaws. For example, one academic partner explained:

> "…we form this partnership knowing that the reality is inequity, and so we form the partnership about 'How can we shift that?' That's why we have these bylaws, you know being very transparent that 'No Academic can be the Chair of the collaborative or the Steering Committee,' you know and that the Academic is just the fiscal agent."

These findings suggest that a focus on equity in partnership processes, as defined in the conceptual framework, is a critical indicator of equity in CBPR partnerships. The perspectives

described here reflect the importance of intentional and conscious efforts to foster equitable relationships and processes. Partners' emphasis on components such as bylaws, research grants, fiscal agents, and resource distribution suggest that these strategies should be enacted early in the life of a partnership in order to facilitate equity in other intermediate and long-term outcomes identified by partners. Members of existing CBPR partnerships may benefit from evaluating these measures in the beginning stages of partnership in order to ensure a focus on equity, and throughout partnership processes.

Response to community concerns in action strategies and recommendations. In relation to studying issues that are relevant to communities, partners also discussed indicators that actions taken or decisions made within partnerships are responsive to community concerns. Specifically, partners discussed actions taken in response to research findings generated by the partnership on a public health issue of interest to community partners. For example, one academic partner explained of community partners, "Success to them might, 'Okay, what are we gonna do with this work?' you know. 'Did the outcomes lead to some action that's improving my community?' The culmination of research processes was seen as a time for partners to make decisions on action strategies that are responsive to community needs and concerns. In reference to the costs and benefits to participation; for example, another academic partner explained, "…I think the beginning and you know the data collection is probably the most high cost time of research together, and then coming together to figure out how to use the data in a way that positively impacts as many people as possible."

This concept was linked to the idea of building or maintaining trust that a partnership will direct actions or effort towards community concerns, either as concerns arise or in response to research findings. Partners specifically referred to academic partners extending themselves in

ways that demonstrate that they are committed to action that reflects community concerns, rather than solely those of academia. For example, one academic partner explained, "'I'm here to collect data and to publish' really isn't going to serve you well, 'cause that's not the priority of the community or practice partners…" For academic partners, this may mean choosing not to publish on a CBPR project early in their relationships with community partners, in order to build and maintain a trusting relationship: "You know as you're getting to know Community Partners, you do need to publish, but that may not be where you publish…You may need to figure out other ways to publish, rather than just through this intensive CBPR project that you're working on." Partners discussed general actions beyond research activities that may be responsive to communities; for example, one academic partner explained:

> "So I think we can do more than we say we can do, and for sustainability and you know real trust-building and trust maintenance with Community Partners, I do think we need to show our willingness to go to the mat, whether it's doing some kind of advocacy, or a chance they want to see happen, even if it's not directly related to the project we've been working on together, that's important, and any of the other ways that we can do that."

Community knowledge and experience are used in analyzing equity impacts. Partners often referred to the incorporation of knowledge from community partners in the framing and etiology of health issues in communities and in the interpretation of research findings generated by a partnership. In terms of framing issues, partners acknowledged the need to validate communities' conceptualizations of problems and potential solutions. One academic partner described respect for academic and community expertise as a partnership outcome related to equity, stating, "So I guess another is admiration of each other's or appreciation for each other's you know knowledge and expertise as well. I think we both respect each other's expertise." One community partner, suggesting that a sense of "equal partnership" was a partnership outcome related to the equity dimension, recounted an experience in which partners cultivated a sense that

academic researchers were not the only experts on a topic: “It's not from the top down, that, ‘I am the expert and this is what you should do.’ But it's really about sitting in circle and asking people what they think we should do.” The partner went on to emphasize the need to actively listen to communities’ perspectives, stating:

> “So I think what I mean by listening in a good way is to... We say that the communities already know what their issues are. They already probably have the solution, but if we stand up there telling them what to do then we're not listening. And we have to practice what we're talking about and people are not used to being listened to.”

One academic partner suggested that a lack of engagement on the part of community partners was an indicator that “we are just totally off base about how communities conceptualize what’s happening.” Several partners highlighted the importance of validating these conceptualizations and integrating them into issue-framing, research methodologies, and data interpretation. Some academic partners specifically discussed the need to understand and support alternative knowledge epistemologies introduced by community partners, as an issue of justice and a method of challenging Western ideologies that shape knowledge production and interpretation. For example, one academic partner noted:

> “…I really do believe that CBPR partnership should also be efforts at cognitive justice. So I think that one of the outcomes should be that community-level series of etiology and community-level intervention should be highlighted and should be supported as other ways of knowing and as other epistemologies and as ways to really get that within mainstream Higher Education.”

> “… Western knowledge construction can get too speculative, and I think that we need to really get down to ‘What does this mean on the ground in this moment?’ you know, speculative stuff, and I think that that is a learning that I got from my Community Partners…”

Furthermore, it was suggested that the predominant language or perspectives used to frame problems that affect communities may have unintended negative consequences for those

communities. One academic partner explained that community partners must be able to trust that, in the research done within a partnership, issues will be represented in a way that is acceptable to them. The partner stated, "that has something to do with language, too, 'cause there's certain language that's not acceptable, from their perspective." The partner described a past experience in which community partners referred to the use of the term "target population" in the partnership's research as "violent language," explaining:

> "There's just certain language that we use that's common in Public Health, that because they're interested in preventing violence, that they don't want their children, they don't want the community exposed to that kind of language, because that's unnecessary. There are other words that you can use without reinforcing that negative connotation. So we don't ever write anything that incorporates that kind of language."

Finally, partners also suggested that the knowledge and experiences of community partners should guide or influence the development of data collection instruments and interpretation of data. Academic partners described scenarios in which community partners challenged and suggested changes to survey measures, for example, based on their knowledge as members of the communities using the measures. An academic partner recounted:

> "…when I was circulating the data collection instrument, you know I had people say 'Don't ask this, and ask that,' and I actually, for the most part, absolutely did what they said. They were the boss of us in many regards, and it turned out they were absolutely right, you know."

When partnerships collect data within a community, partners also acknowledge that community knowledge and experience should guide the interpretation of research findings or complement academic perspectives. One academic partner specifically noted that community perspectives lend significant meaning to what, in many research contexts, may appear to be only "numbers." The partner stated, "It's not about numbers. It's about people…that we have the benefit of having the wisdom of the community to be able to tell us more about what it means,

rather than just interpreting whole numbers, that they really have meaning in a different kind of way."

These findings resonate strongly with the theoretical roots of CBPR (Wallerstein & Duran, 2008; 2018), as well as CBPR principles (Israel et al., 1998). CBPR partnerships often aim to challenge positivist paradigms for conducting research, which typically privilege academic research as the primary producers of knowledge, in favor of paradigms that allow community perspectives to drive the framing of public health problems and the development and implementation of research questions, methods, and analyses (Israel et al., 1998; Wallerstein & Duran, 2008; 2018). Partner responses in relation to this indicator of equity makes this orientation within CBPR more explicit. Assessing the extent to which community knowledge and expertise is valued and meaningfully incorporated in partnership research appears to be an evaluation priority for partners, and may facilitate equitable outcomes of partnership interventions and programs.

Theme 3: Capacity and ability of communities facing inequities to engage in future partnerships and decision-making

Capacity to influence decision-making processes, including the ability to plan, organize, fundraise, and take action within the decision-making context. Partners named various forms of community capacity to engage in partnership activities and decision-making contexts as partnership outcomes, both within partnerships and in broader communities. While partners did not always directly link these capacities to specific decision-making contexts, partners did discuss dimensions of capacity that ultimately affect the ability of communities facing inequities to participate and contribute meaningfully to partnership efforts. Several community and

academic partners discussed capacities such as leadership, knowledge and research capacities, social connections, credibility and visibility, and multiple tangible resources (e.g., funds, staffing) and intangible resources (e.g., time investments). Partners referred to the ability of community partners to participate in decision-making spaces through capacity building in which they take on leadership roles, gain access to resources to support their engagement in the partnership, and enhance their ability to conduct research and participate in CBPR partnerships. A community partner described one partnership indicator as a community-based organization's ability to "engage and take leadership in its own research," "generate critical research questions" and "assume leadership in different grants and projects" within the partnership. Another academic partner explained:

> "At the community level, I really look at community capacities and community empowerment, and capacities to engage in research, capacities to decide that they want to do research with you again or with other partners, potential Academic partners, that they have that critical capacity to make decisions around who they want to partner with, that the interventions are programs or policies or practices that they care about are sustainable."

For many partners, community capacity building was a means of establishing capacity for research and action beyond the current partnership, either independently, in future partnership contexts, or after the funding for a particular project ends. Partners suggested that, as a result of a partnership's efforts, a community-based organization may have developed the connections, research training, credibility within the scientific community, and ability to generate the funding necessary to sustain itself as an organization and continue programs or interventions after partnership funding ends. One community partner expressed that community partners and community-based organizations might develop "the skills to figure out how to plant in another place." Another community partner suggested that through participation and growth in the

partnership "…the Community Partner's credibility is increased with policymakers and in the Health and Environmental Health fields."

In reference to differences in capacity between community and academic partners, some partners explained that, in the early stages of a partnership, there is a need for capacity building in the form of research and CBPR training, knowledge, resources, and relationship building (e.g., with research funders and other actors) among community partners in order to reap the benefits of participation and to be meaningfully engaged in the partnership's work. Both community and academic partners noted that initially, community partners often face barriers to meaningful participation due to research and resource capacities. Community partners specifically highlighted barriers such as childcare concerns, travel burdens, inadequate compensation, and time constraints. Community and academic partners also noted that certain conventional aspects of academia, such as the need to meet requirements for human subjects' criteria or peer-reviewed publication processes, functioned as barriers to community engagement in partnerships. Over time, however, partners expressed that as community partners become more familiar with research and university processes; obtain more funding; and build stronger relationships with funders, researchers, policymakers, and other actors, community partners and community-based organizations develop the capacity to better leverage the benefits of participation.

Community partners specifically recounted members of their organizations obtaining further training or education and becoming more knowledgeable about university resources. One noted, "I think one outcome is people in our community go back and get degrees. They get academic degrees that they were not interested in before." Another noted:

> "So for me individually, I can honestly say that the cost of participating in a partnership has drastically went down because, like I said, I understand how to better allocate my time, but

> also understand how to access certain resources that's out there, and the only way I can sort of explain that is you just get smarter."

At the same time, other partners emphasized the need to address these initial disparities in community and academic partner capacities by distributing effort and resources according to need. Specifically, in an equitable partnership, disparities in resources and capacities for research and action are addressed in ways that better allow community partners to participate. For example, one academic partner explained, "…it's a bigger cost to the community being involved in Community/Academic partnerships than it is to the Academic, because it's part of the Academic's job…" The participant also explained, "…the community tends to get the short end of the stick when it comes to funding. They don't have indirect cost in most cases." Another academic partner described equitable distribution of resources as critical to community capacity to participate:

> "…part of equity in our partnerships is assuring an equitable distribution of resources, recognizing that to contribute to the work, everybody needs support to do that…And that doesn't mean that we always have an equal distribution of money across partners…but that one of the things that we just pay attention to and think about balancing over time is 'Are people adequately supported to do the work that they are doing towards the shared ends of the partnership?'"

As discussed further in the discussion section, findings related to community capacity reflect several dimensions of capacity defined in the literature, notably those by Goodman and colleagues (1998) (e.g., skills, resources, organizational networks). In addition to the need to assess these dimensions, differences in the capacities of communities and academic partners may be critical to evaluate in order for partnerships to equitably distribute resources and to address potential social or economic inequities that may shape differences in capacity between community and academic partners.

Theme 4: Shift in power benefitting communities facing inequities

Community influence over decisions, policies, partnerships, institutions, and systems that affect health. Partners identified indicators of equitable power that reflect the extent to which community partners engage in, lead, and influence decision-making contexts and activities both within partnerships and in broader communities and environments. Several partners suggested that equitable partnerships require equitable power dynamics, represented by equity in the extent to which partners influence decisions and make contributions to partnership efforts. One academic partner referred to a partnership's ability to assess shifts in power, stating, "We're constantly aware of that, aware of the privilege, but aware of how it's so ingrained, and so for me it's more like do we have in place the mechanisms to constantly check to see if power is shifting within the partnership?" Another academic partner explicitly discussed equity as "equal power" relations across multiple partnership processes, stating that, "I mean I think that if you have equal power, in terms of decision-making, resources, knowledge contribution, knowledge democracy, that's equity." The conceptualizations align with both the model by Ward and colleagues (2018) and models by Wallerstein and colleagues (2008; 2018) defining outcomes, such as changes in power relations in research processes and "influence/power dynamics" within partnerships.

*Community-Driven Partnership Processes***.** Some partners suggested that one indicator of equitable partnerships is the extent to which community partners have not only a seat "at the table" within decision making contexts, but also a "voice" that is heard within decision-making across various partnership processes. Under these conditions, "…community partners feel that they indeed are not just at the table, but they're there in an equitable you know equally important role as anybody else." Furthermore, one academic partner described, when asked about

indicators of equity within a partnership, "I would say that everyone feels they have a voice at the table, that they feel respected and listened to, and that if they wanted to bring something new to the table, they could." Another academic partner expressed the importance of community influence in decisions about research, sharing that, "…I actually think there's one of the biggest indicators to me (these are kind of intermediate ones, but) are whether you can tell if there's a shift in power relations in research decision-making. So whether the community feels that they actually have equal voice in next steps of the research in the partnership…"

It was also suggested that within equitable partnerships, community partners utilize existing or built capacities not only to engage in partnership activities, but to also ultimately lead or steer the direction of those activities. These ideas accord with the notion that the activation of built community and partnership capacities represents the acquisition and use of power on the part of community partners (Freudenberg, 2004; Minkler et al., 2008). For example, it was noted that after community partners have built or enhanced their capacity for activities such as research and leadership, those partners begin "starting that capacity themselves," including initiating or leading processes that they had not previously (e.g., running meetings, developing operating principles, defining future research directions). Under conditions of shifted or equitable power, it is not always a "foregone conclusion" that an academic partner will lead a given process. Finally, a community partner discussed the ability to "take control of their own research destiny" by "managing and mitigating" potential exploitative acts that might otherwise have taken place within research projects.

While some partners emphasized the importance of a "shift" in power relations within partnerships, others highlighted the idea that community partners and community-based organizations often enter partnerships with a strong degree of power or influence within broader

communities and policy arenas. In these partnerships, the conditions for equitable power relations may already be present, evidenced by community partners exhibiting or exercising this power initially. One academic partner explained:

> "... I think it really pays to try to partner with the most powerful organizations for a couple of reasons. One, because they're already probably targeting high policy levels, and so your work could actually have a higher impact…You know they're not gonna sit there and it's not like you have a big knowledge, a lot more knowledge or a lot more power than your Community Partner, and they're gonna feel absolutely empowered to tell you what they think and how things should go."

In relation to the notion of "activating" capacities (Freudenberg, 2004) discussed above, this perspective suggests that when community partners enter partnerships with a great degree of capacity to take action on health issues, they may enter with a great degree of empowerment. Perspectives such as these challenge the notion that a directional change in power for community partners should be a central focus with respect to equity. As academic and community partners bring differing and often complementary capacities, expertise, and influence, equity may represent the extent that power is balanced within partnerships. Further research might explore specific conceptualizations of this concept in order to refine its definition and measurement.

Community Leadership in Broader Settings. Beyond the context of the partnership, partners also referred to community partners being active or assuming leadership roles in research, policy, and other arenas, in part as a result of their participation in the partnership. For example, one community partner noted that active participation in public health research communities is a partnership outcome, including giving talks at professional conferences, coauthoring publications, and developing special issues of journals. Others referenced community partners assuming "positions of greater authority in their own community," including

running for public office, taking positions at various levels of government, or moving from local community leadership to higher levels of leadership. As community partners become more active leaders in arenas for change, partners suggested that they may develop more power to influence the way that emergent public health issues are addressed. For example, one community partner recounted how communities, "got in front of…[local] research initiatives and demanded that resources be put there to help them to kind of govern this process or to control this process that was occurring."

Government and institutions are more transparent, inclusive, responsive, and/or collaborative. Partners referenced the extent to which various institutions or decision-making bodies deliberately incorporate communities in decision-making. This might be evidenced by community members, advisory boards, or organizations being called on to answer public health questions, for example, or changes in public or institutional policies (e.g., at universities, institutional review boards) that promote meaningful community involvement or control in research, grantmaking, and other decision-making contexts. One academic partner discussed changes in policy environments that better support inclusion of communities facing inequities: "…and you don't just make a policy change, but how do you transform a policy environment so it's more conducive to having the community be involved and actually be an active partner, sort of the Procedural Justice issues…" In the context of partnership sustainability, a community partner referenced research funding institutions incorporating communities in grantmaking decisions:

> "So over the course of this whole continuum of things, they have decided to, it'd be a good idea to include Community Partners at the table when they're making these decisions. So I think that helps with the sustainability where organizations like NIH and the CDC and whoever else who are doing grant programs bring Community Partners to the table to help review these grants and things like that."

A community partner who had been a member of a partnership with a tribal community specifically referenced indications that universities and institutional review boards change their operations in ways that are more responsive and inclusive of communities:

> "…and several tribes in academic centers are doing this more and more due to CBPR and a lot of the good work that you've done in raising the level of this type of work, but people have policies about data-sharing that findings from whatever study they take part in, the community must be informed about it, that it can't be a complicated report, that it has be easy to understand, that meetings don't all take place at the Research Center…"

Relatedly, an academic partner described conditions within universities that might improve responsiveness of research to communities:

> "At the university level, I think it's whether the university changes their IRB to reflect more amenable, easy-to-conduct research so that they can be responsive to community. I think you know if the university is putting money into infrastructure at the community level, that's important. That's not dependent on a grant. If the university is changing its tenure and promotion criteria to accommodate and to encourage and facilitate Researchers so that they can look at actual health impact as a criteria, not just the number of papers published at the university level."

These responses highlight the importance of assessing transparency and collaboration with governments and institutions as indicators of shifts in power to benefit community partners. Partners' discussions of procedural justice, changes to policy environments, and institutional change suggest that these factors indicate that a partnership's efforts have better enabled community members to engage in decision-making processes within the relevant policy arenas and institutions. These indicators resonate with measures in conceptual frameworks by Wallerstein and colleagues (2008; 2018) which define measures such as changes in practice and policy. Evaluation studies of CBPR partnerships, such as one by Devia and colleagues, often refer to systems change, or policy and organizational change, that also resonate with the perspectives shared by partners.

Additional Indicators of Shifts in Power. In addition to the a priori codes developed for each equity metric defined in the conceptual framework, codes were defined to reflect indicators that are not fully or explicitly represented in the framework. Those indicators included: 1) changes in the degree to which community identities are socially marginalized; and 2) a sense of community ownership or control over partnership efforts. These potential indicators are briefly described below.

*Marginalization of Community Identities***.** Some partners referenced initial or persistent conditions within partnerships in which community partners were not treated with the same level of regard or respect as academic partners. For some, this inequity was based on a perceived lack of academic credentials or knowledge. One community partner recounted a time that academic partners demonstrated less respect for a staff member: "Treating my staff, my Environmental Health Director, like she was an Intern, and this was somebody who had an MPH…and very smart. You know things like that, little disrespect…You know a lot of researchers don't want to work with your staff. They only want to work with you, and so there's a kind of disrespect with the others…" Another partner explained:

> "I mean they'll first make the assumption that because we're at a community-based organization that we don't know diddly squat about doing some of this stuff…We need you to assume everybody you're talking to is a Leader and everybody is well-educated because they are, even if they don't have letters after their name, and they're well-informed…"

Partners also referred to changes in the perceptions of communities facing inequities beyond the partnership context, particularly those based on race. One academic partner referenced the positive result of a group of Hispanic women participating in a community-based program implemented by a partnership: "So I think its benefits, in this case, fairly marginalized

women are benefited in that their husbands, their kids, their community sees them as playing an important role on behalf of everyone…" Another partner described an experience implementing a community service program for African American men with criminal histories. Initially, perceptions of the men among other members of the community were negative: "They knew these guys and they looked upon them with a lens that suggested they were not positive contributors to the social fabric of the community…" As a result of the men's work in the program and positive interaction with other members of the community, perceptions of the men changed. The partner recounted a White community member's response to the men: " 'I never would've thought to ask for your help, and I never would've thought that you would've been willing help and contribute to the community in this way,' and he had never even spoken to them."

These findings, discussed further in the discussion section, represent the potential for partners to reproduce inequitable societal power dynamics within partnerships through institutionalized or interpersonal forms of discrimination (Chavez et al., 2008). Partner responses make the commitment within CBPR to address and prevent these imbalances more explicit as a partnership evaluation outcome. Evaluating the social marginalization of partners within partnerships, or as a result of a partnership's programs or activities, may aid partners in critically assessing the extent to which their efforts promote power dynamics that benefit communities facing inequities.

*Sense of Community Ownership***.** Some partners explicitly discussed a sense of ownership or control over the partnership's work, on the part of community partners, as a partnership outcome. One community partner referred to a sense of pride in and ownership of the work, stating, "Now clearly, as an external partner who is involved in the research, we are not in

the field conducting research or gathering data, but I think there's still a sense of ownership and pride in the research and I think advancing and promoting that research is an important outcome…" Expanding on the idea that community partners should be able to drive the agenda within partnership meetings and other processes, one academic partner referred to a sense of local ownership:

> "…I don't know if it gets back to that equity piece or what, but something shifts, and so that could be you know an outcome, and a long-term outcome may be that that, yes, people continue to come back, but how important or how they view that the partnership is different, it may be lower in the sense of you know 'I'm just coming. I don't own it,' versus somebody local owning it. I think sometimes we don't hand the baton."

Another academic partner described a partnership outcome to be, "…if each of the members feel they have stewardship not only over their own goals and principles and outcomes, but stewardship also over their community's goals and outcomes and you know things in the affect of domain."

These findings suggest that partners view community ownership as an indicator that a partnership's processes are equitable. This concept, discussed further in the discussion section, may reflect that power has been shifted, or power dynamics have been created, in ways that allow communities a greater sense of ownership, or actual ownership, over the direction and implementation of research projects. These ideas resonate with research findings suggesting that community engagement research can promote a sense of ownership or self-determination with research processes (Salsberg, 2017; Walker et al., 2017). Evaluation of this concept may help partnerships better understand the extent to which they are sharing or shifting power among partners.

Theme 5: Reduced health inequities and inequities in the social and environmental determinants of health

While partners primarily discussed equity promotion indicators within partnership processes, many made references, to a more limited degree, to changes in health inequities, health outcomes, and in the social determinants of health. Partners emphasized, in general terms, partnership efforts contributing to changes in social and environmental conditions that promote health in communities facing inequities. For example, changes in policy, policy environments, physical environments, workplaces, and families were discussed. One academic partner referred to policy and environmental changes as changes in "health equity structures," and as partnership outcomes. It was acknowledged that these forms of change represent some of the underlying drivers of inequities and may only be manifested "far down the line," or after a partnership has formally ended. Another academic partner explained: "That the outcome impacted on, not only on the individual level, but on social policy and things that are continuing the inequities and are targeted on things that might improve equity from an institutional policy and systems level, not just you know individuals."

In some cases, community and academic partners specifically referenced changes in health outcomes and decreased differences in health outcomes their social determinants between communities facing inequities and other communities. For example, one academic partner responded:

> "I mean I think that there's success in terms of the partnerships themselves, and then there's the success in terms of the work that the partnership does, and in terms of success in terms of the work that the partnership does, you know indicators of 'Did we actually, was our intervention successful in reducing health inequities, or was it successful in promoting health?'"

Another academic partner explained that although a particular partnership had reduced racial differences in quality of care, for example, achieving equity would mean ultimately reducing inequities in healthcare systems:

> "You know I've moved now to system change. Before that, you know 'How many woman can we get to go get mammograms? Increase the number of Black women who go get mammograms,' but then you get the women, they get mammograms and then they're entered into the system and then they're just slapped in the face you know with inequities in the system and implicit bias and gatekeeping, and so you know the issues is now, 'How do we change these actual systems of Healthcare that have been structured and just embedded with you know hierarchies of inequities and implicit bias and people don't see it? The doctors don't see it. The doctors think they treat everybody the same, but they really don't.' You know so that's gonna take a long time, and the communities know that."

These findings suggest that partners view equity in longer-term health and social outcomes as important evaluation indicators. In part, these perspectives resonate with CBPR conceptual frameworks which define long-term outcomes in relation to equity. Namely, frameworks by Wallerstein and colleagues (2008; 2018) and Kastelic and colleagues (2018) specify outcomes such as social justice, transformed social and economic outcomes, and policy change.

Discussion and Implications for Future Research

Findings from this study suggest that members of long-standing partnerships conceptualize equity promotion in ways that align with many of the constructs in the conceptual framework for equity promotion by Ward and colleagues (2018). Findings also highlight inequities that exist within CBPR partnerships, and potential measures to assess progress toward reducing them. In many cases, findings within each dimension of equity resonate with empirical and theoretical findings in the current CBPR evaluation literature and highlight potential areas for further research. Across the five dimensions in the conceptual framework, these areas are explained below.

Focus on addressing health equity and a focus on equity in partnership processes.

The conceptual framework that guided this study, and those upon which it builds (Schulz, Israel, & Lantz, 2003; 2013; 2014, Wallerstein & Duran, 2011), suggests that partnership efforts to improve group dynamics can promote more equitable partnership processes, and promote a focus on addressing health inequities through partnership programs and research. In accordance with the intermediate measures of equity in the conceptual framework, specific outcomes documented in this study reflect intermediate outcomes of action taken to foster equitable group dynamics characteristics within partnerships. Findings within these two themes particularly reflect the intention, or goal, of partners to develop a partnership structure that supports equitable processes and outcomes. Specific findings coincide with priorities or goals within CBPR partnerships, as articulated in the literature, including the extent to which partners: recognize histories of inequity and make a commitment to addressing or discontinuing them (Chavez et al., 2008; Israel et al., 2013; Wallerstein & Duran, 2008); maintain power-balancing processes within partnerships (Chavez et al., 2008; Israel et al., 2013); study and take action on issues that are identified by and relevant to community partners (Israel et al., 1998; Israel et al., 2017); and validate and prioritize community etiologies and conceptualizations of health problems and research findings (Israel et al., 1998; Israel et al., 2017; Wallerstein & Duran, 2008). Within Theme 2 (a focus on equity in partnership processes) a subtheme emerged (equity in partnership structure and processes), which reflects the importance of early, intentional efforts among partners to develop structures and processes that facilitate equitable respect, engagement, and decision-making, in recognition of historical inequities that have impacted community involvement research. These efforts particularly resonate with conceptualizations of equity by Jones (2014), who suggests that promoting equity requires recognizing and rectifying historical injustices. They also reflect

Braveman's (2014) conceptualization of equity as a principle underlying a commitment to reduce health disparities, as partners discuss the importance of the intentional development of partnership structures and processes that reflect a commitment to equity.

Further research is necessary to explore the concepts within these themes for which no data segments were coded. Namely, further research might specifically investigate the extent to which "Analysis of the distribution of health and equity impacts across the population" is conceptualized as an indicator that a partnership has a focus on addressing health equity. It is possible that a future study focused more narrowly on research processes within partnerships, or the nature of research conducted within partnerships, might be appropriate to assess this construct. Within the same theme, further research might assess the extent that a focus on equity in partnership research methods and research questions, is an indicator of equity. For example, future research might explicitly examine the extent to which partners perceive that equity considerations within a partnership's data collection or recruitment methods, as well as its formal research questions, would indicate that a partnership is focused on equity.

Capacity and ability of communities facing inequities to engage in future partnerships and decision-making. Findings highlight potential indicators that community partners have the capacity to engage in or lead partnership processes and decision-making across multiple dimensions of community capacity defined in health promotion and CBPR evaluation literature. Outcomes suggested in this study overlap with several of the ten dimensions of capacity defined by Goodman and colleagues (1998) and adaptations of those dimensions within conceptual models for assessing capacity within CBPR partnerships (Freudenberg, 2004; Minkler et al., 2008), such as skills, leadership, participation, resources, and social and organizational networks (Goodman et al., 1998).

Findings also highlight differences or disparities in capacities between community and academic partners. Partnerships often focus efforts to enhance capacity and support meaningful participation and decision-making among all members (Coombe et al., 2018) in part to acknowledge that: community and academic partners often bring different skills and resources to partnerships that complement each other (Cashman et al., 2008); and that various capacities of both academic and community partners can be enhanced though a partnership's work (Minkler et al., 2008). At the same time, the emphasis on disparities in capacity in this study supports the importance of explicitly assessing the capacity of communities facing inequities to engage in decision-making and future partnerships, as well as the extent to which differences in capacity are bridged or addressed. The findings also accord with other empirical studies of capacity building in CBPR and community-engaged partnerships which highlight these disparities and potential negative consequences associated with them. For example, Wallerstein and colleagues (2019) found that differences in capacities to conduct research between community and academic partners can act as a barrier to conducting CBPR, as they may prevent equitable power dynamics. Rubin and colleagues (2016) found that building research capacities among community partners specifically (e.g., informing community partners about research practices in academia) promotes equitable power dynamics within partnerships. Ideas about capacity from partners in this study also coincide with conceptualizations of equity by Braveman and colleagues (2011) and Jones (2014), including the notion that achieving health equity requires focusing efforts and resources towards those facing the greatest need. Further research might explore potential indicators of disparities in capacities or capacity-building processes (e.g., distribution of resources, cost burdens, perceptions of community influence in decision-making) to expand or refine this equity dimension more comprehensively.

Shift in power benefitting communities facing inequities. Study findings provide support for the two constructs defined in the conceptual framework indicating a shift in power, including the extent to which community partners and members of communities facing inequities engage in, drive, or lead partnership processes and decision-making contexts both within partnerships and in broader communities and decision-making contexts. Emphasis on community-driven processes and decision-making within partnerships, particularly in research processes, aligns with the evaluation measure of power relations in partnership research developed in studies by Wallerstein and colleagues (2008), and Belone and colleagues (2016), which assesses: the extent to which community partners are able to voice opinions about research, have increased participation in the research process, among other factors. That partners highlighted active community participation, leadership, or influence both within partnerships and in settings beyond the partnership (e.g., policy, research) suggests that further research may be necessary to explore indicators of equitable power in multiple contexts, and potentially, the extent to which a shift in power is conceptualized as both an intermediate and a long-term outcomes of partnership equity. Furthermore, findings support the idea that while a shift in power may occur within partnerships, community partners may also enter partnerships with a strong degree of influence or decision-making power that is exercised at the outset. Therefore, further research might explore specific conceptualizations of this construct to determine the extent to which a "shift" is an appropriate indicator.

Findings also support the idea that, if community capacity represents community partners' ability to participate within decision-making spaces, equitable power represents their active participation and influence within those spaces. In accordance with literature on capacity building and power in CBPR partnerships (Freudenberg, 2004; Minkler et al., 2008), findings

provide evidence for the conceptualization of power as actualized or activated capacity, in which partners develop or bring with them the skills, resources, expertise, or relationships (building capacities) that enable them to engage in or lead decision-making processes, and activate those capacities in order to actually engage in or lead those processes (acquiring and using power) (Freudenberg, 2004). While the study conducted in Chapter 2 addresses this potential relationship, further research might explicitly explore the extent to which equitable power or shifts in power are conceptualized as outcomes of community capacity building.

Finally, this study provides evidence for two emergent concepts related to equitable power that are not currently represented in the conceptual framework. The first concept, social marginalization of community identities, reflects a goal that is deeply embedded within CBPR principles and practice with respect to addressing and disabling patterns of racism, sexism, and other forms of discrimination based on social identity that disempower community partners disproportionately (Chavez et al., 2008; Israel et al.,1998; Wallerstein & Duran, 2008). In many partnerships, considerable effort has been taken to "undo" the impacts of institutional and internalized racism, prejudice, and privilege, often by integrating anti-racist community organizing principles with those of CBPR (Yonas et al., 2006; Yonas et al., 2013). These approaches may have measurable impacts on both intermediate processes (e.g., reducing bias and discrimination between partners, and thus promoting more equitable power dynamics) and long-term partnership outcomes (e.g., reducing marginalization by social identity at the community level).

The second concept, a sense of community ownership, coincides with research suggesting that meaningful community engagement in partnership research promotes a sense of ownership and control (Walker et al., 2017), and self-determination (Salsberg et al., 2017) within

the research process. A sense of community ownership or control may facilitate empowerment among community partners, or the degree of influence community partners have within partnerships and in broader settings. Ownership or control may also be ways in which partners operationalize equitable partnership power dynamics. The extent to which community partners have true control over the research agenda has been shown to have strong implications for power dynamics, including unintentional power differentials or disempowerment of community partners (Travers et al., 2013). Further research should investigate conceptualizations of both marginalization of community identities and community ownership as indicators of equity or a shift in power.

Reduced health inequities and inequities in the social and environmental determinants of health. Though the focus on the key informant interviews was primarily processes within partnerships than longer-term outcome measures, study findings point to potential indicators that partnership efforts contribute to improvements in health outcomes, social determinants of health, and health inequities. References to embedded systems and structures that work to produce poorer health outcomes for communities facing inequities align with CBPR evaluation constructs identified in prior literature, such as changes in policy environments, transformed social and economic conditions within communities facing inequities, improvements in health outcomes, and health equity (Kastelic et al., 2018; Wallerstein & Duran, 2008; Wallerstein, Duran, Oetzel, & Minkler, 2018). While these outcomes were not referenced in great detail in this study, they were highlighted as important longer-term evaluation indicators. As the focus of the MAPS key informant interview study was to investigate conceptualizations of outcomes specifically within partnership processes, further research may be useful to better understand how partners conceptualized equity in long-term outcomes. Future research questions may center on the extent

to which changes: in social, physical, and economic conditions, community-level health outcomes; and health disparities, for example, are indicators of equity promotion in CBPR partnerships.

Strengths and Limitations

Building from a conceptual framework for equity promotion in CBPR, this study contributes empirical evidence toward conceptualizing equity within CBPR partnerships and specific ways in which equity may be measured. Findings from this study provide insight on how 16 members of long-standing CBPR partnerships conceptualize equity across multiple dimensions, spanning both intermediate and long-term partnership outcomes. The MAPS key informant interview protocol consists of multiple interview items across several dimensions of partnership success, in addition to equity. The study sample represents both community and academic members of CBPR partnerships from diverse backgrounds, with multiple years of partnership experience.

A deductive analytic approach provided the opportunity to determine how empirical qualitative data support constructs in the guiding conceptual framework. While the analysis is primarily deductive, the provisional coding method allowed the opportunity to revise and incorporate new codes and code categories that emerged throughout the analysis process, while remaining grounded in the original framework (Miles, Huberman, & Saldana, 2014). The rigor of the study was enhanced by two analysts participating in the coding process. Engaging another analyst in qualitative research may help to reduce researcher bias and improve the reliability of study findings by promoting reflexivity and cross-checking of coding and data interpretation by independent researchers (Barbour, 2001; Weston et al., 2001). Ultimately, findings may inform

the revision or addition of constructs to the conceptual framework, and specific directions for future study of potential new constructs.

There are limitations to this study. First, while this study assesses perceptions of equity among partners with considerable expertise, the perceptions captured in the study may not fully reflect perceptions of equity within the broader field of CBPR researchers and practitioners. Second, I have conducted a secondary analysis of interview data intended to meet the goals of the MAPS study. Thus, a small number of constructs in the conceptual framework were not captured comprehensively by the data in this study, as partners were not asked about their perceptions of the specific constructs within the conceptual framework. A future study that explicitly investigates these various constructs may be appropriate in order to gain a further understanding of partner perceptions of the specific equity promotion constructs in the model.

Third, while a deductive approach to data analysis allows for an in-depth investigation of the specific equity constructs that guide this study, the approach does not allow me to richly understand and describe the entire body of data, compared to an inductive analysis method such as grounded theory (Glaser & Strauss, 1967; Miles, Huberman, & Saldana, 2014). A separate analysis seeking to inductively analyze conceptualizations of equity may be appropriate for reaching a greater understanding of equity-related concepts that emerge beyond those defined in the existing framework. Such an analysis may also provide a better understanding of the extent to which equity is perceived to be embedded within, or distinct from, the various dimensions of partnership success explored in the entire body of data (e.g., costs and benefits of participation, synergy, and sustainability).

Conclusion

This deductive qualitative analysis sheds light on conceptualizations of equity as a within partnership processes and outcomes across the five dimensions of equity defined in the conceptual framework (Figure 2-1). In addition to providing empirical support for many constructs within the model, findings highlight multiple areas for further research in order to make revisions to the conceptual framework and to inform the development of indicators that members of CBPR partnerships might use to evaluate their efforts. Findings also highlight potential indicators that partnerships may use to assess their progress toward achieving health equity across the five defined dimensions in intermediate and long-term processes. Chapter 5 explores the implications of these findings synergistically with findings from Study 1 and Study 3, in order to inform future iterations of the conceptual framework, considerations for partnership practice and evaluation, and areas for future research.

Chapter 4: Evaluating Equity Promotion in a Partnership to Promote Healthy Environments

Introduction

As discussed in Chapter 1, equity promotion principles are strongly aligned with those of community-based participatory research (CBPR). CBPR's emphasis on meaningfully engaging communities facing inequities in research and practice to reduce health disparities reflects the embeddedness of equity promotion goals within CBPR principles (Israel et al., 1998). CBPR principles specifically align with conceptualizations of equity developed by Braveman and colleagues (2017) and Jones (2014), who write that achieving equity requires an iterative process that meaningfully engages communities facing inequities in action to reduce health disparities (Braveman et al., 2017), and valuing all individuals and populations involved in this process (Jones, 2014). Despite this strong alignment, there are relatively few evaluation measures that explicitly assess equity promotion defined in the literature on CBPR and community-engaged partnerships.

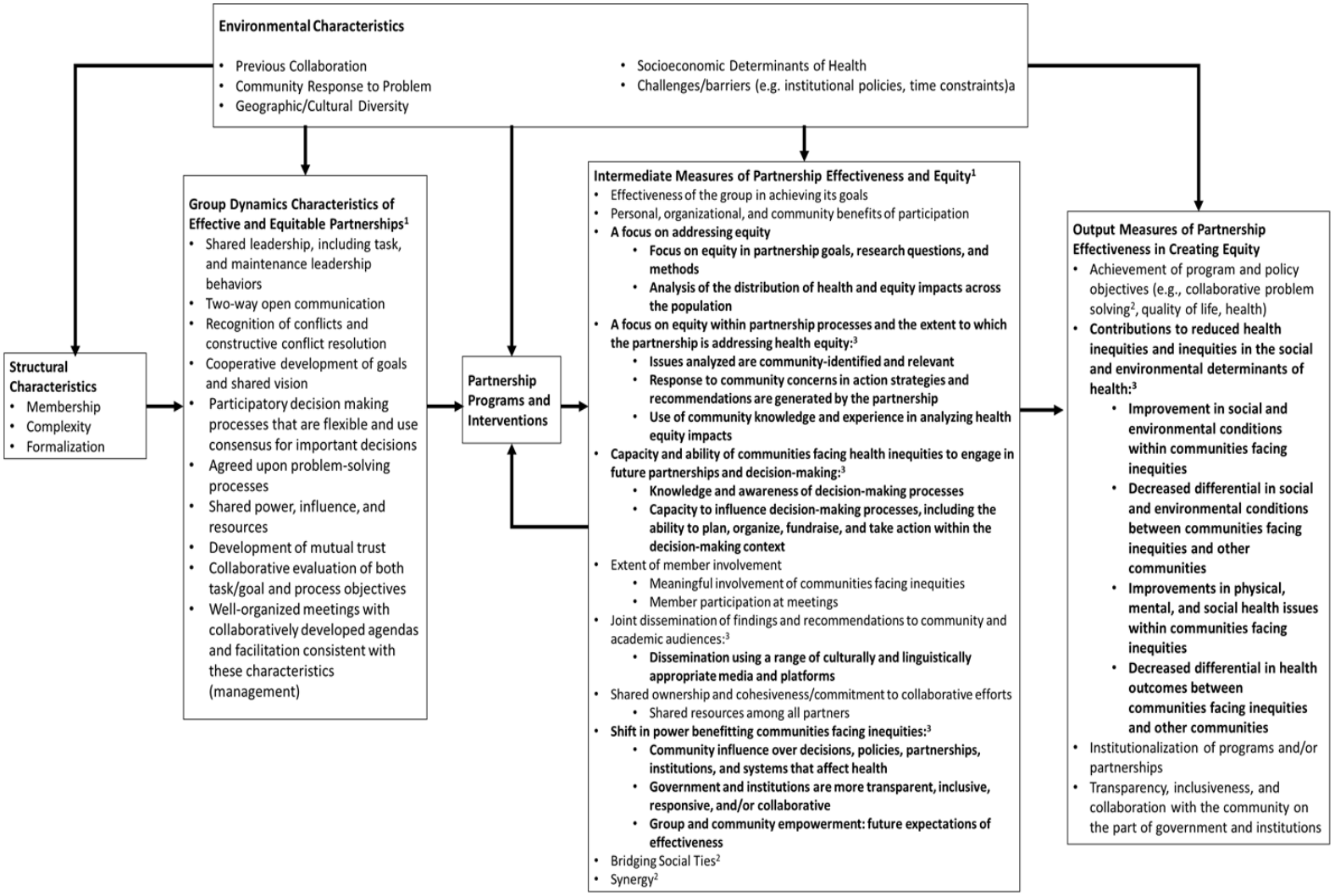
As suggested in Chapters 1 and 3, equity in group dynamics characteristics of partnerships (such as shared leadership, power, and resources, mutual trust, and participatory decision-making) (Schulz et al., 2003; 2017) are conceptualized as critical to facilitating intermediate and long-term outcomes that reflect a focus on equity (Ward et al., 2018). Intermediate and long-term measures within existing conceptual frameworks generally reflect three domains that connote a focus on communities facing inequities: community empowerment and power dynamics (Belone et al., 2016; Schulz et al., 2003; 2014; Wallerstein & Duran 2008),

community and organizational capacity (Schulz et al., 2003; 2014; Wallerstein & Duran, 2008), and equity in social conditions and health outcomes (Belone et al., 2016; Wallerstein & Duran, 2008). As explained in Chapters 1 and 3, models for CBPR evaluation, as well as CBPR evaluation practice, may be strengthened by a deeper understanding and critical assessment of how partnership efforts contribute to health equity. Logic models for health promotion programs and CBPR partnerships focused on environmental justice (Freudenberg, 2004; Minkler et al., 2008), elaborate on specific domains related to equity, such as community capacity. Specifically, these models suggest that dimensions of community and partnership capacity, along with community and partnership characteristics, can influence empowerment, mobilization and action on the part of community partners to make changes that promote equitable health outcomes (Freudenberg, 2004; Minkler et al., 2008).

While these conceptual frameworks and logic models align strongly with principles of equity promotion, participatory and formative evaluation approaches that focus on considerations of equity more explicitly, and encourage iterative dialogue and reflection among partners, may help CBPR partnerships develop strategies to facilitate progress toward achieving health equity. Specifically, by assessing equity as an explicit partnership outcome, partnerships might develop more intentional efforts to equitably engage communities facing inequities in their work, and to promote programs and interventions that create equitable outcomes for those communities (Ward et al., 2018). Towards a more explicit evaluation of equity promotion in CBPR partnerships, the conceptual framework in Figure 4-1 by Ward and colleagues (2018) defines five dimensions of equity promotion within intermediate and long-term measures of partnership effectiveness. This model demonstrates that effective and equitable group dynamics characteristics (such as shared leadership, resources, and power; participatory decision-making; and multidirectional, open

communication) (Schulz et al., 2003) have the potential to facilitate equity in four intermediate partnership outcomes and one long-term outcome. The dimensions are as follows: 1) a focus on addressing health equity; 2) a focus on equity in partnership processes; 3) capacity and ability of communities facing health inequities to engage in future

Figure 4-1: Conceptual Framework for Evaluating Equity Promotion Within CBPR Partnerships



1. As presented in Schulz, Israel, and Lantz, 2003, italicized and bolded items were derived from Johnson and Johnson (1982, 1997) and also included in Sofaer, 2000. Other items were derived from Johnson and Johnson and not included in Sofaer's model.
2. Derived from Lasker and Weiss, 2003
3. Derived from Heller, Givens, Yuen, Gould, Jandu et al., 2014

partnerships and decision-making; 4) shift in power benefitting communities facing inequities; and 5) contributions to reductions in health inequities and inequities in the social and environmental determinants of health.

This study examines equity promotion within the context of a CBPR partnership that uses formative evaluation to assess its partnership process. The partnership evaluation, guided by CBPR partnership process and evaluation frameworks (Schulz et a., 2003; 2014; 2017), focused on multiple partnership outcomes (e.g., group dynamics characteristics, intermediate measures) in addition to the four intermediate measures of effectiveness and equity defined in the model by Ward and colleagues (2018). This study is a mixed method case study analysis of equity in which I integrate data from partnership questionnaires, project documentation, and field notes capturing partnership discussions of findings. I assess the following dimensions of equity using data from these sources: 1) a focus on addressing equity; 2) a focus on equity in partnership processes; 3) capacity and ability of communities facing inequities to engage in future partnerships and decision-making; and 4) shift in power benefitting communities facing inequities.

Formative Approaches to CBPR Partnership Evaluation

A formative evaluation approach involves assessing a program throughout its implementation in order to improve program design, processes, and outcomes (Patton, 1987). The approach can be useful in the context of CBPR and community-engaged research, as it can enable partners to: continually monitor their progress; identify, discuss, and respond to unanticipated challenges; and discuss factors that may contribute to or explain evaluation findings (Stetler et al., 2006). In turn, these approaches present opportunities to identify strategies to strengthen processes and outcomes within partnerships. Formative partnership

evaluation typically involves the collection of evaluation data at multiple points in time throughout the partnership and presentation of results back to all partners in ways that are understandable and useful (Lantz et al., 2001). Partners then collaboratively discuss evaluation findings and make collective decisions toward improving partnership efforts.

Formative evaluation conducted either before or during the implementation of CBPR partnerships and interventions has helped to provide opportunities to interpret and apply findings to improve the effectiveness and relevance of interventions and programs to communities (Finlayson et al., 2017; Israel et al., 2010; Teufel-Shone, Siyuha, Watahomigie & Irwin, 2006). The approach has also helped partnerships to identify and address challenges and facilitating factors to reaching their desired outcomes, which may help partners improve their work together as the partnership continues (Lantz et al., 2001).

As noted in a comprehensive literature review by Sandoval and colleagues (2011), many CBPR evaluation studies have been case studies describing CBPR partnerships, research designs, and interventions. These case studies may employ formative evaluation approaches in addition to others (e.g., summative, process, impact evaluation). Generally, case studies in the literature assess partnership efforts to create and maintain research partnerships, collaboratively develop study methods, and build trust among partners (Sandoval et al., 2011), in accordance with the idea that effective processes within partnerships contribute to achievement of desired outcomes. Some case studies, however, have evaluated changes in policies, systems, and capacity as long-term outcomes or impacts of CBPR partnerships (Gonzales et al., 2011; Minkler et al., 2008, Sandoval et al., 2011). Evaluation studies of CBPR and community-engaged partnerships have used both qualitative and quantitative data collection methods, including in-depth interviews, focus groups and survey data (Israel et al., 2013).

As discussed in Chapters 1 and 3, intermediate and long-term outcome measures generally assessed in summative and formative partnership evaluations reflect CBPR's goal of promoting equitable relationships and outcomes (e.g., addressing power imbalances, enhancing community and organizational capacity, social justice, reducing health disparities) (Belone et al., 2016; Schulz et al., 2003; 2013; Wallerstein & Duran, 2008). In this study, I apply a conceptual framework which more explicitly defines dimensions of equity to a formative evaluation of a CBPR partnership (Ward et al., 2018). Employing a formative evaluation approach to the explicit evaluation of equity within CBPR partnerships has the potential benefit of exploring partner perceptions of specific evaluation findings related to equity promotion, identifying barriers and facilitating factors to achieving equity-related goals, and identifying strategies for improving efforts to achieve these goals.

Evaluation Case Study: Community Action to Promote Healthy Environments Partnership

Community Action to Promote Healthy Environments (CAPHE) CBPR partnership currently in its seventh year (2013-2020), in which community partners and academic researchers are working together to develop and implement components of a Public Health Action Plan designed to improve air quality and health in Detroit. CAPHE has developed a multilevel, integrated and scientifically informed Public Health Action Plan designed to reduce air pollution and its adverse effects on health. As this chapter is written, the partnership is working to promote implementation of components of the action plan. CAPHE was initially established as a collaboration among three long-standing CBPR partnerships that have previously engaged community, academic, and practice partners in research and action focused on air quality in Detroit: Community Action Against Asthma (CAAA), the Healthy

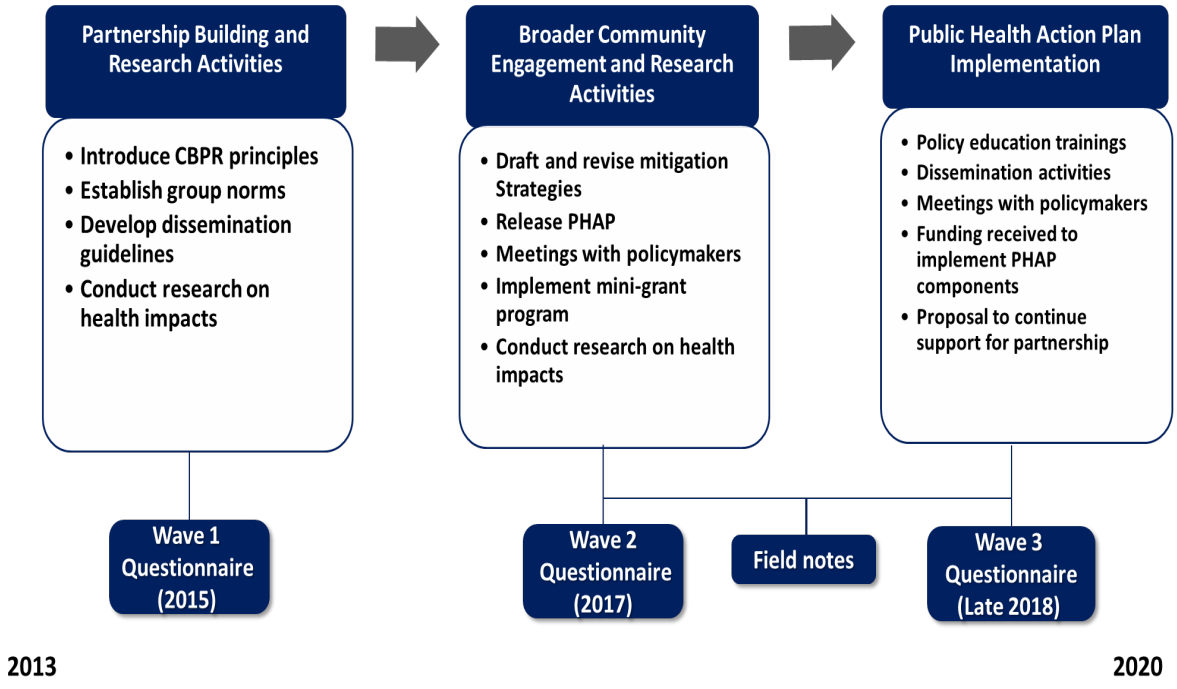
Environments Partnership (HEP), and the Detroit Community-Academic Urban Research Center (Detroit URC). The goals of the CAPHE partnership include: equitably engaging community and academic partners in all phases of research and action; increasing knowledge about exposure to air pollution and health effects; translating findings into a Public Health Action Plan; implementing policy and practice solutions to mitigate adverse health effects; and evaluating partnership processes and outcomes. CAPHE's emphasis on equitable partnership processes, and its goal of reducing specific health and social inequities related to air pollution in Detroit, make it a promising case study for evaluating equity promotion constructs within the conceptual model in Figure 4-1.

Partnership Organization and Structure

When the partnership was formed, its structure consisted of a Steering Committee and a Core Team. The Core Team consisted of one academic and one community representative from each of the founding partnerships, who collaborated to write the initial grant proposal and who received funding to conduct the research and action. Members consisted of representatives from three community-based organizations - Detroit Hispanic Development Corporation, Detroiters Working for Environmental Justice, Southwest Detroit Environmental Vision – and the University of Michigan School of Public Health. The Core Team met monthly and was responsible for collaboratively coordinating the implementation of partnership activities, including research activities and the prioritization and implementation of Public Health Action Plan recommendations. In 2019, discussions within the partnership (described in this analysis) led to the mutual decision among partners to restructure such that the Steering Committee is now the central decision-making body.

The Steering Committee was established in the partnership's first year, consisting of representatives of community-based organizations and government agencies as well as academic partners. The Steering Committee provides oversight for, and actively engages in, all aspects of the partnership. Meetings of the Steering Committee have engaged partners in building the evidence base on air pollution exposure and health impacts and benefits of mitigating exposures, the construction of a scientifically-informed Public Health Action Plan, and the development and implementation of specific strategies and recommendations from the Public Health Action Plan. The chronological stages of CAPHE's work are depicted in the timeline in Figure 4-2 and described in the sections below.

Figure 4-2: CAPHE Partnership Activities and Evaluation Data Collection Timeline



Partnership Building and Initial Research Activities

Upon formation, Steering Committee members collaboratively developed and adopted operating norms, including methods for decision-making, and selected community and academic co-chairs to facilitate equitable decision-making across various project activities. To refine the scientific evidence regarding efficacy of potential strategies to adopt in the Public Health Action Plan, partners conducted research to identify pollutant sources associated with adverse health outcomes and evaluate strategies to mitigate those health outcomes. This research also included estimating the health benefits of selected strategies on various health outcomes. Results from scientific analyses are published in CAPHE's resource manual (http://caphedetroit.sph.umich.edu/resource-manual-cover-page-with-full-manual/). Research projects, such as those assessing the cumulative effects of social, physical, and environmental factors (including air pollution) on health outcomes in Detroit (Schulz et al., 2016; 2018), have continued throughout the life of the partnership to inform decision-making regarding the Public Health Action Plan recommendations and other partnership efforts.

Community Engagement and Public Health Action Plan Development

Construction of the Public Health Action Plan was led by members of the Steering Committee drawing on scientific evidence as well as input from community residents, public health decision-makers, academic researchers, and business leaders with various areas of expertise. Specific goals of this process were to: (1) assess the evidence base regarding the potential health impacts, as well as the strategy's suitability, feasibility and timeliness for implementation; (2) develop criteria to assess potential strategies for inclusion in the Public Health Action Plan (e.g., strength of evidence base, feasibility, health benefits); and (3) develop a Public Health Action Plan that includes scientifically grounded and community-informed

recommendations for strategies to reduce air pollution exposures and their adverse effects on health. The partnership developed an implementation strategy to coordinate efforts to carry out the recommendations included in the Public Health Action Plan.

To engage community input beyond the members of the Steering Committee, CAPHE hosted a series of open meetings at community-based organizations in Detroit. At these meetings, partners shared and discussed draft recommendations for the Public Health Action Plan and sought input from attendees to refine and inform the prioritization of recommendations and implementation strategies. Ultimately, the Public Health Action Plan put forth recommendations in the following areas: point source controls, renewable energy, diesel engine retrofits, idling controls, clean fuels, transportation control measures, indoor air filters, buffers and barriers, compliance and enforcement, and air quality monitoring (http://caphedetroit.sph.umich.edu/public-health-action-plan/).

Public Health Action Plan Implementation

After the Public Health Action Plan was developed, the Steering Committee and Core Team identified recommendations for which the partnership might lead implementation efforts, and those which the partnership might collaborate with or support currently existing efforts. Criteria used in this process included recognizing and supporting other entities who were currently engaged in moving forward some strategic recommendations (e.g., sharing findings with and supporting them through identification of resources), and recognizing which set of recommendations were not currently being moved forward by others and to which CAPHE might be best positioned to contribute. Following considerable discussion, CAPHE decided to focus its implementation efforts in the following areas: indoor air filters, buffers and barriers, air

quality monitoring, and strengthening capacity to improve air quality in Detroit. This included advancing the utilization of health impact assessments, a strategy proposed across recommendations in the Public Health Action Plan, in order to assess the expected health impacts of future proposed policies and programs related to air quality. Various organizations and academic partners have taken the lead on these components, representing their respective areas of capacity and expertise.

A number of strategies have been implemented to support the adoption and implementation of Public Health Action Plan recommendations, including: development and dissemination of translational materials (fact sheets, pamphlets) describing the action plan; trainings on elements of the action plan (e.g., air pollution exposure, emissions monitoring); implementation of a "mini-grant" program to support community group projects; meetings with key public health decision-makers to encourage them to take action on elements of the plan; adult and youth capacity building programs designed to improve environmental health literacy and policy education; and conducting health impact assessments on policies and decisions likely to impact air quality

Data and Methods

The evaluation of equity promotion in CAPHE was conducted using a multistage case study design. The partnership employed a formative evaluation approach in which partners engaged in discussion about the results and generated strategies through those discussions to strengthen efforts toward equity. Data from multiple sources, described below, were integrated and analyzed using a mixed method approach. A case study is an approach to research that explores a phenomenon under contextual conditions using a variety of data sources. (Baxter &

Jack, 2008; Yin, 2009). Case study research allows for in-depth analysis of multiple aspects of an ongoing program or phenomenon, relies on multiple sources of evidence that can be converged or triangulated, and benefits from prior development of theoretical framing to guide data collection and analysis (Yin, 2009). Because this study draws on multiple sources of data in order to analyze four dimensions of equity promotion in the context of an individual CBPR partnership, based on a pre-defined conceptual framework, a case study design is appropriate. This evaluation takes on a multistage design due to the sequential nature of data collection (Fetters, Curry & Creswell, 2013), described in the following sections.

Formative Evaluation Process

Data Collection. Data from three sources collected at multiple time points are: 1) three waves of a questionnaire administered to the partnership Steering Committee between 2013 and 2019; 2) field notes taken at meetings of the Steering Committee and Core Team; and 3) review of partnership documents such as meeting minutes and grant proposals. On the following page, Table 5 lists each intermediate measure of equity collected from each of these sources, specific indicators that were be used to assess each metric, and respective sources of data used to evaluate each. Specific data collection and analyses are described in detail below.

Steering Committee Questionnaire. The CAPHE evaluator, in consultation with the Steering Committee, developed a questionnaire containing closed- and open-ended items designed to assess multiple dimensions of partnership effectiveness in 2015. Development of the questionnaire was guided by prior conceptual models and evaluation questionnaires developed for evaluating CBPR partnerships (Israel et al., 2013; Schulz et al., 2003; Schulz et al., 2017), including group dynamics characteristics (power and conflict, shared leadership and decision-making, trust and mutual respect, organization and structure of meetings), and intermed

Table 4: Equity Evaluation Metrics and Data Collection

Intermediate Measures of Partnership Effectiveness and Equity			
Equity Dimension	**Metric**	**Example Indicators**	**Data Collection Methods**
Focus on equity within partnership processes	1a. Issues analyzed were community-identified and relevant	Processes, analyses, and activities: • Are informed by community facing inequity • Have community support • Are informed by power, political, and historical context of the health problem	Project Documentation: Grant Proposals Meeting minutes Field Notes
	1b. Response to community concerns in action strategies and recommendations are generated by the partnership	Processes or criteria used to develop recommendations and mitigation strategies Incorporation of community input or concerns in recommendations or mitigation strategies	Steering Committee Questionnaire Project Documentation: Meeting minutes Field Notes
	1c. Use of community knowledge and experience as evidence in analyzing equity impacts	Incorporation of community input in analyses of health impacts Validation and incorporation of alternative knowledge epistemologies	Project Documentation Grant Proposals Meeting Minutes Field Notes
Focus on addressing health equity	2a. Focus on equity in partnership goals, research questions, and methods	Processes or criteria used to formulate partnership goals, research questions and methods Extent to which issues of equity are considered in the development and implementation of partnership processes and research projects	Steering Committee Questionnaire Project Documentation Grant proposals Meeting Minutes
	2b. Analysis of the distribution of health and equity impacts across the population	Assessment of disproportionate or cumulative impacts on communities facing inequities in research projects and analyses	Project Documentation: Meeting Minutes Grant Proposals

Capacity and ability of communities facing health inequities to engage in future partnerships and decision-making	3a. Knowledge and awareness of decision-making processes	Leadership or advocacy training programs for community members Community member understanding of policy advocacy and change tools, environmental health literacy	Project Documentation: Training materials for adult and youth capacity building programs Meeting minutes Field Notes
	3b. Capacity to influence decision-making processes, including the ability to plan, organize, fundraise, and take action within the decision-making context.	Opportunities for community member or community partner participation and leadership Training programs for community members Community partners serving as fiduciary agents for grants Community partner perceptions of their "seat" at the decision-making table	Project Documentation: Training materials for youth and adult capacity building programs Field Notes
Shift in power benefitting communities facing inequities	4a. Community influence over decisions, policies, partnerships, and institutions that affect health	Community partner perceptions of influence in decision-making spaces Community-driven processes and decision-making in partnership and community	Steering Committee Questionnaire Project Documentation: Mini grant guidelines and selection criteria Selected mini grant proposals, reports/impacts Field Notes
	4b. Transparency, inclusiveness, and collaboration with the community on the part of government and institutions	Public or corporate policy changes that reflect equity Extent to which environmental health decision-making is informed by science, social justice perspectives, and local residents Contact, meetings, and follow-up with policy-makers	Project Documentation: Meetings and correspondence with decision-makers Field Notes

measures of partnership effectiveness and equity (e.g., capacity building, community involvement in partnership activities, raising awareness about adverse health effects among various actors, community engagement in action strategies, personal and organizational benefits of participation). The questionnaire was administered online using the Qualtrics survey software by the partnership Evaluator and Program Manager in 2015, and by the Program Manager in 2017 and 2018. In this study, I analyze a subset of items from the questionnaire in order to evaluate equity promotion, as described below.

Closed-Ended Questionnaire Items. Eight closed-ended questionnaire items are used to assess equity promotion within the partnership. These items reflect select intermediate measures of equity defined in the conceptual framework in Figure 4-1 (Ward et al., 2018). These items were added to the 2017 and 2018 iterations of the questionnaire, based on continuing dialogue among the Steering Committee members about equity promotion following the administration of the 2015 survey. All items were administered using a five-point Likert scale (Strongly Agree, Agree, Neither Agree or Disagree, Disagree, Strongly Disagree). The added items reflect measures within Themes 1, 2, and 3. To assess Theme 1 (a focus on addressing equity), the following items were added to the questionnaire: 1) "CAPHE's activities aim to benefit communities facing heightened health risk;" 2) "CAPHE partnership goals reflect a focus on health equity," and 3) "CAPHE has clearly communicated how its actions will address air quality and health inequities in Detroit." To assess Theme 2 (a focus on equity in partnership processes), the following item was added: "CAPHE's activities are informed by representatives from communities facing heightened health risk." To assess Theme 3 (capacity and ability of communities facing inequities to engage in future partnerships and decision-making), the following items were added: 1) "CAPHE has been effective in sharing information within

Detroit about strategies to reduce adverse health effects;" and 2) "CAPHE has been effective in engaging community members around strategies to reduce air pollution and its adverse health effects."

Open-Ended Questionnaire Items. Several open-ended items are used to assess partner perceptions of the partnership's work together. Six open-ended items are analyzed for this study: "What recommendations do you have for how to strengthen our partnership?", "What was your motivation for joining CAPHE?", "What do you think CAPHE will accomplish in the coming year?", "What recommendations do you have for how to strengthen CAPHE's work in Detroit?", "What suggestions do you have to facilitate CAPHE's efforts to improve air quality in Detroit?", and "Are there any other comments you wish to share?" These items were included in all three iterations of the partnership questionnaire and were reviewed for content related to to the four equity dimensions assessed in this analysis. Relevant content was included in the analysis reported in this chapter.

Project Documentation. I reviewed documents produced at various stages of the partnership from multiple sources. Project documents include: the initial grant proposal and strategy for the CAPHE partnership, subsequent grant proposals developed for various initiatives throughout the partnership, research dissemination guidelines, documentation of the Public Health Action Plan development and progress on prioritized action strategies, and minutes taken at meetings of the Core Team and Steering Committee by the partnership Program Manager.

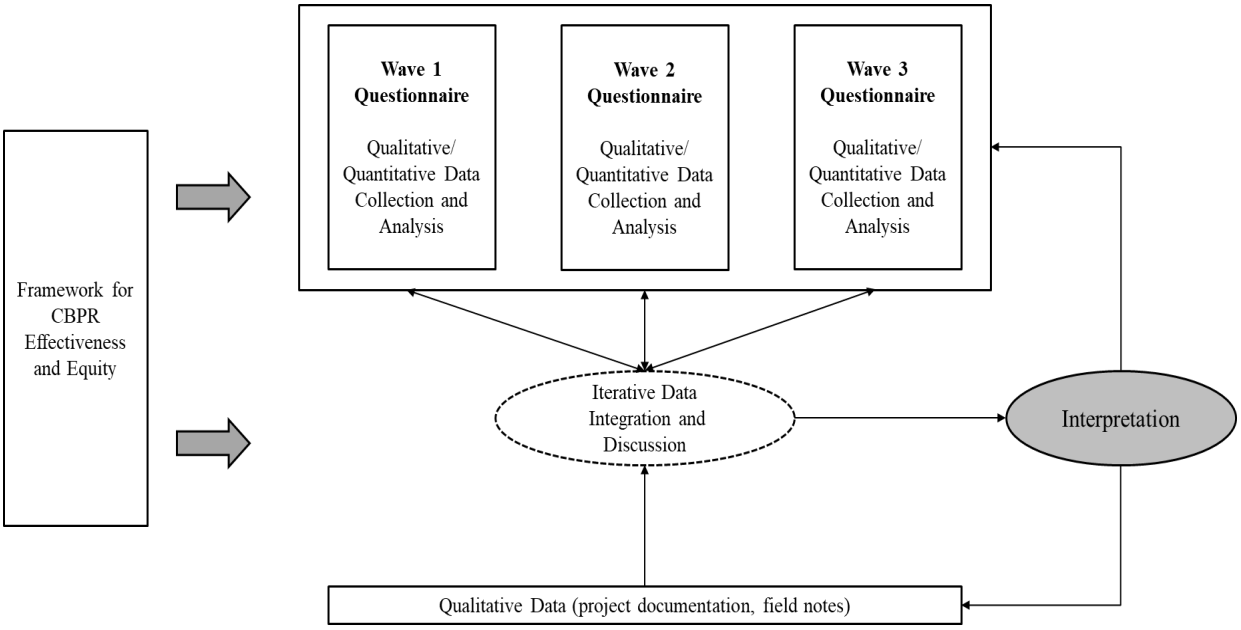
Field Notes. Field notes were taken by me to capture group discussions at Steering Committee and Core Team meetings, including partnership discussions of evaluation findings. Field notes are verbatim when possible and taken with the goal of capturing the essence of group discussions. Following each wave of survey data collection, the Steering Committee and Core

Team met to review and discuss findings and develop mutually-identified strategies to improve partnership activities (e.g., group processes, training programs, community engagement strategies), efforts to promote equity, and other partnership outcomes. Field notes were used to record the process of evaluating partnership findings in relation to equity promotion and specific action strategies emerging from these processes, and to document recommendations and discussion related to issues identified in the context of the formative evaluation. Names and other identifying information were not recorded in field notes.

Mixed Methods Study Design

As shown in Figure 4, a mixed method approach was taken to analyze and integrate quantitative and qualitative data from three waves of the Steering Committee questionnaire and project documentation. The analysis was guided by the conceptual framework for equity promotion in CBPR partnerships (Ward et al., 2018). This design is informed by a convergent parallel approach to quanitative and quantitative data integration, as well as formative evaluation processes. In convergent parallel designs, quantitative and qualitative data are collected and analyzed concurrently, and the results are merged during the interpretation phase in order to compare or relate the findings (Watkins & Gioia, 2015). Namely, this approach allows for the researcher to corroborate results from different methods to develop a more comprehensive understanding of both the quantitative and the qualitative data (Creswell & Plano Clark, 2011; Watkins & Gioia, 2015). This analysis is also driven by the framework for partnership effectiveness and equity (Figure 4-1), which has been used to inform data collection and analysis activities (e.g., questionnaire items, discussion questions, document analysis) and data interpretation.

Figure 4-3: Mixed Methods Research Design for Evaluating Equity Promotion within the CAPHE Partnership



As indicated in Figure 4, qualitative and quantitative data were collected concurrently at three time points through the Steering Committee questionnaire, and throughout the length of the partnership through project documentation and field notes. Following the administration of each wave of the questionnaire, quantitative and qualitative findings were integrated, analyzed, and presented to steering committee members for discussion and feedback, in accordance with a formative evaluation approach. As indicated by the reciprocal arrows in Figure 4, feedback and recommendations from these discussions had the potential to inform relevant changes to the questionnaire items, administration, or interpretation. These discussions ultimately informed the interpretation of evaluation results with respect to equity promotion. Finally, the relationships in Figure 4 also suggest that, in accordance with both formative evaluation and transformative or change-oriented approaches, the interpretation of evaluation findings may further influence ongoing evaluation processes, including changes in the collection and analysis of data (e.g., changes to existing measurement items, the addition of new items or procedures).

Data Analysis. Frequency distributions were calculated for the closed-ended questionnaire items from the 2015, 2017, and 2018 waves of the Steering Committee Questionnaire. To analyze qualitative data (open-ended questionnaire items, field notes, and project documentation), I used a deductive coding approach (Miles, Huberman, & Saldana, 2014) guided by the specific metrics within the intermediate measures of equity promotion developed in the conceptual framework by Ward and colleagues (2018). I used a provisional coding method to analyze these data, deriving initial codes based on the framework. As Saldana (2016) notes, provisional coding calls for an a priori set of codes that can be developed from anticipated categories based on prior literature or empirical studies, including conceptual frameworks, research questions, and researcher hypotheses (Saldana, 2016). A priori codes and code categories organized into a codebook constitute a "start list" that can be revised, deleted, or expanded as the data is collected, coded, and analyzed (Miles, Huberman, & Saldana, 2014). This coding method is thus appropriate for building on or corroborating previous research (Miles, Huberman, & Saldana, 2014). I developed an initial codebook by sorting codes within themes reflecting the four intermediate measures of equity promotion described in the conceptual framework: 1) a focus on addressing equity; 2) a focus on equity in partnership processes; 3) capacity and ability of communities facing inequities to engage in future partnerships and decision-making; and 4) shift in power benefitting communities facing inequities. Within these themes, codes were sorted into categories representing individual metrics for each theme (e.g., issues analyzed are community-identified and relevant).

Deductive Coding Process. Using the initial codebook, I analyzed data from open-ended questionnaire items and field notes using the derived codes to sort and label data segments. Throughout this process, I reviewed coded extracts for each category to determine whether they

form coherent patterns and reflect the meanings of the initial codes. The provisional coding process (Miles, Huberman, & Saldana, 2014) allowed for me to create new codes or code categories representing those not currently defined in the framework, or make modifications to a priori codes, as needed. These potential measures included: splitting and redefining codes into which a large number of data segments were sorted; developing sub-codes; redefining or combining codes or code categories if little data are sorted within them; and identifying new codes emerging from the data that are related to equity (based on prior literature or responses in the data that represent concepts not identified in the literature), but that do not fit within pre-defined codes.

Data segments were ultimately coded across all four intermediate measures of partnership effectiveness and equity, and seven of the nine constructs defined within those dimensions. In the following sections, I report and analyze synthesized findings pertaining to each of the evaluation constructs within the four dimensions of equity.

Results

Findings from the analysis of qualitative and quantitative data sources are discussed below. Frequency distributions for the closed-ended questionnaire items related to the equity dimensions from the 2015, 2017, and 2018 waves of the Steering Committee Questionnaire are shown in Table 5. Results for individual survey items are discussed in the following sections, as they pertain to each dimension of equity.

Theme 1: Focus on addressing health equity

The CAPHE partnership exhibited a focus on addressing health equity in its overarching goals regarding air quality and health outcomes in Detroit. As described in the sections below, data from project documentation and the Steering Committee questionnaire provide data suggesting that the partnership was focused on equity in its goals, research questions, and methods, and analyzed health outcomes and their determinants in ways that reflect a focus on equity.

A focus on equity in partnership goals, research questions, and methods. Language from grant proposals initially funding CAPHE's work reflect a substantial focus on equity in the partnership's goals and research activities. As depicted in the quotes below, partners describe and emphasize proposed efforts to promote equitable health and social outcomes in the city of Detroit and neighboring communities. For example, proposed research and action are focused on, specific goals related to Theme 5 (contributions to reduced health disparities), such as "reducing adverse health effects for vulnerable populations," and promoting "environmental health equity and social justice," as well as Theme 4 (shift in power): "strengthening community engagement and power in decisions that affect the environment and health." Strategies also reflect intentions to build the capacity of communities facing inequities and community-based organizations to engage in research and action, and to empower those communities within decision-making contexts, which relates to Theme 3 (capacity of communities facing inequities) . Research proposed and ultimately conducted (discussed further in the next section) by the partnership reflects a significant focus on social conditions and health outcomes for communities of color and low-income communities. This work has focused on the role of economic divestment, poverty, and other social and economic vulnerabilities in shaping disparities in exposures and health outcomes due to air pollution, in addition to potential strategies to improve

those outcomes, with the aim of building on research that had been conducted by the earlier partnerships. For example, recognizing that "exposure to fine particulate matter may disproportionately affect urban communities with larger numbers of vulnerable residents" (Schulz et al., 2018, p. 1209), partners conducted research to estimate "the health benefits of reductions in [particulate matter] across census tracts in the Detroit metropolitan area with varying levels of population vulnerability" (Schulz et al., 2018, p. 1209). Partners assessed factors such as racial composition, education level, linguistic isolation, and household income at the census tract level (Schulz et al., 2018).

Steering Committee questionnaire findings across Waves 2 and 3 suggest that partners generally perceived that CAPHE's goals reflected a focus on equity. As shown in Table 5, 17 (100%) of partners either agreed or strongly agreed that CAPHE partnership goals reflect a focus on health equity in Wave 2 of the questionnaire (when equity-focused questionnaire items were first introduced). In the Wave 3 questionnaire, 1 (8%) partner indicated that they neither agreed nor disagreed, while the remaining 12 partners (92%) indicated that they either agreed or strongly agreed. Likewise, when asked to indicate the extent to which they agreed or disagreed that CAPHE's activities aimed to benefit communities facing inequities, 15 (88%) of participants either agreed or strongly agreed, in Wave 2, while 2 (12%) neither agreed nor disagreed. In Wave 3, 100% of participants either agreed or strongly agreed. Finally, 13 (76%) partners either

Table 5: Perceptions of Equity Promotion Outcomes Among Community Action to Promote Healthy Environments Steering Committee Members, Waves 1 – 3

	Wave 1 (n=18)			Wave 2 (n=17)			Wave 3 (n=13)		
Questionnaire Item	**Disagree /Strongly Disagree**	**Neither Agree nor Disagree**	**Agree/ Strongly Agree**	**Disagree /Strongly Disagree**	**Neither Agree nor Disagree**	**Agree/ Strongly Agree**	**Disagree /Strongly Disagree**	**Neither Agree nor Disagree**	**Agree/ Strongly Agree**
CAPHE partnership goals reflect a focus on equity.				0 (0%)	0 (0%)	17 (100%)	0 (0%)	1 (8%)	12 (92%)
CAPHE's activities aim to benefit communities facing heightened health risk.				0 (0%)	2 (12%)	15 (88%)	0 (0%)	0 (0%)	13 (100%)
CAPHE has clearly communicated how its actions will address air quality and health inequities in Detroit				0 (0%)	4 (24%)	13 (76%)	0 (0%)	1 (8%)	12 (92%)
CAPHE's activities are informed by representatives from communities facing heightened health risk.				0 (0%)	2 (12%)	15 (88%)	0 (0%)	0 (0%)	13 (100%)

CAPHE has been effective in sharing information within Detroit about strategies to reduce adverse health effects				3 (18%)	4 (24%)	10 (59%)	1 (8%)	2 (15%)	10 (77%)
CAPHE has been effective in engaging community members around strategies to reduce air pollution and its adverse health effects.	3 (17%)	9 (50%)	6 (33%)	1 (6%)	5 (31%)	10 (63%)	0 (0%)	4 (31%)	9 (69%)
CAPHE has been effective in engaging community leaders around strategies to reduce air pollution and its adverse health effects.	2 (11%)	5 (28%)	11 (61%)	0 (0%)	5 (31%)	11 (69%)	0 (0%)	2 (15%)	11 (85%)

agreed or strongly agreed that CAPHE has clearly communicated how its actions will address air quality and health inequities in Detroit during Wave 2, while 4 (24%) of participants indicated that they neither agreed nor disagreed. In Wave 3, 12 (92%) of participants indicated that they either agreed or disagreed, while 1 (8%) participant neither agreed nor disagreed.

While the sample size of responses to closed-ended items is insufficient to assess meaningful trends in agreement, responses to open-ended questionnaire items from each of the three waves provide context for these quantitative findings. Data from open-ended items suggest that partners themselves share a focus on improving health equity in Detroit. In Wave 1, when asked what they hope the partnership will accomplish in the next year, one partner responded, "I hope that CAPHE will summarize Detroit-specific risk assessment literature for sources of air pollution associated with impacting children's health. (For example, what is the increased risk of having an asthma exacerbation for children in Detroit that live near high traffic, major roadways?)." Another reported, "collect the necessary data that will assist health officials, experts, academia to address the serious conditions that many people of color are burdened with as it relates to their health and quality of life." Across all three waves of the questionnaire, partners expressed similar interests when asked about their motivation for joining CAPHE, including: "air quality issues and ways to mitigate the health/environmental impacts unique to Southwest Detroit," and, "to address air quality issues in Detroit and promote public health and health equity."

As the Public Health Action Plan (PHAP) was developed, more specific action strategies were proposed that reflect a focus on health equity in partnership goals. PHAP recommendations included explicit language that signaled the partnership's focus on equity. Examples included:

"require quantitative and qualitative health impact assessments and equity assessments when developing air quality management strategies" (CAPHE, 2017 p. 36); "increase public engagement with air quality monitoring activities," (CAPHE, 2017, p. 11 and creating dissemination materials that distill information and research conducted by the partnership specifically for community audiences. Subsequent to the release of the PHAP, responses to subsequent open-ended questionnaire items reflected a desire to begin or continue implementing strategies included in the action plan and engaging relevant communities and organizations not currently engaged in the work, as discussed further in the sections to follow.

Analysis of the distribution of health and equity impacts across the population. The CAPHE partnership prioritized the analysis of disparities in health outcomes and the social determinants of health related to air pollution in Detroit, as evidenced in project grant proposals, group discussions, and documentation of research produced by the partnership. Partners conducted several studies focused on (in)equity to inform the development of the Public Health Action Plan. These included: mapping and quantifying the distribution of population vulnerabilities to the adverse effects of pollutant exposures across the Detroit Metropolitan Area (Schulz et al., 2016); quantifying the health benefits of pollution mitigate strategies such as enhanced air filters in schools (Martenies & Batterman, 2018), calculating inequalities in the distribution of health risk associated with air pollution (Schulz et al., 2016) and estimating the contributions of socioeconomic and physical environmental exposures (e.g., race-based residential segregation, poverty, pollution exposure) to health outcomes (Schulz et al., 2018).

Analyses related to equity were also conducted during the implementation phase of the public health action plan. For example, partners conducted a health impact assessment of potential health outcomes associated with the Gordie Howe International Bridge Crossing, an

effort to build a border crossing between Detroit and Windsor, Ontario (Sampson et al., 2020). The goal of the assessment was to address the concerns of the southwest Detroit residents who live near the construction site, document air quality and health conditions over time, and identify strategies to reduce adverse health impacts to residents associated with the bridge project. The HIA resulted in a report specifying recommendations to address community concerns and reduce adverse outcomes (http://bit.ly/BaselineHIA).

Overall, the focus on equity in the partnership's goals and research agenda reflects the focus on equity embedded in CBPR principles and efforts to promote equitable group dynamics characteristics described in the literature on CBPR practice and evaluation (Israel et al., 1998; Schulz et al., 2003; 2013). As shown in Figure 4-1, equitable group dynamics characteristics help to shape intermediate measures of partnership effectiveness and equity, such as those described here. Language from project documentation particularly highlights the manifestation of this focus across partnership goals and activities (such as a commitment to strengthening engagement and capacity of communities facing inequities and studying health outcomes associated with population vulnerability). In keeping with this relationship described in the conceptual framework, the CAPHE partnership's grounding in CBPR principles (e.g., using an ecological approach that attends to multiple determinants of health and disease) (Israel et al., 1998), and characteristics of effective groups (e.g., shared leadership and power, participatory decision-making) (Schulz et al., 2003) may contribute to the extent to which equity is an explicit focus of the partnership's efforts.

Theme 2: Focus on equity in partnership processes

Described further in the sections below**,** data from project documentation highlight the ways in which CAPHE: 1) focused on analyzing issues that were identified by and relevant to

community partners and communities facing inequities, and 2) was responsive to community concerns in its action strategies and recommendations. The formative evaluation process appears to have facilitated the analysis of issues that are relevant to community partners over the life of the partnership, as well as the development of action strategies and recommendations that are responsive to community concerns.

Issues analyzed are community-identified and relevant. Data capturing several aspects of CAPHE's partnership processes suggest that the partnership focused on analyzing issues that were identified by and relevant to communities facing inequities. First, language from grant proposals developed throughout the process generally reflect an ongoing emphasis on issues of community concern. Second, discussions of partnership evaluation findings also aided partners in identifying and analyzing community-relevant issues.

Grant proposals focus on community concerns. CAPHE project aims reflect a focus on analyzing issues that are identified by and relevant to Detroit communities adversely impacted by environmental health exposures. As CAPHE began as a collaboration between three long-standing CBPR partnerships focused on interrelated health issues, its focus on air pollution exposure and its health impacts in Detroit is responsive to ongoing community concern about the issue, as suggested in its initial grant proposal:

> These exposures and their concomitant health effects have long been a concern among Detroit residents, who disproportionately experience many adverse health effects. Air pollution continues to be identified as one of the top public health priorities by Detroit community members and community-based organizations (CAPHE, pg. 1).

Detroit community partners engaged with the partnerships that preceded CAPHE identified environmental determinants of health outcomes such as asthma and cardiovascular disease as public health priorities, as indicated in partnership grant proposals. CAPHE's initial grant proposal also expands on the relevance of air pollution and health issues to Detroit

communities, providing evidence of Detroit's historically "high levels of industrial emissions, which include numerous volatile, very volatile, and semivolatile organic compounds…Many of these pollutants are classified as air toxics and several as carcinogens" (CAPHE pg. 2). Justification for analyzing air pollution and health provided in the grant proposal has centered on the social and economic contexts that exacerbate air quality-related health outcomes that concern various communities, such as: "Detroit's minimal public transportation infrastructure" which has led to "heavy reliance on private vehicles" and high traffic volumes; the high prevalence of asthma among communities "who are medically underserved and [rely] on emergency departments for asthma care;" and disproportionately high rates of cardiovascular disease among low-income residents.

A subsequent proposal, developed and led by a community-based organization to support work to implement recommendations in the PHAP, further highlights prioritization of air quality and health issues to communities within Detroit. The organization emphasizes its earlier work to identify priority issues among community leaders and organizations with whom it partners, noting that "priorities identified…include a focus on youth, community engagement, health and environmental justice." (CAPHE, pg. 1). It is also noted that air pollution has been a "community-identified priority" that also informs the work of other community-based organizations participating in CAPHE. Qualitative data from partnership grant proposals, such as that presented here, provide evidence suggesting that CAPHE's work is motivated in part by priorities and concerns of communities facing inequities within Detroit.

Formative Evaluation Process. Aspects of the formative evaluation process, including discussions of evaluation findings with respect to equity, helped to provide further information about issues of relevance to communities engaged with CAPHE's work. When asked about

suggestions for improving health equity promotion as part of the formative evaluation process, partners' responses reflected concerns about how various social determinants of health impacted the health outcomes CAPHE addresses. One partner emphasized, "People need to have an opportunity to be healthy," citing internet access as a barrier to raising awareness of some Detroit community members about CAPHE's work on air quality and health. It was suggested that partners print its dissemination materials, such as pollutant fact sheets, and place them in locations such as libraries for those without internet access. Partners also discussed the importance of addressing "cultural barriers around discussing asthma management with Hispanic families" stemming from "stigma associated with asthma." In relation to this concern, partners expressed the need to consider "religious and cultural differences in how we communicate our messages." Partners also expressed the importance of further examining "the role of racial segregation in Detroit versus national contexts," in air pollution and health issues. Subsequent research conducted by the partnership did examine the independent and joint associations of racial segregation, poverty, education, air pollution concentration, and other factors with mortality from all causes in the Detroit metropolitan area (Schulz et al., 2020). Materials disseminated to raise awareness of the PHAP included both print and online materials, and were translated into other languages (Arabic, Spanish). The stigma associated with asthma management and cultural barriers to communication have not been addressed, in part due to the partnership's focus on policy change around air quality and health

The topics raised in discussions of evaluation findings represent issues of relevance to low-income communities and communities of color within Detroit whom community partners within CAPHE represent. The discussion within the formative evaluation process helped to provide more detailed information about issues relevant to communities facing inequities in

Detroit, which may not have been identified explicitly through summative or impact evaluation approaches alone.

Similar to findings for Theme 1, findings related to this theme strongly align with principles of CBPR and equity promotion, and represent potential outcomes that are facilitated by equitable group dynamics characteristics and adherence to CBPR principles. Findings also resonate with equity promotion principles defined by Braveman and colleagues (2017), who acknowledge that promoting equity requires meaningfully engaging communities facing inequities in the identification, design, implementation, and evaluation of health promotion efforts. That data from the CAPHE partnership indicates that the issues it addresses are identified by communities and community partners suggests that communities have been engaged in identifying these issues.

Response to community concerns in action strategies and recommendations generated by the partnership. The partnership's actions and recommendations were largely responsive to the concerns of community partners and communities engaged with CAPHE, which were identified at various stages of the partnership's work. The degree to which CAPHE was responsive to these concerns is suggested by data related to: 1) the stages and outputs generated through the public health action plan development process, 2) the partnership's response to emergent events and concerns related to air quality and health in Detroit, and 3) the partnership's response to issues raised during the formative evaluation process.

First, CAPHE implemented a community engaged process for developing the public health action plan, including a series of open meetings with members of community-based organizations in order to develop recommendations that reflect community concerns and priorities. Specifically, members of the Steering Committee worked to: develop criteria to

evaluate potential strategies to include in the plan; assess the evidence base on the health impacts, feasibility, and appropriateness of potential strategies, draft an outreach plan in order to obtain input from Detroit community-based organizations to inform the plan, and draft an implementation strategy in order to coordinate efforts to implement strategies in the plan. As a result of this process, the partnership was able to recommend and implement strategies that were responsive to community concerns, and to specify how selected strategies should be implemented, with attention to existing strengths, capacities and ongoing efforts to address air pollution by Detroit communities and community-based organizations.

Second, members of the partnership were responsive to emergent events, issues, and opportunities with respect to air pollution and health in the Detroit Metropolitan Area, and acted collectively to address them. For example, members of the partnership have submitted comments in response to proposed rules and regulations related to: the availability of scientific information in environmental regulatory decision-making, rules for vehicle fuel economy and carbon dioxide standards, and proposed permits to install emission units that might increase air pollution concentrations in Detroit. Recommendations stemming from the health impact assessment report conducted by members of the partnership on the impacts of the Gordie Howe Bridge project (described above) reflected community residents' concerns based on their proximity to the construction site.

Third, through the partnership's formative evaluation process, concerns introduced through survey findings and discussions of evaluation results led to distinct recommendations and actions to address those concerns. For example, in Waves 1 and 2 of the Steering Committee questionnaire, 17% and 6 % of respondents, respectively, disagreed or strongly disagreed that CAPHE had been effective in engaging community members and community leaders around

strategies to reduce air pollution. Responses to open-ended questionnaire items also reflected these concerns and highlighted strategies for increasing engagement, which are described in more detail in the following sections. As the PHAP was released in 2017 after the Wave 2 questionnaire was administered, and before partners began implementing recommendations in the PHAP, partners' responses conveyed readiness to implement the recommendations, and to engage the relevant individuals, organizations, and policymakers in order to do so. In response to this issue and one of the public health action plan recommendations which called for a community outreach and engagement strategy around prioritized mitigation strategies, partners developed a Community Engagement Subcommittee. Members of the committee convened to "discuss, create, and review a community outreach and engagement strategy for the prioritized recommendations of CAPHE." This committee identified high-priority groups, organizations, and individuals to engage in CAPHE's work, based on feedback from partners.

The formative evaluation process facilitated collective thought among partners about the needs and concerns of communities and community partners, which evolved as the partnership continued and expanded their work. The ability to address emergent concerns is consistent with the cyclical model of the core phases of CBPR developed by Israel, Eng, Schulz, and Parker (2013). This model suggests that CBPR partnership stages (e.g., conducting research, disseminating research findings, partnership evaluation) should be implemented in an iterative process, and some efforts, such as partnership evaluation, are conducted concurrently with others (Israel et al., 2013). As the partnership feeds back and interprets evaluation findings among all partners, those efforts may simultaneously serve to strengthen existing efforts to maintain and sustain the partnership, and to inform the identification of priority concerns and research questions among partners, among other stages in the model (Israel et al., 2013).

Use of community knowledge and experience in analyzing equity impacts. To a more limited degree, data from project documentation and evaluation questionnaire items provide evidence that community knowledge and experiences inform the analysis and interpretation of equity-related research projects, and that community partner knowledge and expertise are validated throughout research and partnership processes. Upon formation, partners acknowledge the expertise that all partners, including members of community-based organizations, bring to CAPHE, based on their long-standing efforts on issues related to air quality prior to CAPHE's formation. For example, partners acknowledge that community partner organizations bring: "substantial experience in addressing environmental health, land use, and public health concerns through their respective [community-based organizations] and through collaborations with each other (CAPHE, pg. 4). One partner indicated on the Steering Committee questionnaire that CAPHE's work, "is based on expert and local knowledge of problems and solutions." In addition, language used in grant proposals recognizes the experience and expertise of both community and academic partners as valuable to research and project goals:

> The continued engagement of these experienced community and academic partners in integrating and interpreting the scientific evidence offers a unique opportunity to advance the development and implementation of an integrated, multilevel public health action plan. Fourth, the engaged community and academic partners bring a unique combination of community connections and history, collaborative experience, policy advocacy training expertise, and scientific and technical knowledge that offer exceptional opportunities to convey current knowledge and expert opinion to the public and decision-makers (CAPHE, pg. 6).

Specific partnership activities also reflected that community knowledge and experience were validated. For example, the partnership implemented an engagement process focused on obtaining input and perspectives from community members and organizations in order to inform the development of the public health action plan. In addition, community partners made contributions to research projects focused on the analysis of health disparities related to air

pollution discussed above. While these activities suggest that community partner knowledge and expertise was acknowledged and incorporated throughout partnership efforts, further analysis is necessary. Future evaluation studies of the partnership might examine more deeply the explicit ways that partners acknowledged, validated, and incorporated alternative knowledge epistemologies, if any, and conceptualizations of issues that impact communities facing inequities. Specifically, further analysis should explicitly assess perceptions among community, in addition to academic, partners that such processes have occurred.

Theme 3: Capacity and ability of communities facing inequities to engage in future partnerships and decision-making

The CAPHE partnership aims to strengthen and support the capacity of community and academic partners to engage in and influence decision-making and action around air pollution and health. As explained in Chapter 3, this dimension of equity refers to the extent to which communities facing inequities have or enhance capacities spanning two categories: 1) knowledge and awareness of decision-making processes; and 2) the ability, opportunity, or invitation to participate in or lead decision-making processes within partnerships and in community or policy arenas. As the forms of capacity analyzed pertaining to category 1 (knowledge) overlapped substantially with those analyzed within category 2 (ability, skills), the categories were ultimately combined. Data related to knowledge and awareness of decision-making processes are were analyzed as a sub-category in the following section.

Capacity to influence decision-making processes, including the ability to plan, organize, fundraise, and take action within the decision-making context. In addition to the efforts described above, broader capacity building of community-based organizations and

community members has been a central aim of the CAPHE partnership. CAPHE's project aims also included enhancing the capacity of "the community, academic and practice partners engaged in CAPHE to work effectively together, and to conduct, understand and communicate effectively about the science of air pollution and human health," and the capacity of "the engaged community-academic partnerships to promote environmental health literacy, knowledge and understanding of linkages between exposure to air pollution and health outcomes among community members, urban planners, business leaders, and public health and other decision makers." Partners' efforts to meet these aims were categorized into the following areas: 1) knowledge and awareness of decision-making processes; and 2) enhancing the capacity of communities and community-based organizations to plan, organize, fundraise, and take action on air quality issues; and 2) opportunities for engaging communities in partnership planning, organizing, and action strategies.

Knowledge and awareness of decision-making processes. CAPHE's efforts served to enhance knowledge and awareness among partners and communities engaged with CAPHE in three ways: 1) formal programs and trainings for various audiences; and 2) dissemination materials stemming from the PHAP. CAPHE implemented programs aimed specifically at improving knowledge and awareness of decision-making processes that shape health outcomes related to air quality and health. First, partners conducted trainings designed to enhance knowledge and awareness of decision-making processes related to air quality, including policy advocacy trainings designed for youth and adults. Trainings focused on teaching participants about policy, policymaking processes, and mobilization of power for communities and organizations to advocate for policy change related to air pollution. In addition to policy advocacy, youth capacity-building trainings also emphasized topics such as environmental

racism in Detroit, historical environmental crises, non-profit environmental justice organizations, natural resource management, and the relationship between air quality and health outcomes such as asthma. More informally, partners co-created and raised awareness of existing opportunities for all partners to influence decisions impacting air quality and health in the Detroit Metropolitan Area, helping partners to build skills related to influencing those decisions. For example, partners disseminated information about opportunities to make comments on proposed rules related to air quality and environmental health regulations, and co-presented at public meetings related to decisions about proposed regulations.

Second, the dissemination materials that partners developed for community audiences also have the potential to improve health literacy related to air quality, health, and policy. Building on the existing evidence base pertaining to air quality and health, one of CAPHE's early activities was to develop a Public Health Action Planning Resource Manual providing information to inform the development of the public health action plan. The plan ultimately included the objective to create new materials that distill information from the resource manual into dissemination materials for community and policy audiences. For example, partners developed a toolkit providing information on the use of vegetative buffers to mitigate the health effects of air pollution in Detroit, as well as informational cards providing information on districts in Detroit (such as the population; city council members and district managers; and statistics related to tree cover, vulnerable populations, and cancer mortality risks) and specific strategies from the public health action plan that may be effective for that district. As specific changes in knowledge and awareness of decision-making processes were not assessed among partners or community members, a follow-up partnership evaluation study might further

investigate contributions of partnership efforts to partners' and community members' knowledge and awareness.

Enhancing the capacity of communities and community-based organizations to plan, organize, fundraise and take action on air quality issues. Partnership activities aimed to strengthen various capacities of communities and community-based organizations, both within the partnership itself and in Detroit communities more broadly. First, the CAPHE partnership's structure offered multiple opportunities to enhance the capacity of community partners, including opportunities for leadership and engagement in efforts such as grant-writing, research projects, the design and delivery of components of the public health action plan, and broader partnership decision-making. Specifically, based on CAPHE's jointly developed norms for working as a group and commitment to sharing opportunities among all partners, the Steering Committee made mutual decisions about: how to prioritize issues and actions; and how to organize meetings with Detroit communities engaging with CAPHE (e.g., location, time, information presented). The Steering Committee also jointly identified opportunities for collaborative funding and identified community partner organizations who would serve as the fiduciary agent.

With the intention of sharing power and formally recognizing the contributions of community partners to CAPHE's work, members of community partner organizations were also designated as co-investigators on grant proposals. Through these funding mechanisms, resources were allocated to staff members involved in the partnership, including funding and supplies necessary for those organizations to participate in the development of the science and lead the implementation of the public health action plan (e.g., youth training programs, translation of dissemination materials). CAPHE's operating principles and guidelines for research dissemination created further opportunities for community partners to participate in and lead

aspects of CAPHE's work. Guidelines for publishing academic papers, for example, called for peer-reviewed papers and conference presentations to be co-authored and co-presented jointly by community and academic partners who had been engaged in the work.

Second, the partnership implemented programs which aimed to increase the capacity of community-based organizations in Detroit and academic partners to engage collaboratively in efforts to address air pollution and health. Most notably, CAPHE implemented a mini-grant program to fund pilot projects for community-based organizations to implement recommendations put forward in the PHAP. This program aimed to enhance the existing capacities of community-based organizations to address air quality and health issues in Detroit by providing further resources to those organizations. Grant recipients ultimately used funds to: plant and promote the use of vegetative buffers to improve air quality, increase renewable energy usage (e.g., solar lighting) in Detroit, install indoor air filters in community locations, educate and conduct outreach communities about air quality and health, and other activities. The financial resources provided by the mini-grants often built on existing networks, knowledge, and leadership within Detroit communities and organizations. For example, funded projects sought to: "enhance the leadership of local community residents," and "build upon a common curriculum across neighborhoods communicating the same message."

In addition to funding the mini-grant program, the partnership also implemented components of the public health action plan that would enhance community capacity for action on air quality issues. For example, one aim of the public health action plan was to increase engagement in air quality monitoring activities. Objectives of this aim included monitoring and training workshops, including a "Train the Trainers Monitoring Workshop" for community and academic members of the Steering Committee to become trainers for a series of workshops for

community members. A community partner organization also conducted a monitoring workshop for youth focused on educating youth about pollutants such as particulate matter and methods of collecting data on air pollution concentration using sensors.

During the implementation phase of the PHAP (Wave 3) questionnaire responses pointed to further needs for capacity building for community-based organizations:

> Possibly all [community-based organizations] should be mailed the CAPHE tools. There is also a need for capacity development within these organizations. [CAPHE] probably can't do this, but this is an important need. CAPHE has, in its history, made a good start but change takes time.

Another partner spoke to the need for greater community outreach in addition to the capacity issues that community-based organizations might face in relation to achieving some of the partnership's objectives:

> More funding and more outreach components as it takes at least 6 visits for folks to finally understand what you are teaching. We need to be everywhere 6 times. Most community leaders have their own work to follow up with it is very difficult to do the follow up work necessary to change policy. This is getting done…incrementally.

Research proposals submitted for the continuation of CAPHE's work included plans for expanded community capacity building and engagement. These included, for example: translating and disseminating air quality information to enhance environmental health literacy among Detroit communities and policymakers, tailoring certain products to school administrators and including strategies for installing filers in schools. Other activities included specific programs to engage schools and youth-serving organizations in programs to improve health literacy among youth related to indoor and outdoor air pollutants. Partners also proposed the formation of a community-oriented monitoring network to improve public access to air quality

data to Detroit communities and organizations, and to build skills among community residents to collect and utilize air quality monitoring data.

The specific capacities addressed by the partnership align with those defined by Goodman and colleagues (1998) and many of those examined in CBPR evaluation literature (Cheezum et al., 2013; Coombe et al., 2017; Schulz et al., 2013) namely, equitable opportunities for participation and leadership in partnership activities, building skills related to policy and environmental health issues, resources via funding mechanisms, and the ability to influence decision-making within the partnership. Aspects of the partnership's operating principles and structure (e.g., requirement that community members are included in presentations and publications on the partnership's work, community members as co-investigators) helped to create opportunities for participation and leadership. This suggests that, as shown in the conceptual framework in Figure 4-1, structural and group dynamics characteristics of partnerships contribute in part to intermediate measures of partnership effectiveness and equity (Ward et al., 2018).

Opportunities for community engagement in planning, organizing, and action strategies. Data across the three waves of the Steering Committee questionnaire offer perspectives on further opportunities to engage individuals, groups, and organizations with CAPHE's work. In keeping with the definition of the broader construct, which refers to the ability, opportunity, or invitation to participate in or lead decision-making processes within partnerships and in broader settings, opportunities for community members and community partners to engage in CAPHE's work are critical to ensure the actualization of capacities (Freudenberg, 2004) to take action on health issues that impact them. Goodman and colleagues (1998) and Freudenberg (2004) define one dimension of capacity as community power (the ability to create or resist change). Freudenberg defines community power as a continuum of rights, including the right to be

informed, the right to sit at decision-making tables, and the right to frame issues and identify options (Freudenberg, 2004). The extent to which communities facing inequities have the opportunity or invitation to participate in a partnership's activities may influence their ability to sit within and influence decision-making processes, or more broadly, to create or resist change.

Findings from the Steering Committee questionnaire suggest that partners perceived the need for further opportunities for community members and organizations to become involved in CAPHE's work, particularly before the implementation of the PHAP. As shown in Table 5, partners were asked to rate the extent to which they agree that CAPHE has been effective in engaging community members and community leaders in programs and strategies to reduce air pollution and its adverse effects on health. In Wave 1 (2015), only 33% of respondents strongly agreed or agreed that CAPHE had effectively engaged community members. As CAPHE's work continued, including its community engagement efforts, the proportions who agreed with this statement increased to 63% and 69% in Waves 2 and 3, respectively. The percentage who strongly agreed or agreed that CAPHE had effectively engaged community leaders increased from 61% in Wave 1 to 69% and 85% in Waves 2 and 3, respectively, while 85% strongly agreed or agreed by Wave 3. Similarly, when asked to rate the extent to which they believe that CAPHE has been effective in sharing information within Detroit about strategies to reduce adverse health effects of air pollutants (asked in Waves 2 and 3 only), 59% strongly agreed or agreed in Wave 2, and 77% did so in Wave 3. The trend in these results over time suggest that in the partnership's initial stages of conducting research and developing the PHAP its prior to community engagement efforts, there was a desire among partners to engage community members, leaders, and organizations who were not yet participating in CAPHE's work. The relatively positive responses to items related to community engagement may represent

recognition of active or ongoing efforts to further engage community members as the partnership's work evolved.

Responses to open-ended questionnaire items help to contextualize these changes in the proportion of partners agreeing on these items. Particularly in earlier waves of data collection, partners discussed the desire to further engage communities and organizations with CAPHE's work, including groups who may not have typically been included in prior efforts. In Wave 1, for example, one partner explained the need to "involve people most affected by the problem (poor air quality) in the Steering Committee not just those who are representing organizations that work with people affected by the problem." This sentiment resonates strongly with CBPR and other participatory approaches to research; namely the recognition that participation of communities facing inequities in research and action is important to addressing health inequities (Israel et al., 1998). More broadly, it also resonates with the conceptualization of health equity by Braveman and colleagues (2017), who describe equity as a process which meaningfully engages those most impacted by social and health inequities in the identification, design, implementation, and evaluation of health promotion efforts.

Presentation of results from the questionnaire offered the Steering Committee the opportunity to discuss and identify potential strategies for expanding community engagement. In those discussions, partners shared suggestions for how the partnership might strengthen its efforts to engage community members, community leaders, and policymakers in CAPHE. Partners suggested strategies for engaging local schools (including teachers, principals, and superintendents), libraries, and other entities in implementing air pollution mitigation strategies. In partial response to these discussions, the partnership formed a Community Engagement Subcommittee, described previously, in order to identify and work with groups not yet involved

in CAPHE's work. Subsequent community engagement efforts included work with teachers and schools in the installation of air filters and community air quality monitoring training workshops discussed in the section above.

These findings suggest that partners perceived a need to involve members of communities facing inequities and community leaders who have not yet been engaged with CAPHE. In part, these findings resonate with other evaluation measures defined in the conceptual frameworks by Schulz and colleagues (2003; 2017), such as the extent of member involvement, and conceptualizations of capacity (a continuum of community power) by Freudenberg (2004), including the right to sit within decision-making spaces. Meaningful engagement of communities facing the greatest inequities in research and action on air pollution and health burdens shapes the ability and opportunity of communities facing inequities to engage in decision-making processes. The engagement discussed by partners reflects the underpinnings of the CBPR approach. In order to facilitate collaborative action and to empower communities to take action on health issues, it is critical to meaningfully engage communities facing inequities through opportunities for participation, leadership, and other dimensions of capacity (Suarez-Balcazar, 2020). However, further investigation is needed in order to understand the extent to which partners view the need for broader community engagement as an issue of equity within capacity building, as conceptualized in this study.

Theme 4: Shift in power benefitting communities facing inequities.

The remaining section describes the extent to which community members and community partners within CAPHE participated in or led processes, activities, and decision-making within the partnership and in broader settings. Data from project documentation, field notes, and questionnaires shed light on the extent to which community members were drivers of

those processes during the study period, and the extent to which government and institutions have been increasingly transparent, inclusive, or responsive with communities facing inequities. These areas related to shifts in power are discussed below.

Community influence over decisions, policies, partnerships, institutions, and systems that affect health. Community partners were able to exercise influence both within CAPHE activities and decision-making processes and in broader contexts in the community. The following section describe several ways in which community partners engaged in and influenced processes and decision-making within partnerships and in community settings.

Community-driven processes, activities, and decision-making. In keeping with CAPHE's operating principles and structure described in the sections above, community partners often co-led or co-facilitated meetings within the partnership, and co-presented at multiple conferences, workshops, and events featuring CAPHE's work. As part of the formative evaluation process, partners were asked about the ways that community members have meaningfully influenced decision-making within the partnership itself, and the ways that the partnership's work has incorporated communities in decision-making on air quality and health. Partners highlighted the community-engagement process used to develop the public health action plan recommendations as a process that allowed the draft recommendations to be vetted by all members of the Steering Committee, in addition to decisions about what individuals or groups to partner with to implement the recommendations. In addition to processes within partnerships, community partners also built on existing capacities and capacities built in the context of the partnership to take the lead on partnership efforts in the community. For example, one community partner organization developed and led the implementation of the youth air quality monitoring and environmental health literacy training programs described in earlier sections. The degree of

engagement and leadership on the part of community partners aligns with conceptualizations of Freudenberg (2004) and Minkler and colleagues (2008) who describe the acquisition and use of power as a behavioral manifestation, or activation, of community capacity. Active engagement and leadership based on existing capacities represents the actualization of a right, as Freudenberg (2004) to sit at decision-making tables and to make decisions.

Findings from partnership discussions of evaluation findings also suggest that community partners played a significant role in driving changes in specific decision-making processes. As described in the introduction to this chapter, the partnership initially established both a Core Team and a Steering Committee. The Core Team consisted of a smaller group of academic and community partners, who were also members of the Steering Committee, who acquired the initial funding for the partnership. This group was responsible for coordinating public health action plan implementation and research activities within the partnership, while the Steering Committee served as the central decision-making body. Discussions stemming from the evaluation questionnaire led to critiques of this initial structure as contributing to inequities in decision-making, as not all partners were involved to the same degree in making decisions within the partnership. Ultimately, partners made the mutual decision to create a more streamlined structure in which the Steering Committee was the sole decision-making body. In documented discussions, partners noted that a community partner was the "voice that contributed to that change." Community-driven partnership processes and decision-making can be considered an indicator of power dynamics that benefit communities facing inequities, as community driven processes often prioritize community concerns and contributions in ways that ensure that this input helps to shape or influence activities or research processes (Montoya & Kent, 2011). Doing

so may involve meaningful dialogue about power differentials (Montoya & Kent, 2011), which occurred in the partnership's decision-making regarding restructuring the partnership.

Government and institutions have been increasingly transparent, inclusive, or responsive with communities facing inequities. Members of the CAPHE partnership were often invited to participate within policy and other decision-making contexts, and CAPHE's work in part contributed to greater responsiveness of governments and institutions to communities facing inequities. As relatively few data segments were coded in relation to this measure in project documentation and field notes pertaining to the formative evaluation process, a select few are highlighted here.

Members of the CAPHE partnership met with policymakers in order to advance the recommendations prioritized in the PHAP, including city councilmembers and state representatives. Those meetings provided CAPHE members the opportunity to share priority issues and actions (e.g., filters, air quality monitoring, vegetative buffers) with policymakers, and discuss potential ways for partners to work with policymakers on mutually-identified priorities. CAPHE has developed efforts to collaborate with public schools (principles, superintendents, etc.) around the shared goal of installing and maintaining enhanced air filters in schools.

Most notably, CAPHE community partner organizations and researchers at the University of Michigan were contracted to conduct a Health Impact Assessment of the potential impact of the Gordie Howe Bridge Project on local residents, which specified numerous recommendations to enhance community benefits to protect against the health impacts of the project. Language from a recent publication describing the community-driven mobilization and implementation of the project sheds light on the degree to which the Detroit Health Department acted collaboratively and responsively with community-based organizations:

> "Strong relationships between academic and community partners who had been working together previously created space for the government agency to engage with community from a place of trust, at a time when the [Detroit Health Department] was rebuilding after Detroit's bankruptcy. By engaging…longtime partners, the [Health Impact Assessment] process built on existing community-initiated research…in rigorous, validated ways and existing community bodies…to ensure the methods and interpretation of findings were locally relevant" (Sampson et al., 2020).

These findings suggest that CAPHE's work contributed in part to opportunities policymakers and decision-making entities to engage more transparently and collaboratively with communities facing inequities and members of community-based organizations. The above quote may suggest that, as a result of the history of trust and equitable collaboration among community and academic partners, community perspectives were better able to drive and inform the design and implementation of the project. Further evaluation of the partnership should involve the collection of additional data (e.g., interviews, focus groups) to explore this example of CAPHE's role in facilitating responsiveness and collaboration on the part of governments and institutions with communities facing inequities, as well as others.

Discussion and Implications for Evaluating Equity in CBPR Partnerships

This study describes the methods and outcomes of a formative evaluation undertaken by a CBPR partnership, with a specific focus on its efforts to promote health equity across four dimensions defined in the framework by Ward and colleagues (2018). Findings from the formative evaluation suggest that the CAPHE partnership promoted equity in various ways, across the four intermediate measures of partnership effectiveness and equity. The formative evaluation process and mixed-method, multistage case study design were valuable in deriving and contextualizing perceptions of equity promotion across various constructs, and in facilitating the development of strategies to promote equity as partnership efforts unfolded. The following

sections describe implications for ongoing evaluation of the CAPHE partnership, the value of formative and mixed method evaluation approaches, and directions for future research.

CAPHE Partnership Evaluation and Equity Promotion. The evaluation process and findings suggest both strengths and areas for improvement with respect to equity promotion in the CAPHE partnership. The relative success of the partnership in demonstrating and exercising an emphasis on equity in the partnership goals and research agenda, and in processes for analyzing community-relevant issues and responding to community concerns in its action strategies can be attributed in part to its commitment to adhering to CBPR principles and characteristics of equitable and effective groups. In accordance with the framework by Ward and colleagues (2018), these partnership characteristics help to facilitate equity in intermediate and long-term partnership outcomes.

This study also illuminates specific strategies the partnership took, and may continue to take, in order to address issues of equity in engagement of and outreach to communities facing inequities. Findings from ongoing partnership evaluation and discussion highlighted the evolving need to engage communities not previously engaged in the partnership's work or environmental justice efforts more broadly, and resulted in evolving strategies to further engage and increase the capacity of those communities to engage in air quality and health initiatives. Further research might assess the extent to which members of CBPR partnerships evaluate or conceptualize the issue of community engagement as an issue of capacity within the equity dimensions described here. Specifically, it is necessary to explore and define forms of engagement that are equitable or that promote equity, with recognition that not all forms of engagement are fully participatory or equitable (Arnstein, 1969).

Similarly, in relation to shifts in power that promote equity, findings from facilitated partnership discussions highlighted opportunities to make decision-making more equitable through changes to the partnership's structure. Ongoing partnership efforts might further document strategies undertaken to improve engagement and power dynamics within the partnership. Further dialogue within the partnership with regard to preliminary findings may strengthen partners' understanding of the extent to which capacity is enahved and power dynamics are shifted in ways that promote equity. Alternative or additional data collection efforts such as interviews, focus groups, or revised questionnaire items might also facilitate such an understanding.

Contributions of Formative and Mixed Method Approaches to Equity Evaluation. The formative evaluation and mixed method approach to data collection and analysis helped to add greater depth to the analysis of equity promotion in the CAPHE partnership. Specifically, the formative evaluation process, which included facilitated discussions following the collection of Steering Committee questionnaire data, provided valuable elaboration and contextual information necessary to understand formal evaluation findings more deeply. In part, this data contributed to the partnership's ability to better identify specific strategies to promote equity and achieve broader objectives, in accordance with literature documenting the opportunities within formative evaluation approaches to apply ongoing findings to improve the effectiveness and relevance of a partnership's programs or interventions to partnering communities (Finlayson et al., 2017; Israel et al., 2010; Teufel-Shone, Siyuha, Watahomigie & Irwin, 2006).

Moreover, a formative evaluation process may contribute to a partnership's ability to promote equity in partnership processes. Namely, as explained in the results section related to this construct, the insights from the formative evaluation process ultimately informed the

partnership's ability to respond to community concerns in its action strategies and recommendations. As community needs and concerns are likely to evolve over time as the partnership evolves, a formative evaluation process has the potential to be responsive to those concerns. Formative evaluation is also appropriate based on the cyclical model of CBPR stages by Israel and colleagues (2013), which emphasizes that evaluation occurs throughout the life of a partnership and contributes to the ongoing improvement of partnership efforts.

Strengths and Limitations

This case study evaluation provides an example of the application of a CBPR framework for equity promotion to the formative evaluation of a partnership that aims to promote healthy environments, using multiple sources of data. This study exhibits several strengths. The analysis offers insight on the application of the framework in a partnership focused on environmental justice and health in the city of Detroit, where multiple social and structural determinants shape health outcomes for communities of color, and where numerous communities, organizations, and public agencies have a growing interest in environmental justice, air quality, and health.

In relation to study design, a formative evaluation approach was particularly appropriate for the evaluation of intermediate measures of partnership equity, as it contextualized formal evaluation results and allowed opportunities to identify strategies for improvement as the partnership's efforts progressed. Furthermore, the multistage nature of the evaluation allowed for the analysis of changes in partner perceptions of equity promotion progress over time, representing an advantage over more traditional pre- and post- test evaluation approaches. The mixed methods approach allowed me to synthesize findings across multiple sources of data, which helped to further contextualize and understand findings beyond what might be

accomplished in evaluation approaches using quantitative or qualitative data alone. Finally, the deductive, provisional coding approach to applied to the qualitative data in this study allowed me to conduct an in-depth investigation of the specific equity constructs that while a deductive approach to data analysis allows for an in-depth investigation of the specific equity constructs that guide this study, with opportunities to integrate new codes representing concepts not captured in the model as appropriate.

There are limitations to this study. In relation to data collection, many of the equity promotion items were not added to the Steering Committee questionnaire until the 2017 and 2018 waves. Therefore, I was unable to assess perceptions of equity promotion on certain items at earlier stages of the partnership, in which the partnership was undergoing partnership-building activities such as establishing guidelines and norms for working together, refining initial research priorities, and other activities. Furthermore, changes in Steering Committee membership across the five-year period over which the evaluation was conducted, due to staff changes at the university and partner organizations, limit the ability to interpret differences in perceptions of partnership effectiveness across years. Finally, I have a limited ability to analyze and interpret quantitative data due to the relatively small sample sizes (i.e., members of the Steering Committee) for each year.

Second, while the deductive approach to qualitative data analysis allows for in-depth exploration of data related to the specific measures of interest, the approach does not allow for a richer description of the data overall, compared to inductive approaches to data analysis such as grounded theory (Glasser, Strauss, & Strutzel, 1968; Miles, Huberman, & Saldana, 2014). Furthermore, qualitative data for this study come from field notes and project documentation. While these sources of data allowed me to elaborate on or explain findings from quantitative

data, they may not reflect or provide context for all partners' perceptions of equity promotion. During this project, I was able to attend several partnership meetings; however, limited time on the agenda did not always allow for full presentation of preliminary findings and their discussion among partners. Furthermore, meetings of the partnership were interrupted due to COVID-19 as I finalized this analysis in early 2020. Meetings resumed shortly after the completion of this dissertation. In keeping with a formative evaluation approach, an evaluation process that allowed for more opportunities for partners to discuss findings and to reflect on their implications might allow for a deeper and more comprehensive exploration of the factors within the conceptual framework. In addition to these considerations for evaluation process, future formative evaluation studies, or follow-up evaluation of this partnership, might employ additional qualitative methods such as in-depth interviews or focus groups with the partners involved in order to explore and elaborate on perceptions of equity promotion with respect to the specific constructs of interest, and to identify other potential equity constructs.

Conclusion

In this study, I have applied a conceptual framework for evaluating equity within CBPR partnerships to the evaluation of a partnership committed to addressing air quality and health in Detroit, using data from multiple sources. Findings from this study highlight several implications for community and academic members of partnerships who seek to assess their progress toward promoting health equity, including aspects of partnership structure and processes that facilitate a focus on addressing issues of equity and equitable participation, leadership and decision-making among all partners. Specifically, partnerships might focus greater attention on the extent that they are adhering to CBPR principles and developing equity in group dynamics characteristics,

which may help to facilitate a focus on equity in intermediate partnership outcomes. In addition, partnerships might consider strategies generated by the CAPHE partnership to address issues such as community engagement in partnership efforts, and the distribution of power in partnership decision-making processes. Findings from this study also underscore the value of formative evaluation and mixed methods approaches evaluating equity promotion throughout the life of a partnership, as described above. Future research and evaluation studies might more closely examine equity promotion efforts of partnerships with other health promotion goals, partnership structures, and operating principles, using other data collection and analysis techniques

Chapter 5: Conclusion

CBPR approaches are uniquely positioned to examine and address issues of equity based on its roots in knowledge epistemologies that challenge positivist paradigms of knowledge creation and the distribution of power in society (Israel et al., 1998; Wallerstein & Duran, 2008). However, while partnerships aim to build collaborative relationships and foster authentic, participatory processes, achieving the degree of equity to which these claims aspire is a complex and enduring undertaking. Because CBPR efforts do not exist in a vacuum, partners' perspectives may be inevitably driven by pre-existing norms, power dynamics, and institutions that privilege academic researchers in the process of producing knowledge (Wallerstein & Duran, 2008), despite their efforts to develop and adhere to written CBPR principles. Thus, without critically and continually assessing the extent to which these conventions are truly being challenged, partners run the risk of mirroring and perpetuating the patterns of systemic racism and marginalization based on social identity which they ultimately seek to reduce (Chavez et al, 2008).

At this time in history, transparent and critical interrogation of public health partnerships, programs, interventions, and policies is essential. Racial and socioeconomic health disparities continue to gain national attention in part due to high-profile events such as the water crisis in Flint, Michigan and the ongoing COVID-19 pandemic, which shine light on long-standing social and economic inequities that have unjustly predisposed communities of color to adverse health outcomes (Hooper, Nápoles, & Pérez-Sable, 2020; Laurencin & McClinton, 2020; Michigan Civil Rights Commission, 2017). As research and funding priorities shift to focus on disparities

rooted in systemic racism and institutionalized oppression, it is uniquely urgent for continued critical interrogation of CBPR partnership efforts to address these dynamics within their own partnerships, and their efforts to promote equity. Those engaging communities in partnership research, or engaging in research on health inequities more generally, must confront these realities with purpose, humility, and consciousness.

To this end, I have sought in this work to contribute to our understanding in CBPR of the ways that equity can be promoted, measured, and evaluated within partnerships. Therefore, to further clarify and refine the measures and relationships developed in the conceptual framework, I conducted three studies with the following goals: 1) work toward an understanding of the potential processes by which equity is promoted in partnerships by assessing the association between selected intermediate measures of equity; 2) explore how conceptualizations of equity promotion among partners align with the dimensions defined in the framework; and 3) conduct a case study evaluation of equity promotion in a CBPR partnership, guided by the conceptual framework. The specific contributions of each study to the CBPR literature are discussed in their respective chapters. In the remaining sections, I synthesize findings across the three studies and discuss their implications for the conceptual framework that has guided this work, as well as future study and evaluation of equity in CBPR partnerships more broadly.

The association between community and partnership capacity and shifts in power benefitting communities facing inequities

Findings from this work suggest that Figure 2-1 might be revised to reflect the association between capacities for change and shifts in power. Specifically, Chapter 2provides quantitative, cross-sectional evidence to support the association between community and

partnership capacity and power relations that benefit community partners, one that has thus far only been described in theoretical and qualitative literature. To a more limited degree, qualitative data from Chapter 3 provide additional support for this association, adding context based on the ways that members of long-standing partnerships conceptualize the acquisition and use of power on the part of community partners as a manifestation of community and partnership capacities to make change on health issues that impact them (Freudenberg, 2004; Minkler et al., 2008).

As findings from this work support a cross-sectional association, rather than a causal relationship, between capacities and power, further research is needed to clarify the direction of relationships between capacity and power in the current conceptual framework. To better understand these associations, further research might explore: various dimensions of capacity and how they are associated with or help to facilitate a shift in power; and the direction of the relationship, including the extent to which this relationship is bidirectional. Specifically, studies might examine the existing capacities of community and academic partners, and the extent to which they facilitate or hinder equitable power relations. As suggested by the qualitative findings from Chapter 3 and recent literature, this examination should account for potential disparities in existing capacities, and in opportunities to build capacities between academic and community partners (Rubin et al., 2016; Wallerstein et al., 2019).

More broadly, findings also suggest that there are potential interrelationships between measures of equity promotion, which further suggest that there are processes in which partnerships might engage more intentionally to improve their efforts toward equity. For example, based on the central role of power in shaping the ability of community members to participate in knowledge production and change efforts in public spheres (Gaventa & Cornwall, 2015), future research should investigate the extent to which equitable power dynamics promote

equitable long-term partnership outcomes. Likewise, partnership evaluation may also benefit from understanding the contribution of intermediate dimensions such as a focus on equity in partnership processes to equitable power dynamics. Ultimately, future research might investigate more complex and dynamic processes by which the constructs presented in this framework function to produce equity and other partnership outcomes, as suggested in some literatures (Davis et al., 2018; Raymaker, 2016).

Measuring shifts in power benefitting communities facing inequities. In relation to community capacity and in partnership evaluation more broadly, studies might further examine the extent to which a "shift in power," as indicated in the conceptual framework, is the necessary concept to be measured or achieved. As findings from Chapter 3 suggest, community and academic partners may enter partnerships with varying degrees of power within their relative spheres of influence (e.g., community organizing, policy, research). Findings ultimately suggest that the construct of a "shift in power" may connote a directional change in power relations based on a presumed distribution of power within a partnership at a given time. More specifically, "a shift in power" may imply that community partners hold a smaller degree of influence or decision-making power compared to academic partners at any given time, which needs to be improved upon in order to achieve or promote equity. Because partnerships are influenced by various contextual factors and characteristics of partners that shape the distribution of power within them, a "shift in power" may not be an appropriate evaluation measure for all partnerships at all times. For many partnership contexts and evaluation goals, a more cross-sectional measure of this construct may be appropriate to evaluate the distribution of power more generally, which may help partners understand the association or impact of partnership characteristics and efforts on the extent to which power is distributed equitably among partners.

To this end, further research might explore alternate constructs that allow partnerships to assess power in a way that does not involve a directional change.

This work also suggests that there are additional indicators of a shift in power, or equity in the distribution of power within partnerships, beyond those analyzed in this work that might be added to the conceptual framework. Namely, Chapter 3 introduces two measures identified in key informant interviews: 1) a sense of community ownership, and 2) social marginalization of community identities. More explicit analysis of these constructs in order to define measures as indicators of shifts in power, equitable power, or equity more broadly is warranted. Guided by these findings, existing partnerships might explore issues of community ownership and social marginalization in order to understand how they might hinder or facilitate equity promotion in their work.

Centrality of equitable group dynamics to intermediate equity outcomes

Findings from this work ultimately suggest that the conceptual framework might be revised to reflect the idea that equitable group dynamics characteristics (e.g., shared leadership, power, and resources; mutual trust; participatory decision-making) contribute to at least two intermediate measures of partnership effectiveness and equity; specifically, equitable group dynamics may be associated with a focus on addressing health equity and a focus on equity in partnership processes. Findings from Chapters 3 and 4 suggest that, as indicated in the conceptual framework, CBPR partners perceive equitable group dynamics characteristics of partnerships as critical to facilitating equity in intermediate outcome measures. Qualitative data across the two studies suggest that a focus on addressing health equity and a focus on equity in partnership processes may be representative of adherence to CBPR principles and characteristics

such as shared leadership, shared power, and participatory decision-making. Specifically, key informant responses in Chapter 3 highlight outcomes, such as the analysis of community-identified and relevant issues and responsiveness of partnership actions to community concerns, that stem ultimately from initial, intentional efforts to foster equity in partnership structure, processes, and group dynamics. Formative evaluation findings in Chapter 4 further underscore the role of intentionality in fostering equitable initial conditions of partnerships. Evidence of the CAPHE partnership's focus on equity in its goals and processes were found in grant proposals and early partnership documents that reflect intentions to share leadership and power, and create opportunities to engage and respond to the concerns of communities facing inequities. Formative evaluation of the partnership, as it evolved, provided critical opportunities to assess the extent to which those intentions were realized, and to engage in dialogue amongst members of the partnership with respect to strategies for strengthening those efforts.

Qualitative findings from both studies suggest that the initial work that a partnership does to recognize, examine, and address the presence and historical context of the inequities in the communities with whom they partner helps to foster a focus on equity. A partnership's focus on and investment in equity is made tangible as the partnership prioritizes community-relevant issues, knowledge, and experience, and creates a culture of responsiveness to community concerns. The ability to foster this culture harkens back to CBPR's roots in critical, post-structuralist, emancipatory, and other research paradigms that center the roles and experiences of marginalized groups and challenge research practices that have historically silenced those groups (Wallerstein & Duran, 2008). To make progress toward equity, findings from Studies 2 and 3 suggest that researchers and community members must enter partnerships with the goal of creating this environment, including planning and acting in ways that consciously and

intentionally promote it. Critical and continuous evaluation of partnership processes and actions with explicit equity promotion goals in mind can help partnerships continue to refine their efforts toward this end.

In order to establish and understand the potential relationship between equitable group dynamics and intermediate partnership processes in this conceptual framework, further research is needed to determine the extent and the manner in which these factors are associated. Quantitative studies might investigate this hypothesized association, while qualitative, mixed method, or evaluation studies might examine how partners perceive the role of group dynamics specifically in facilitating a focus on addressing equity and a focus on equity in partnership processes. Furthermore, future research should also investigate the extent to which equitable group dynamics facilitate other intermediate measures of equity as defined in the framework.

Implications for Evaluating Equity in CBPR and Community-Engaged Research

By bringing considerations of equity to the forefront of partnership evaluation efforts, the processes and measures introduced in the conceptual framework and explored in this dissertation present implications for partners seeking to evaluate their efforts and progress toward equity. First, findings ingrain the importance of establishing equity as an explicit goal within partnership structure and processes, and as an ultimate outcome of a partnership's work. Establishing this grounding requires careful attention to existing inequities and their historical contexts, and to fostering equitable dynamics between community and academic partners. Ensuring that this culture is maintained within partnerships requires a commitment to evaluation as a deliberate, iterative, and essential component of partnership functioning and sustainability, as suggested in the model by Israel, Coombe, & McGranaghan (2010).

Concepts introduced in the conceptual framework particularly hinge on the ability of partnerships to engage in continual and honest self-assessment. Namely, a partnership's responsiveness to community concerns in its action strategies and recommendations may depend on the partnership's commitment to candidly assessing its actions and their alignment with equity promotion principles. In addition to this commitment, the formative and mixed method evaluation approaches employed in Chapter 3 and other CBPR evaluation studies (Israel et al., 2005; Lantz et al., 2001) may contribute greatly to a partnership's ability to evaluate and promote equity. These approaches introduce opportunities to incorporate ongoing and contextual information to complement data gleaned from more traditional evaluation and single-method approaches (Creswell & Plano-Clark, 2011; Stetler, 2006). As CBPR partnerships are not invulnerable to the impact of internalized and institutionalized racism and oppression on partners (Chavez et al., 2008), data generated from these approaches may introduce opportunities for partners to correct and address potential disparities that have been inadvertently perpetuated in partnership processes.

The findings presented in this work are applicable to community-academic and community-engaged partnerships beyond those defined by CBPR principles, as well as other research interventions and programs designed to impact communities facing inequities. While CBPR is one of the most widely recognized forms of community-engaged research, community-engaged partnerships similarly aim to build collaborative, trusting, and bi-directional relationships with multiple stakeholders or communities committed to addressing issues of mutual relevance (Balle-Berry & Acosta, 2017; CDC, 2011). Community-engaged research efforts also often focus on health disparities or health inequities, and aim to obtain community input to identify and study relevant issues and involve community members or stakeholders in

multiple aspects of the research process (Balls-Berry & Acosta-Perez, 2017). Though these partnerships might not focus the same attention on factors specifically defined in conceptual frameworks for CBPR partnerships (e.g., group dynamics characteristics, intermediate process outcomes), the explicit focus on the perspective and experiences of communities facing inequities might aid those partnerships in developing interventions, policies, and programs that better promote equitable outcomes.

The need to critically evaluate community-engaged and community-academic research efforts with a focus on equity is particularly salient given the social context of knowledge production within academia. Academic institutions have long been recognized and positioned as centers of knowledge creation, which have functioned to define and circumscribe what constitutes legitimate knowledge and the actors who may produce it (Hall & Tandon, 2017; Hall, 2015). Hall (2015) discusses the establishment of Western European universities, describing their creation as an act of "enclosing knowledge , limiting access to knowledge, exerting a form of control over knowledge and providing a means for a small elite to acquire this knowledge for purposes of leadership of a spiritual nature, of a governance nature or a cultural nature…The enclosing of the academy dispossessed the vast majority of knowledge keepers, forever relegating their knowledge to witchcraft, tradition, superstition, folkways, or at best some form of common sense" (p. 2-3).

Institutions of higher education have historically excluded multiple knowledge systems beyond those driven by Western ideologies (i.e., knowledge democracy), particularly those that represent Indigenous and socially marginalized communities (de Sousa Santos, 2007; Hall & Tandon, 2017). In accordance with the arguments by Gaventa and Cornwall (2015) and Stoeker (2009), which build on Foucault's (1980) conceptualization of "power-knowledge" (see Chapter

2), social and economic forces (e.g., colonization) have contributed to the predominance of the Western knowledge creation paradigm as the primary paradigm that shapes public agendas and the narratives that define social problems. Thus, even as academic researchers seek to study and intervene upon issues of equity, the knowledge creation process itself can perpetuate cognitive injustice, an overarching social inequity which de Sousa Santos (2007) describes as a lack of "equity between different ways of knowing and different forms of knowledge" (de Sousa Santos, 2007, p. 237; Lacy, 2014). In the context of knowledge epistemologies in the Global South, de Sousa Santos emphasizes that this underlying injustice "undermines the practices (including emancipatory ones)" (Lacey, 2014, p. 2) that different ways of knowing might inform (de Sousa Santos, 2007). He argues that global social injustices are intimately linked with global cognitive injustice, and "the struggle for global social justice will, therefore, be a struggle for cognitive justice as well" (de Sousa Santos, 2007, p. 63).

Thus, as academic researchers demonstrate continued interest and investment in studying health and social inequities, it is critical that they acknowledge and address inequities in knowledge creation processes and their link with the issues of equity that they study. CBPR and participatory research approaches have been upheld as viable approaches to promoting knowledge democracy and challenging cognitive injustice (Hall & Tandon, 2017). Lessons from this dissertation and other work in the broader CBPR literature (Allen et al., 2011; Israel et al., 2005) point to the need for change within academic institutions that foster greater and more equitable community engagement and participation in knowledge creation. For example, efforts to reduce institutional constraints that hinder the development or implementation of CBPR partnerships or community engagement efforts (such as IRB regulations that take into account the needs of community partners, greater opportunities for training community and academic

partners, extending criteria for research productivity--such as experimental design) (Israel et al., 2005) may facilitate more meaningful opportunities for communities to influence and drive the direction of research processes. Further, all partners in research should develop an understanding of the institutional histories that have established and perpetuated the predominance of Western models of knowledge production within universities, including the often adversarial relationships between universities and communities that can hinder collaboration (Israel et al., 2005) and equitable acknowledgement of other ways of knowing. More generally, an institutional shift in the culture of knowledge production within academia is potentially necessary to promote equity, or one that validates and legitimizes multiple forms of knowledge that exist within communities facing inequities. The evaluation measures put forth in the conceptual framework for equity in CBPR partnerships, in addition to the findings of the research presented in this dissertation, shed light on strategies toward engaging and incorporating the knowledge and experiences of communities facing inequities in research and practice to ultimately reduce health and social disparities.

APPENDICES

Appendix A: Supplementary Regression Models

Table 6: Mixed Effects Linear Regression Model: Power relations in research among community and academic members of federally funded community-engaged research partnerships regressed on community capacity, partnership capacity, and covariates

	Model 1				Model 2				Model 3			
Variable	Estimate	Std err	95% CI	p-value	Estimate	Std err	95% CI	p-value	Estimate	Std Err	95% CI	p-value
Community capacity	0.13	0.04	(0.06, 0.20)	0.00					0.09	0.04	(0.01, 0.17)	0.025
Partnership capacity					0.2	0.05	(0.10, 0.29)	0.00	0.14	0.05	(0.04, 0.25)	0.009
Community engagement in research	0.35	0.08	(0.27, 0.43)	0.00	0.34	0.04	(0.26, 0.42)	0.00	0.32	0.04	(0.24, 0.34)	0.000
Community partner (ref= academic)	-0.22	0.09	(-0.39, -0.05)	0.01	-0.16	0.08	(-0.32, 0.01)	0.06	-0.20	0.09	(-0.37, -0.03)	0.019
Number of years involved	0.01	0.01	(-0.00, 0.03)	0.10	0.02	0.01	(0.00, 0.03)	0.31	0.02	0.01	(-0.00, 0.03)	0.06
Gender (ref= male)	0.04	0.09	(-0.13, 0.23)	0.62	0.03	0.09	(-0.14, 0.21)	0.71	0.03	0.09	(-0.14, 0.20)	0.71
Socioeconomic status (ref= high)	0.11	0.13	(-0.16, 0.37)	0.43	0.09	0.13	(-0.17, 0.35)	0.51	0.11	0.13	(-0.15, 0.38)	0.39
Race												
American Indian	-0.14	0.11	(-0.36, 0.09)	0.23	-0.11	0.11	(-0.33, 0.11)	0.32	-0.12	0.11	(-0.34, 0.10)	0.27
Asian	-0.17	0.14	(-0.45, 0.12)	0.25	-0.09	0.14	(-0.36, 0.19)	0.54	-0.15	0.14	(-0.43, 0.13)	0.28
Black	0.19	0.12	(-0.22, 0.26)	0.88	0.02	0.12	(-0.22, 0.26)	0.88	0.02	0.12	(-0.22, 0.26)	0.90
Hispanic	-0.22	0.15	(-0.51, 0.06)	0.13	-0.24	0.15	(-0.53, 0.05)	0.10	-0.27	0.15	(-0.56, 0.02)	0.07
Random Effect Parameter (partnership)	.0028514	.0302299	(2.70e-12, 3014376)	0.46	2.82e-16	1.44e-12	0	1.00	2.57e-16	1.08e-15	(6.78e-20, 9.73e-13)	1.00

Table 7: Mixed Effects Linear Regression Model: Power relations[1] in research among community and academic members of federally funded community-engaged research partnerships regressed on community capacity, partnership capacity, and covariates

Variable	Model 1				Model 2				Model 3			
	Estimate	Std err	95% CI	p-value	Estimate	Std err	95% CI	p-value	Estimate	Std Err	95% CI	p-value
Community capacity	1.50	0.38	(0.76, 2.2)	0.00					0.96	0.42	(0.14, 1.8)	0.025
Partnership capacity					2.3	0.5	(1.3, 3.3)	0.00	1.7	0.58	(0.53, 2.8)	0.009
Community engagement in research	3.9	0.42	(3.1, 4.7)	0.00	3.8	0.4	(3.0, 4.6)	0.00	3.5	0.43	(2.7, 4.4)	0.000
Community partner (ref= academic)	-2.5	0.91	(-4.3, -0.74)	0.005	-1.8	0.89	(-3.6, -0.1)	0.04	-2.3	0.90	(-4.1, -0.53)	0.019
Number of years involved	0.15	0.09	(-0.02, 0.32)	0.08	0.20	0.09	(0.03, 0.37)	0.02	0.18	0.09	(-0.00, 0.35)	0.06
Gender (ref= male)	0.43	0.94	(-1.4, 2.3)	0.65	0.34	0.9	(-1.5, 2.2)	0.72	0.31	0.93	(-1.5, 2.1)	0.71
Socioeconomic status (ref= high)	1.4	1.4	(-1.4, 4.2)	0.31	1.2	1.4	(-1.5, 4.0)	0.38	1.5	1.4	(-1.2, 4.3)	0.39
Race												
American Indian	-1.8	1.2	(-4.2, 0.61)	0.15	-1.5	1.2	(-3.9, 0.83)	0.21	-1.6	1.2	(-4.0, 0.70)	0.27
Asian	-1.8	1.5	(-4.8, 1.2)	0.24	-0.93	1.5	(-3.9, 2.0)	0.53	-0.02	1.3	(-2.6, 2.5)	0.28
Black	-0.02	1.3	(-2.6, 2.6)	0.99	0.05	1.3	(-2.5, 2.6)	0.97	-1.7	1.5	(-4.6, 1.3)	0.90
Hispanic	-2.6	1.6	(-5.6, 0.48)	0.1	-2.8	1.6	(-5.9, 0.29)	0.08	-3.0	1.6	(-6.1, 0.04)	0.07

[1] **The dependent variable (power relations) was transformed by squaring the variable to account for slight left-skew**.

Random Effect Parameter (partnership)	1.6	3.3	(0.02,101)	0.32 (LR Test)	0.40	3.2	(50, 72)	0.45 (LR Test)	0.82	3.2	(0.00, 1850)	0.40 (LR Test)

Table 8: Mixed Effects Linear Regression Model: Power relations[2] in research among community and academic members of federally funded community-engaged research partnerships regressed on community capacity, partnership capacity, and covariates

	Model 1				Model 2				Model 3			
Variable	Estimate	Std err	95% CI	p-value	Estimate	Std err	95% CI	p-value	Estimate	Std Err	95% CI	p-value
Community capacity	12.9	3.15	(6.77, 19.1)	0.00					8.16	3.48	(1.34, 15.0)	0.02
Partnership capacity					19.9	4.32	(11.4, 28.4)	0.00	14.7	4.81	(5.32, 24.2)	0.00
Community engagement in research	33.6	3.50	(26.8, 40.5)	0.00	32.3	3.54	(25.3, 39.2)	0.00	30.3	3.63	(23.2, 37.4)	0.00
Community partner (ref= academic)	-22.2	7.58	(-37.0, -7.30)	0.00	-16.3	7.39	(-30.8, -1.79)	0.03	-20.1	7.53	(-34.9, -5.38)	0.01
Number of years involved	1.30	0.730	(-0.13, 2.73)	0.07	1.74	0.72	(0.32, 3.16)	0.02	1.51	0.73	(0.09, 2.93)	0.04
Gender (ref= male)	2.89	7.84	(-12.5, 18.3)	0.71	2.18	7.80	(-13.1, 17.5)	0.78	1.88	7.76	(-13.3, 17.1)	0.81
Socioeconomic status (ref= high)	14.2	11.9	(-9.15, 37.6)	0.23	12.5	11.8	(-10.7, 35.6)	0.29	15.0	11.8	(-8.11, 38.1)	0.20
Race												
American Indian	-17.2	10.4	(-37.6, 3.10)	0.1	-15.0	10.1	(-34.8, 4.86)	0.14	-16.1	10.1	(-36.0, 3.79)	0.11
Asian	-14.7	12.8	(-39.9, 10.4)	0.25	-7.28	12.5	(-31.7, 17.2)	0.56	-13.6	12.7	(-38.4, 11.3)	0.28

[2] The dependent variable (power relations) was transformed by cubing the variable to account for slight left skew.

Black	-1.36	11.1	(-23.2, 20.5)	0.90	-0.78	11.0	(-22.3, 20.7)	0.94	-1.44	10.9	(-22.9, 20.0)	0.90
Hispanic	-22.1	13.1	(-47.8, 3.47)	0.09	-24	13.2	(-49.8, 1.80)	0.07	-26.0	13.1	(-51.7, -0.24)	0.05
Random Effect Parameter (partnership)	1.6	3.3	(0.02,101)	0.32 (LR Test)	0.40	3.2	(50, 72)	0.45 (LR Test)	0.82	3.2	(0.00, 1850)	0.40 (LR Test)

Appendix B: Qualitative Codebook

Codebook (Chapters 3 and 4)			
Theme	**Category**	**Code**	**Code Description**
Theme A: Focus on addressing health equity	**Focus on equity in partnership goals, research questions, and methods**	**Goal for Equity in the Community**	Promoting equity at the community level is named as a goal or intention of a CBPR partnership, such as reducing obstacles to good health and improving opportunities to be healthy
		Partnership Equity Goal	Promoting equity within a partnership is named as a goal or intention of a CBPR partnership, such as equitable relationships and/or group dynamics among members of the partnership
		Research Question	Research questions developed within a partnership address issues of equity
		Research Methods	Research methods undertaken by a partnership address issues of equity or equity promotion for communities facing inequities
	Analysis of the distribution of health and equity impacts across the population	**Analyzing Equity Outcomes**	Partnership research includes analysis or measurement of disparities or differences in health and social outcomes between populations
Theme B: Focus on equity in partnership processes	**Issues analyzed are community-identified and relevant**	**Community Identified Issues**	Community members, or the communities they represent, identify issues addressed or studied by the partnership
		Community Relevant Issues	Issues addressed or studied by the partnership reflect the concerns of community partners or community members
	Response to community concerns in action strategies and recommendation	**Actions Respond to Community Concerns**	Actions or recommendations made by the partnership in communities facing inequities address concerns of community partners or community members
		Actions within partnership respond to community concerns	Actions and recommendations made within the partnership address concerns of community partners or community members

	Community knowledge and experience are used as evidence in analyzing equity impacts	**Community knowledge**	Partnership prioritizes community partner knowledge or experiences (or knowledge/experiences from the communities they represent) in order to study equity-related outcomes (e.g., health and social disparities)
	Capacity to influence decision-making processes, including the ability to plan, organize, fundraise, and take action within the decision-making context	**Community Capacity to participate within partnership**	Community partners or community members have the ability, opportunity, or invitation to participate in decision-making processes within a partnership Community partners or community members gain knowledge or awareness of decisions and decision-making processes that affect health (e.g., public policies and policy-making processes, institutional practices)
		Capacity to participate outside of partnership	Community partners or community members have the ability, opportunity, or invitation to participate in decision-making processes outside of a partnership that influence health, including planning, organizing, and fundraising
		Capacity to lead within partnership	Community partners or community members have the ability, opportunity, or invitation to lead decision-making processes within a partnership
		Community Capacity to lead outside of partnership	Community partners or community members lead, have the ability, opportunity, or invitation to lead decision-making processes outside of a partnership that influence health, including planning, organizing, and fundraising
		Academic or Partnership Capacity	Academic partners gain knowledge or awareness of decisions and decision-making processes that affect health Academic partners have the ability to participate or lead decision-making processes either within or outside of the partnership The partnership as a whole (or its members -- when indistinguishable

			from exclusively community partners) have the ability to participate or lead decision-making processes or efforts, either within the context of the partnership or in the broader community.
Theme D: Balance of power benefitting communities facing inequities	**Community influence over decisions, policies, partnerships, institutions, and systems that affect health**	**Balanced (actual) community participation within partnership**	The extent to which community partners or community members participate in decision-making processes within a partnership
		Community participation outside of partnership	The extent to which community partners or community members participate in decision-making processes that influence health (e.g., participating on advisory boards, councils, work groups, or research that influence policy, institutions, future partnerships, or systems)
		Community leadership within partnership	The extent to which community partners or community members act in leadership roles in decision-making processes within a partnership
		Community leadership outside of partnership	The extent to which community partners or community members act in leadership roles in decision-making processes that influence health (e.g., leadership on advisory boards, councils, work groups, or research that influence policy, institutions, future partnerships, or systems)
		Sense of community ownership (new)	The extent to which community partners perceive or demonstrate a sense of ownership or control over the partnership's work or within partnership processes, incuding partnership research, programs, and interventions.
		Marginalization of community identities (new)	The extent to which partnership activities help to reduce marginalization or stigmatization of communities of color, low income communities, or other historically marginalized populations (communities facing inequities).The extent to which partnership

			activities help to legitimize the knowledge and experience of communities of color, low income communities, or other historically marginalized populations (communities facing inequities).
		Community incorporation	The extent to which community concerns, knowledge, or experiences are incorporated into decision-making processes that influence health (e.g., research, policies, institutions, future partnerships, systems) The extent to which community concerns, knowledge, or experiences are incorporated into various processes or efforts that take place outside of the context of the partnership
	Government and institutions are more transparent, inclusive, responsive, and/or collaborative	**Institutional design (Outside)**	Institutional or administrative designs (outside of the partnership itself) address equity (e.g., establishing Community Advisory Boards, Health Equity offices, committees, or working groups, integrating health equity into institutional missions/visions)
		Government and institutional collaboration	The extent to which governments and institutions collaborate with and are responsive to community members (or invite community members) on issues that affect their health
Theme E: Reduced health inequities and inequities in the social and environmental determinants of health	**Improvement in social and environmental conditions within communities facing inequities**	**Improvements in social and environmental conditions**	Partnership efforts contribute to overall improvements in social and environmental conditions that influence health in communities facing inequities
	Decreased differential in social and environmental conditions between communities facing inequities and other communities	**Reduced social and environmental disparities**	Partnership efforts contribute to reduced differences in social and environmental conditions between communities facing inequities and other communities

	Improvements in physical, mental, and social health issues within communities facing inequities	**Improvements in health issues**	Partnership efforts contribute to overall improvements in physical, mental, or social health outcomes in communities facing inequities
	Decreased differential in health outcomes between communities facing inequities and other communities	**Reduced health disparities**	Partnership efforts contribute to reduced differences in physical, mental, or social health outcome between communities facing inequities and other communities

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