

Using Photovoice to Develop a Grounded Theory of Socio-Environmental Attributes Influencing the Health of Community Environments

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Abstract:

In this study, we used a community-based participatory research (CBPR) method, ‘photovoice’, to engage eighteen residents living in public housing in an examination of person-in-environment factors perceived to facilitate or hinder health and well-being. Five socio-environmental constructs emerged as key factors that contribute to the health and well-being of public-housing community environments: (i) place attachment, (ii) collective efficacy, (iii) social capital, (iv) community development and (v) collective action. Our findings provide a grounded person-in-environment theory for developing community-level interventions for promoting healthy community environments. Implications are discussed in terms of pathways for researchers and social work practitioners to develop and evaluate efforts aimed at enhancing health and well-being through community-level change.

Keywords: Community development | community health | grounded theory | poverty | qualitative methods

Article:

Introduction

Social work has a tradition of focusing on the person in their environment. Because individuals spend a significant amount of their time in communities or neighbourhoods (Calthorpe and Fulton, 2001), it is important to understand the influence of these environments on one's physical and mental health.

High-poverty community environments, such as ‘public housing’ in the USA and ‘social housing’ in member countries of the European Union (Best, 1996), can both facilitate and hinder the physical and mental health of residents. These housing contexts are important settings for understanding the relationship between poverty, neighbourhood environments, and health. Examples of community environments serving as facilitators of wellness are common, including instances such as neighbours providing meals for families after the birth of a child or lobbying to improve sidewalk quality. In contrast, high levels of neighbourhood crime may hinder wellness. Research too often focuses on the hindering effects of high-poverty community environments

(Fauth *et al.*, 2008). For example, studies indicate that residents in public housing have the worst health outcomes among all residents in any community environment (Digenis-Bury *et al.*, 2008; Fauth *et al.*, 2004; Fertig and Reingold, 2007; Howell *et al.*, 2005; Manjarrez *et al.*, 2007). Residents in public housing report worse physical health (i.e. more likely to have hypertension, asthma, diabetes, loss of teeth) and mental health (e.g. higher incidence of depression) compared to residents living in other communities. Although the high prevalence of poor health outcomes would suggest that public-housing community environments hinder wellness, some research indicates that such environments may actually promote wellness among very unhealthy poor residents (Ruel *et al.*, 2010). These conflicting findings necessitate further inquiry into which factors in public-housing communities influence the health and well-being of residents.

The purpose of this study was to use an anti-oppressive, community-based participatory research (CBPR) method, 'photovoice' (Wang, 2003), to engage residents living in public housing in the examination of factors that promote (or detract from) a healthy community environment, and to build a grounded theory for social work researchers and practitioners to explore the person-in-environment dynamics of public-housing community environments. Specifically, this study is focused on an in-depth examination of socio-environmental factors perceived to be strengths and weaknesses of public-housing community environments.

Background

Community environments and health outcomes

Community environments, defined in this analysis as the places where people live or their neighbourhoods, have an influence on the health and well-being of individuals (Kawachi and Berkman, 2003b). A recent analysis of all causes of mortality in the USA found that deaths attributable to social factors—either directly or indirectly related to attributes of community environments (e.g. racial segregation, area poverty, low education levels)—were comparable to the number of deaths attributed to more traditionally examined pathophysiological and behavioural causes (e.g. smoking) (Galea *et al.*, 2011). This research corroborates prior all-cause mortality research in the USA and Europe that found community-level differences in death rates even after controlling for socio-demographic, health and psycho-social factors (Evans *et al.*, 1994; Haan *et al.*, 1987; Kawachi and Berkman, 2003a).

Social work researchers and practitioners have traditionally examined the relationship between social factors and health. Nevertheless, the causal link between communities and individual health outcomes remains contested. Some researchers take a more individualistic approach, avowing that the *composition* of community environments drives differences in mortality rates by community. Such an approach implies that individuals with similar characteristics (e.g. low income) would fare the same in any context (Macintyre and Ellaway, 2003). This approach places more emphasis on the *person* in the environment. In contrast, an approach that emphasises the *environment* asserts that *contextual* factors influence these differences, which implies that people with similar characteristics would fare differently in different contexts (e.g. in a community with good schools versus poor schools) (Macintyre and Ellaway, 2003). This tension manifests, in part, because there are few person-in-environment theories to guide research, policy and practice focused on the relationship between communities and individual health.

It has been argued that what is lacking most in neighbourhood-level research ‘is a coherent conceptual framework for theorising about the precise ways that particular aspects of neighbourhoods may influence which aspects of health in which population groups over what time periods’ (Macintyre and Ellaway, 2003, p. 39). Without strong person-in-environment theories for guidance, research focused on improving individual health through interventions aimed at modifying community environments may lack validity. In this study, we used a CBPR approach to engage residents in public housing in the development of a grounded person-in-environment theory to understand socio-environmental factors that influence health and wellness. We focused specifically on public-housing residents because this population has some of the worst health outcomes (Digenis-Bury *et al.*, 2008; Fauth *et al.*, 2004; Fertig and Reingold, 2007; Howell *et al.*, 2005; Manjarrez *et al.*, 2007). Moreover, we focused on socio-environmental factors because research on the relationship between the physical environment (e.g. air quality, soil contaminants) and health is more common in low-income residential settings (Bonney *et al.*, 2003; Braubach and Fairburn, 2010; Hynes *et al.*, 2003; Zota *et al.*, 2005). Thus, examining which socio-environmental conditions facilitate or hinder wellness for this group could be the first step in developing a stronger conceptual framework for understanding the relationship between community and health for low-income populations. Moreover, it can lay the foundation for developing ecologically valid person-in-environment interventions.

Community-based participatory research

Community-based participatory research emphasises the importance of including research participants and their communities in the process of knowledge development and seeks to model equity in research processes as well as outcomes (Minkler and Wallerstein, 2003). Whilst traditional research approaches are rooted in the belief that outside ‘experts’ are capable of gathering information about groups, conducting analysis and then using the information for change (with little input from the community throughout the process), participatory research approaches embrace an anti-oppressive practice perspective by emphasising the necessity of including the people most affected by an issue in all stages of research (Cornwall and Jewkes, 1995; Kemmis and McTaggart, 2000; Lee, 2009; Minkler and Wallerstein, 2003; Strier, 2006; Truman *et al.*, 2000). Compared to researcher-driven approaches, participatory research models give primacy to participants who are regarded as the ‘experts’ of their own lives and communities. Participants are encouraged to be involved throughout the research process, including problem formation, project design, data gathering, data interpretation and dissemination of the results (Israel *et al.*, 1998). The perspectives offered by researchers, who often reside outside of the community, are combined with participants' knowledge to develop a synergistic understanding of phenomena (Stoecker, 1997). In CBPR, the role of the researcher is a facilitator of and collaborator in the research endeavour (Ansley and Gaventa, 1997; Williams and Brydon-Miller, 2004).

Photovoice (Wang, 2003) is one example of a CBPR approach that integrates photography and critical discussion to examine issues from the perspective of the ‘resident experts’—the people living, working, playing and praying in a targeted context (Wang, 2003). De Lange and Mitchell (2007) classify it as one of the *visual methodologies for social change*. Photovoice is ultimately focused on promoting change at personal and community levels. It empowers people to develop a critical assessment and grounded theory of their reality, share this

information with important stakeholders and promote change based on these insights. Photovoice is grounded in anti-oppressive practice principles (Krieg, 2006; Lee, 2009; Truman *et al.*, 2000) and has been used throughout the globe with many populations including Chinese village women (Wang *et al.*, 1996), homeless populations (Dixon and Hadjialexiou, 2005), people with intellectual disabilities (Jurkowski, 2008), African American women who have survived breast cancer (Lopez *et al.*, 2005) and refugee populations (Dumbrill, 2009).

Purpose of research

In the present study, photovoice was used to provide a forum for participants—residents of a public-housing community—to record and reflect on the elements of the community that influence health and well-being, promote critical dialogue and knowledge about community issues, and develop a grounded theory of socio-environmental factors that facilitate or hinder a healthy community environment. Results from this study provide a grounded theory of the social dynamics perceived to influence health and well-being among the targeted public-housing residents. The resulting person-in-environment theory has import for researchers and practitioners from social work as well as other related disciplines.

Method

Context

This research took place in a public-housing community in a mid-sized southern city in the USA. Eight public-housing facilities located adjacently represented the context for this research; the facilities are managed by the local public-housing authority. Over 1,000 children and families live in the target community context, 99 per cent are African American and 69 per cent are female. The median annual income among residents in the targeted communities is about one-third (US\$12,683) of the median annual income for the county overall (US\$38,588) (Columbia Housing Authority, 2009; US Census Bureau, 2007).

Participants

This study received approval from the university institutional review board. The source population included residents living in a public-housing facility. Purposeful sampling was used to recruit two groups of participants: a youth group (twelve to seventeen years) and an adult group (at least eighteen years). The local public-housing authority organised recruitment efforts. All interested participants completed a written application and were interviewed by a member of the research team to determine their level of interest in and willingness to fully commit to the project. Twelve youth and thirteen adults applied; seven youth and twelve adults were accepted to participate. Residents who were not selected were unable to make the time commitments required for the project.

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Photovoice sessions

The photovoice project included approximately thirty hours of group sessions that were conducted at a community centre managed by the local public-housing authority; transportation to the site was provided to participants if needed. Food was provided at each session. The youth group was conducted during the summer of 2010, twice per week for eight weeks; sessions were approximately 2.5 hours. The adult group was conducted in the autumn of 2010, once per week for ten weeks; sessions were three hours. Additionally, two reunion sessions were conducted after both groups completed their sessions, providing an opportunity for the adult and youth to interact with one another and to participate in the data analysis process. All participants received a digital camera to use during the study; they could keep the camera if they attended all photovoice sessions. During the sessions, participants received training in photography and artistic expression, camera logistics and ethical issues related to photography; they also took a tour of the museum where their art would be showcased in a public exhibition (Powers *et al.*, 2012).

Each participant was asked to take pictures that best represented community-level concerns that influenced their health and well-being that they wanted to address and community-level strengths on which they wanted to expand. During group sessions, the photos were displayed electronically and were analysed through group discussion using a modified version of the 'SHOWeD' technique, which is an acronym for trigger or discussion questions (see Wang, 2003, for a detailed discussion of this methodology). The guiding questions for this analysis were: (i) What do you see happening here? (Describe what the eye sees); (ii) What is actually happening here? (What is the unseen story behind the picture? What does the heart see?); and (iii) What does this photo tell us about life in your community? Following group discussion, participants developed titles and captions for their photos. Ultimately, participants selected 172 photos, titles and captions to be included in the project collection. The resulting analyses are focused on the 172 data sources.

Data analysis

Qualitative data analysis involved an iterative, multi-stage, collaborative process between the participants and researchers. First, after each photovoice analysis session, participants were asked to summarise themes that emerged. Facilitators also recorded field notes to capture their reflections on the emergent themes. These insights were synthesised into a summary report. Second, eight adults and four youth participants reviewed all 172 photos, titles and captions in the collection. Participants were asked to individually record the five most salient community-level strengths illuminated through the photovoice collection and the five most salient community-level concerns. Participants then worked in teams to conduct a pile sort of their data to develop cross-cutting themes (Weller and Romney, 1988). Third, to gain an 'etic' or outsider perspective on the data (Padgett, 2008), the pile sort process was repeated with a team of external researchers. Fourth, both sets of pile-sorted data were compared to the summary report

developed in Step 1 to identify areas of overlap and agreement. The summary report was revised based on ‘emic’ (i.e. insider) and ‘etic’ feedback. Fifth, all photovoice participants were invited to review the revised summary report; nine participants took part in member checking, editing and approval (Powers *et al.*, 2011). Participants also identified illustrative photos relevant to each theme. Finally, a team of four collaborators, including one photovoice participant, examined the thematic analysis to identify relevant socio-environmental theoretical constructs related to the data.

Results

Our findings reveal that photovoice participants perceived a healthy community environment to include ten strengths that could be built upon and ten concerns that should be addressed (Powers *et al.*, 2011). The opposite of many of the strengths were identified as concerns (e.g. natural beauty was a strength whereas trash on the lawn was a concern). These themes were organised into five theoretical constructs: (i) place attachment, (ii) collective efficacy, (iii) social capital, (iv) community development and (v) collective action (see Table 1).

Table 1. Socio-environmental factors influencing public-housing residents’ perceptions of a healthy community environment.

Construct	Strength	Concern
<i>Place attachment:</i> Bond between people and physical and social aspects of place	<ul style="list-style-type: none"> • Natural beauty • Belong and acceptance in community • Ownership of community 	<ul style="list-style-type: none"> • Ambiguity about ownership of space • Social and physical incivilities in community • Perceptions of crime
<i>Collective efficacy:</i> “[S]ocial cohesion among neighbors combined with their willingness to intervene on behalf of the common good’ (Sampson <i>et al.</i> , 1997, p. 918)	<ul style="list-style-type: none"> • Belief that community would come together to address concerns • Agency for making community change • African American heritage and cultural values • Cohesion 	<ul style="list-style-type: none"> • Learned helplessness • High rates of poverty, undereducation and limited resources
<i>Social capital:</i> Ties and connections available within the community to promote	<ul style="list-style-type: none"> • Social support networks • Faith and spirituality 	<ul style="list-style-type: none"> • Limited connections outside of the community

health and well-being of residents (Lin, 2001)		
<i>Community development:</i> Opportunities in community for capacity building and gaining access to necessary resources	<ul style="list-style-type: none"> • Presence of high-quality capacity-building organisations and resources in community 	<ul style="list-style-type: none"> • Unaddressed needs in community • Few community resources
<i>Collective action:</i> Group effort to create community-level change	<ul style="list-style-type: none"> • Agency and empowerment • Sense of urgency • Ability to work together 	<ul style="list-style-type: none"> • Disempowered residents • Complacency • Inability to collaborate

Theoretical constructs

Place attachment

Place attachment was identified as a salient person-in-environment aspect of the community. Place attachment is defined as the bond between people and specific geographic spaces; this bond may include attachment to physical and social aspects of space (Hidalgo and Hernandez, 2001; Jack, 2010). In general, participants expressed the importance of feeling attached to their communities and having a strong sense of ownership of their space. More specifically, place attachment within their communities was facilitated by the overall natural beauty of the community (e.g. parks, trees and flowers), by residents having a strong sense of belonging and acceptance in the community, and by residents having a strong sense of ownership of (or control over) the community. Participants perceived all of these to be strengths that could be built upon. In contrast, participants indicated that place attachment was hindered by ambiguity about ownership of space (e.g. is my community environment owned by residents, gang members or housing authority management?), social and physical disorder (e.g. people loitering in the streets, signs of graffiti, debris in the yards and streets) in the community and heightened perceptions of neighbourhood crime.

The following photovoice exemplars are illustrative of the facilitating/hindering dialectic of place attachment. *What a Sight* was developed by an adult participant and represents a person-in-environment feature that facilitates community wellness. This photo features a close-up shot of a bush with bright lavender flowers; the background of the photo includes red bricks from one of the apartment complexes in the community. The caption reads: *Who takes care of them? We need more of this kind of beauty in our community. It is a pretty sight for sore eyes.* In contrast, *The King*, created by a youth participant, portrays a concrete sidewalk with white spray-painted graffiti, and represents a person-in-environment feature that hinders community wellness. The caption states: *There is a lot of graffiti in our community. Some people don't care about their neighborhood. This makes our neighborhood look ugly.*

Collective efficacy

Collective efficacy emerged as a salient person-in-environment aspect of the community. Collective efficacy is defined as ‘social cohesion among neighbours combined with their willingness to intervene on behalf of the common good’ (Sampson *et al.*, 1997, p. 918). Attributes of collective efficacy identified as person-in-environment features that facilitate community wellness included the belief that community members will come together to address community concerns and a belief that residents can create change individually and collectively. Underpinning collective efficacy was a focus on African American heritage and cultural values that serve to promote cohesion among residents and motivate action. Figure 1 provides an example of photovoice artwork that emphasises collective efficacy among community members; this piece was created by an adult photovoice participant and is entitled *Pillars of Success*.



Figure 1. *Pillars of Success* by Floyd. “This is home. I’m surrounded by inspiration by low-income people from my community who have gone on to achieve greater things and have given back to the community. In our patio area outside our building, we honor these individuals by putting their photo and stories on the brick pillars. Each day we have hope of being better so we can serve our community as those who have served before us.”

Person-in-environment factors perceived to hinder collective efficacy were fatalism and learned helplessness among residents. For example, there was a sense of powerless among some participants and a belief that people are ‘stuck’ in public-housing communities due to poverty, under-education and few financial resources. An exemplar of decreased collective efficacy is found in the photo, *The Four Ways to Stop Violence*, developed by a youth participant. This

image of a stop sign includes the following caption: *Nobody cares what goes on, and it does not matter who they hurt. The stop sign means to stop fighting.*

Social capital

Social capital was another identified person-in-environment attribute of the community that can both facilitate and hinder community wellness. It is defined as the ties and connections available within the community to promote the health and well-being of residents (Lin, 2001). Person-in-environment factors that facilitated social capital among residents included the presence of social support networks, faith and spirituality. These levels of connectedness were largely focused on 'within community' interactions through friendships, gatherings, meetings, cookouts, sports teams and formal mentorship programmes. An exemplar of this theme is a photo of a black-and-white foetal ultrasound picture found on the ground, entitled *Baby on Board*, created by an adult participant. The caption states: *A baby is about to be born onto a rocky situation. I can be a person for her to run to. We are a group of women who come together to take charge.* In contrast, social capital was hindered by people who abandoned the community such as absentee landlords or when people in the community were ignored or neglected such as people who are homeless. *My Community*, a photo by an adult participant, illuminates the dearth of social capital available to some members of the community. This photo depicts a homeless man sleeping in a makeshift home (i.e. discarded chairs in a vacant corner of the community) and represents a person-in-environment feature that hinders community wellness. The caption states: *There is not a hand reaching out to me; do you not see me?*

Community development

Other important person-in-environment aspects of the community were community development efforts (or the lack thereof), including capacitybuilding programming, presence of caring organisations and outlets for residents to secure necessary resources (Stoecker, 2003). Photovoice participants perceived that an important strength in the community was the presence of 'facilities for our abilities' such as the community centre, churches, hospitals, fire stations, schools, libraries and recreation facilities. These resources were considered to be assets accessible to residents in the neighbourhood and represented person-in-environment features that facilitate community wellness. An example of this theme was evident in the photo, *A Good Place for Resources*, by a youth participant, which focused on the newly constructed community centre run by the local public-housing authority. The caption to this photo stated:

It [community centre] is a place where you can go to get your homework done, use the computer, and play games. It is a good resource for the residents because we don't have to walk a long distance to use a computer. They do events here, hold meetings, and kids programs. It's a place we are proud to have in the community.

It was more common, however, for participants to identify the need for resources in the community. Participants indicated the need to be 're-resourced'. Specifically, photovoice participants indicated the need for health, social, educational, childcare, recreational and drug rehabilitation services for children, youth, adult and/or elderly residents. Many community development efforts such as daycares, stores and youth centres have been shut down in the

community, yet their physical presence was described as a continual reminder of the need for these resources, thus representing person-in-environment features that hinder community wellness (see Figure 2).



Figure 2. *Abandoned Building* by Catherine. “This building has been abandoned for several years. It is surrounded by new homes and apartments in our community. In the future it could be used as a historical building for printing and other things. This could be a change for our community.”

Collective action

Collective action was identified as a salient person-in-environment aspect of the community and represented group efforts to change the community. Participants perceived that the chance for collective action was facilitated when community members claimed their agency and personal power to promote change as well as when residents had a sense of urgency and a belief that changes were needed now. Participants also perceived the need for residents to work collaboratively to make change and they believed that a focus on children and youth could be a unifying framework for igniting collective action. An adult photovoice participant illustrated the importance of unity in her photo entitled *Ants Go to the Games Too!* This photo focuses on a cluster of ants crawling en masse; the caption states: We need to be like the ants; gathering food for the winter and hard times. Like the ants, we could unify as well and work toward a common goal. A photo that conveyed the act of collective action was *Power Line* by an adult participant (see Figure 3). This photo demonstrates the importance of various stakeholders joining together to reclaim the community, and is illustrative of a person-in-environment feature that facilitates community wellness.



Figure 3. *Power Line* by Tanjenique. Gang members throw up their shoes in my neighborhood. It's something crazy that I've never understood. It kind of bothers me that they wear the colors and talk in code. But I know them; they are not always in "gangsta mode." When I saw this display I couldn't pretend it was fine. I called the front office and the PO-leese. That's my Power Line.

The photo, *Unity of Infinity*, developed by an adult photovoice participant represents the opportunities and limits of collective action. The photo captures a colourful mural that was painted on the wall of a local business; the mural includes figures of people holding hands with the statement *Just Say No, Fight Drug Abuse* written in large letters across the mural. The mural resulted from a collective action effort organised by a local service corps. However, the photovoice artist included in his caption *Turn the corner after this positive message and uncertainty is there, staring you in the face*. Thus, this collective action effort was necessary but insufficient for effectively reducing risks in the community.

Discussion

This study illuminates the importance of socio-environmental factors as key features that facilitate or hinder a healthy community environment and underscores the need to examine such features from the vantage point of the people living in these communities. Findings from this qualitative study corroborate research that emphasises the importance of social processes in low-income contexts (Sampson *et al.*, 2002). Based on collaborative analysis of 172 photovoice photos, titles and captions generated by residents living in public housing, five key person-in-environment factors that contribute to the health and well-being of a public-housing community environment were identified. Residents indicated that the presence (or absence) of place attachment, collective efficacy, social capital, community development and collective action all facilitate (or hinder) healthy community environments.

Specifically, residents emphasised the importance of having a bond to the physical and social aspects of place; this was considered to be foundational for facilitating a healthy community environment. Place attachment facilitated community wellness when there were instances of natural beauty in the community (e.g. landscaping, parks), thereby heightening feelings of belonging and acceptance in the community and self-proclaimed ownership of the community. In contrast, place attachment declined and hindered community wellness when residents were uncertain about who owns the community (e.g. gangs, management), when residents perceived high rates of physical disorder (e.g. trash, broken windows), when there were instances of social disorder (e.g. gangs, homelessness) and when they perceived community crime rates to be high. These findings corroborate prior research (Brown *et al.*, 2004; Colquhoun, 2004; Pitner and Astor, 2008; Pitner *et al.*, 2011; Taylor, 2002). A strong attachment to place has been shown to be an important person-in-environment feature that provides residents with a sense of pride and ownership in their neighbourhoods; this elevates levels of collective efficacy and decreases perceptions of neighbourhood crime (Brown *et al.*, 2004). Nevertheless, our findings invoke questions about place attachment, particularly among residents living in spaces that are defined as transitional such as public or social housing communities. Striking the balance between cultivating a sense of place and ownership within public or social housing communities and facilitating a desire to exit such communities for more stable housing is an important person-in-environment dilemma that should be taken into account. Given this, interventions in public or social housing communities may address place attachment by focusing on both developing attachment to place in the short term and learning skills to create community-level changes which may facilitate place attachment that could be used when residents move to a future, more permanent locale.

Corroborating many studies focused on community-level crime prevention (Ferguson and Mindel, 2007; Franzini *et al.*, 2005; Pitner *et al.*, 2011; Sampson, 2004; Sampson and Raudenbush, 1999; Shambard, 2009), collective efficacy, defined as the 'social cohesion among neighbors combined with their willingness to intervene on behalf of the common good' (Sampson *et al.*, 1997, p. 918), emerged as an important socio-environmental factor. Collective efficacy facilitated community wellness when residents expressed that community members could work together to address community concerns, expressed a sense of agency for making community change and showed strong connection among other residents based on shared African American heritage and cultural values. In contrast, collective efficacy was perceived to be eroded when residents adopted a learned helplessness framework, which was buttressed by high rates of poverty, under-education and limited resources among some public-housing

residents. Prior research on collective efficacy has consistently shown that high levels of neighbourhood collective efficacy lead to higher levels of place attachment (Pitner *et al.*, 2011). However, one criticism of the collective efficacy framework is that it is not focused on *community-level action*. Thus, when residents feel that they do not have the ability to affect change—or to control community-level outcomes—their desire to collectively intervene gets eroded. It is this person-in-environment feature that can hinder community wellness. Our findings indicate that this may be the case for some residents living in public housing. Accordingly, future interventions may need to focus on issues in the community that are garnering the greatest sense of urgency among residents and then focus intervention efforts on these ‘interests’ rather than other identifiable ‘needs’.

Social capital, defined as the presence of ties and connections among residents that can be leveraged to promote health and wellness (Lin, 2001), was also identified as a key person-in-environment aspect of a healthy community environment. Social capital was considered to be a facilitator of community wellness among residents who had access to social support networks in the community and/or could rely on their spirituality or faith community to provide key connections. However, most of the connections reported by the photovoice participants were *within* their public-housing community or ‘bonding connections’ (Putnam, 2000). In contrast, few ‘bridging connections’ with people and groups *outside* of the public-housing community were identified. Whilst having tight connections within the public-housing community may promote reciprocity and mobilise solidarity among residents, these internally oriented networks may not facilitate community-level change because connections (even if they are weak) with external agents and systems of power are not present (DeFillipis, 2001; Granovetter, 1973; Putnam, 2000). Future efforts to build social capital by bridging connections beyond the immediate neighbourhood context may enhance residents' ability to create community-level change, which may further facilitate community wellness.

Participants also emphasised the importance of community development efforts (e.g. opportunities within the community for capacity building and gaining access to necessary resources) as another key person-in-environment component of a healthy community. Residents identified community assets such as a community centre, churches and recreations facilities as important available resources that facilitate community wellness. Yet, there was consensus among the participants that there were not enough resources available in the community. A call for building new resources or ‘re-resourcing’ existing resources was made throughout the photovoice artwork, titles and captions. In particular, participants illuminated the need for resources related to health, social, educational, childcare, recreational and drug rehabilitation services for children, youth, adult and/or elderly residents. Future research may seize community development opportunities as tools for creating jobs in the community (e.g. construction and repair work, staff for new facilities) and for building capacity among residents.

Finally, results reveal the importance of building on other community assets to engender collective action, which we defined in this study as group efforts to create community-level change. Collective action was described as a higher-level activity that was supported by place attachment, collective efficacy, social capital and community development. Person-in-environment features of collective action that emerged as facilitators of community wellness included a strong sense of agency and empowerment to promote social change, a sense of urgency and an ability among residents to unite and work together for change. Barriers to collective action were the opposite of the facilitators and had the opposite effect on community wellness. Participants highlighted the importance of not just talking about collective action, but

also seeing collective action *in action*. For instance, Figure 3 demonstrated an example of collective action wherein management from the housing authority removed shoes hung over a power line; this action was in response to feedback from residents who had taken the initiative to inform the housing authority of this physical incivility. Together, these groups worked collaboratively to not only remove the shoes from the power line, but to also instil a broader message that this type of behaviour was not tolerated by the 'owners' of the community.

Implication for social work practice

The results of this photovoice study provide a grounded theory for researchers and practitioners from social work and related disciplines interested in developing community-level interventions to promote individual health through the creation of healthy community environments. The five socioenvironmental factors that emerged as components of healthy community environments provide a variety of pathways for social workers to develop efforts that promote health through community-level change. For example, a collective action intervention that involves a community garden may promote natural beauty and ownership of space in the community; correspondingly, this may facilitate place attachment and social capital by cultivating social support networks through garden events. If the community garden focused on culturally relevant foods and recipe exchanges that provided an opportunity to showcase traditional family recipes, then the garden may further promote social cohesion and collective efficacy among residents. The garden could also provide a venue for capacity building by offering cooking classes focused on foods grown in the garden or may serve as a career development opportunity to train residents in gardening and farming or food preservation and preparation skills. This example illuminates the benefit of having a conceptual framework for examining socio-environmental factors influencing community context (Macintyre and Ellaway, 2003). The emergent person-in-environment framework may provide guidance to communities to maximise the potential of community-level interventions.

Limitations

As with any study, this one has both strengths and limitations. A key strength is the anti-oppressive, intensive collaborative research methodology that included community engagement from the identification of the research question through data collection, analysis and dissemination. An additional strength is the target population. Public or social housing communities provide an ideal forum for creating widespread change to promote healthy community environments because they exist in many countries and are governed by similar policies. In the USA, for instance, there are about 1.2 million public-housing units (US Department of Housing and Urban Development, 2010). Moreover, public-housing residents have some of the worst health outcomes and crime rates (US Department of Housing and Urban Development, 2010; Ruel et al., 2010). Thus, insights gained from the perspectives of the people living in public housing will be important for guiding future community-level change efforts in these communities. A key limitation to the study is related to the sample. The sample size is small (N = 18) and may not be representative of the views of all residents living in the targeted community nor those of public or social housing residents in other locales.

Conclusion

In conclusion, there is a paucity of person-in-environment conceptual frameworks that examine the relationship between community and health. Our study adds to the literature-base by highlighting the important role that socio-environmental factors play in the health and well-being of a community environment. For healthier public-housing communities, social work researchers and practitioners should focus on creating interventions that enhance overall community wellness. Our findings reveal five socioenvironmental factors relevant to the promotion of healthier public-housing community environments. Future research should explore the dynamic role that such factors play in the promotion of healthier communities—and healthier residents.

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