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Collective efficacy in Denver, Colorado: Strengthening neighborhoods and health through community gardens

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ABSTRACT

Community gardens are viewed as a potentially useful environmental change strategy to promote active and healthy lifestyles but the scientific evidence base for gardens is limited. As a step towards understanding whether gardens are a viable health promotion strategy for local communities, we set out to examine the social processes that might explain the connection between gardens, garden participation and health. We analyzed data from semi-structured interviews with community gardeners in Denver. The analysis examined social processes described by community gardeners and how those social processes were cultivated by or supportive of activities in community gardens. After presenting results describing these social processes and the activities supporting them, we discuss the potential for the place-based social processes found in community gardens to support collective efficacy, a powerful mechanism for enhancing the role of gardens in promoting health.

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Introduction

Environmental changes that address physical aspects of neighborhoods and facilitate social connections may be an important strategy to improve community nutrition, increase leisure time physical activity and strengthen neighborhoods. Current and past research about community gardens illustrate that gardens have potential to yield fresh food (Blair et al., 1991; Schmelzkopf, 1996; Twiss et al., 2003; Armstrong, 2000), bring 'nature' to urban areas (Schmelzkopf, 1996; Kaplan, 1985; Kaplan and Kaplan, 2005; Hancock, 2001), bridge ethnically and age diverse communities (Armstrong, 2000; Hynes, 1996), increase physical activity (Crespo et al., 1996; Yusuf et al., 1996; Magnus et al., 1979; Pate et al., 1995; Caspersen et al., 1991), build skills and knowledge of everyday life (McBey, 1985; Milligan et al., 2004) and build community (Glover et al., 2005). As described by Glover and others, these plots of land, used collectively, require the formation of social networks that pool neighbors' resources (Glover, 2004). Kaplan and Kaplan write that "the place focus of community gardens is central to their far-reaching benefits" (Kaplan and Kaplan, 2005) and distinguish gardens from other

organizations because they are natural places that are activity-based, thus "calling for action, responsibility and nurturing". While gardens may be an important public health promotion strategy, the mechanisms by which gardens impact health are not well understood. Specifically, firsthand accounts describing the place-based social processes that are experienced and promoted through participation in community gardens are limited and are the subject of this research study.

Neighborhood social processes and health: the role of collective efficacy

Collective efficacy, as defined by Sampson and others, is "the link between mutual trust and a shared willingness to intervene for the common good of the neighborhood" (Sampson et al., 1997). Social cohesion and informal social control are the two major tenets of collective efficacy. Social cohesion results from solidarity and mutual trust, while informal social control is needed in order to fulfill neighbors' expectation to be able to take action together (Sampson et al., 1997). In other words, environments where individuals feel connected to one another tend to be environments where individuals feel they could take action together. It is the link between mutual trust and the expectation for action that defines collective efficacy (Sampson, 2003).

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There is a growing body of research that builds off of the work of Sampson and others to examine the connections between collective efficacy and health. Specifically, research has documented that high levels of collective efficacy at the neighborhood level are associated with decreased risky sexual behaviors, asthma prevalence, obesity, and premature mortality, as well as improved self-appraisal of health (Browning and Cagney, 2002; Locher et al., 2005; Ellen et al., 2004; Franzini et al., 2005; Wen et al., 2005; Burdette et al., 2006; Cohen et al., 2006; Cohen et al., 2008; Chen et al., 2006; Lidfeldt et al., 2007). More research is needed to better understand the activities and places in neighborhood environments that promote these social processes so that this knowledge can be integrated into neighborhood-level health promotion strategies.

Community gardens as health promotion strategy

The American Community Gardening Association (ACGA) defines a community garden as any piece of land gardened by a group of people in urban, suburban or rural settings. The format of the garden varies from one large communal plot to many individual plots and can be located in a variety of settings such as schools, churches, neighborhoods, and hospitals. In some instances, community gardens can include a series of plots dedicated to “urban agriculture” where the produce is grown for a youth or local farmers’ market. Community gardeners come to gardens to grow flowers, vegetables, herbs and in many instances to connect with nature and the restorative qualities of gardening (Kaplan and Kaplan, 2005).

Recognized as an established recreational activity, community gardens have the potential to promote public health through increased physical activity, improved nutrition, increased social engagement, and improved mental health. Gardens as a local place and a nearby destination represent one example of a community-based environmental change that transcends age, ethnicity, race, income, and education, and thus provides an important example of a place-based strategy that can strengthen and sustain neighborhoods and improve residential health across the lifespan. Importantly, community gardens are part of a larger national community gardener movement, with over one million households participating in community gardens across the United States (Hynes, 1996). Community gardeners are also part of a broader social movement around sustainable food systems, thus enabling the community garden movement to reach non-gardeners and to influence policies that support healthy and active lifestyles.

While there are studies documenting the benefits of community gardens, there is little known about the intervening mechanisms that explain how gardens impact health and well-being of neighborhood residents, or how garden social processes may lead to broader community impact. As a first step to addressing these research questions, we present the findings from an analysis of in-depth interviews conducted with community gardeners to explore the social processes that are cultivated within community gardens, the specific activities that give rise to those social processes, and whether and how garden social processes reach beyond the boundary of the garden to impact others in the community.

Methods

In-person individual and group interviews were conducted over the summer and fall months of 2005 with residents who participated directly in community gardens. The interviews were designed to document the meaning of gardens, garden practices,

garden-neighborhood interactions, and the impacts of community gardens on the broader neighborhood and city environment.

Data collection

Active garden leaders and/or community gardeners who had a plot in a Denver Urban Gardens (DUG)-sponsored community garden were invited to participate in the interviews over the summer of 2005. Interviews were conducted over the summer and early fall of 2005 when gardening activities were in full swing. Interviews took place either in the garden setting or a gardener’s home, and the average duration of the interviews was 90 minutes regardless of group or individual interview format. A question guide was developed to assure consistency of data across sites and interviewers and is available upon request. Fifteen interviews were conducted with individuals and 14 were conducted in groups with at least 2 and up to 8 participants. Data from individual and group interviews were pooled to generate the final dataset (67 respondents, 29 garden sites). All of the interviews were tape-recorded (with consent from the respondents), transcribed verbatim, and later verified by the interviewer and interviewees.

Coding

All of the coding, sorting, and comparing of the data during the analysis process took place using NVivo 7 (QSR International Pty. Ltd., <http://www.qsrinternational.com/>). The interview transcripts were coded using a three-step process. Initially, we developed a preliminary list of codes for relevant *social processes* based on the published peer-reviewed literature. Interview material related to these social processes was coded by two independent coders followed by discussion and resolution of coding discrepancies. In the second coding pass, additional material related to *activities that included or fostered key social processes* was coded. The final step of coding involved searching the interview material for negative cases and discrepant evidence that added variation and depth of understanding (Strauss and Corbin, 1998).

Analysis

After all of the transcripts were coded, we generated reports of the material assigned to each code. We then identified themes and patterns in the coded material, referring back to the context of the interview to deepen the interpretation of these themes and patterns. The analysis was driven by the two primary research questions: (1) what social processes are described by community gardeners? And (2) how are those social processes cultivated by, or supportive of activities in community gardens?

Findings

Demographics

Twenty-nine garden sites participated in the interviews. We asked gardeners who participated in interviews ($n = 67$) to fill out information cards with their age, gender, and race/ethnicity. Of the 47 (70%) gardeners who completed these cards, 64% were female and 36% were male. The average age was 46.8 (27–83 years). Approximately three-quarters (78%) of the interview participants self-identified as Caucasian/White, 12% as Hispanic/Latino, 8% as African American/Black, and 2% as of another race/ethnicity.

*Social processes described by community gardeners**Social connections*

Gardeners were drawn to gardens and stayed with the gardens because of the social opportunities they offered. Gardeners frequently described gardens as a place to connect across different cultural backgrounds, to feel a part of a community, to connect with family and neighborhoods and a place for social activism. The gardens were described as a location for growing friendships, not just vegetables and flowers. Strong social ties developed within the garden through face-to-face contact with other gardeners and involvement in garden-related activities:

...when you get people in the garden and they're staying in the garden and coming back, you start forming those relationships and those connections and it really starts building a community and a support network for you. So that when something does happen, you're not there by yourself dealing with it. You have somebody, if nothing else, they'll come and stand there and hold your hand.

I like being part of the community, you know. It's a way to meet people and my family's not from here.

Some gardeners struggled socially and found that the garden offered them a non-threatening way to participate in a group:

It's a way of bringing people together... It's a place where we can be in a way that we aren't in the world.

We are better for being outdoors in a community, we're better for being together in a community as opposed to holed up in our own places. This is an urban environment where we are here. We're not in a walled city, you know.

Not everyone's experience of social connections in the garden setting was positive. In one instance, a gardener stated that being part of the garden community was stressful because of the expectations for participation.

The potential for social connections to provide therapeutic benefits was illustrated by the story of an individual with a history of alcohol and drug use who got involved in the community garden:

Cause, you know, he had an addiction to drug and alcohol and pretty much his lifestyle would be hiding in the apartment and [he] didn't really want to talk to people. But getting him involved in the garden and being out in that, it would get him out, and he'd actually liked to be in the garden. Especially, you know, when the weather was nice and he'd get to talking to people...

Reciprocity: helping each other

Gardeners reported that the garden environment encouraged gardeners to exchange actions and assistance with one another—in the words of one gardener, “everybody helps everyone, you know.” Several gardeners noted that they were willing to share their garden produce and expected that the other gardeners would share as well. Reciprocity was not restricted to garden activities:

If any of these people came to me and told me, you know, they were really sick and whatever, I think that we all agree that we would help each other in life. Not necessarily [only] the garden. Even in the winter and stuff, just, you know, being able to walk around in the neighborhood and knowing that, you know, some of my garden buddies are around and it's you know, a nice sense rather than just, you know, being involved in your own plot.

Gardeners mentioned the importance of individuals sharing advice about gardening practices and food recipes. One gardener explained that an elderly Hispanic woman who grew an array of chili peppers would tell others how to cook with them. This same gardener also said,

What I like about it too is the woman from Russia, the woman from Germany, and [the woman from] Taiwan will get talking some about the vegetables and everything and sharing recipes and then finding out how similar some of our recipes are.

The garden was talked about as a place to establish social connections that developed into personal friendships and that could be relied upon for support beyond the context of the community garden. When one gardener developed cancer, another gardener voluntarily picked him up from the hospice agency where he was residing and drove him to the community garden for one last visit. The community garden also provided his wife with a supportive environment during her grieving:

He was too weak to get out of the car, but he just sat there and just absorbed the energy and the feeling of being at the garden. It was really a special thing for him. And he died a few weeks later. And, [his wife] came to me in the garden, ah... and, she said, if it hadn't been for the garden I don't know how I would have made it through the first year. So that gives you an idea of the connections and the value and what that garden means to people. A place of healing, a place of refuge and connection...

Mutual trust

Gardeners also talked extensively about a high level of trust between members of the garden, often on the strength of being fellow gardeners in the same garden. One garden leader said that she felt important because the other gardeners trusted her to be a good leader, and she further explained just how valuable that trust was to her, saying she would go to great lengths to uphold that trust:

And I'm pleased about that because it says that there's a lot of trust there. And you don't get very far without some trust. I don't want to deal with people that do not trust me or that I don't trust.... And so that says they trust me and it says I need to do all I can do so I'll never lose that trust.

A number of gardeners mentioned feeling safe and comfortable inside the garden, even when it was located across from a park known for its drug sales, or within an area that experiences frequent vandalism or theft. However, some of the interviews shed light on potential threats to the atmosphere of mutual trust within gardens. One gardener described the trust within the garden but also hinted at some insecurity that persists in the garden:

We all trust one another because we're here putting our time into our gardens and assume that we're not gonna take stuff from each other but you never know.

Other gardeners spoke of not trusting people outside of the garden and noted that the stealing of produce or tools from the garden and vandalism of the garden property were issues that made some gardeners mistrust non-gardeners. Interestingly, gardeners were aware that not being able to feel trust with people outside the garden was at odds with belonging to the larger community of the neighborhood:

If the garden gets trampled by outside visitors, it is a sign that the community is not unified and people do not respect the gardeners' work.

There's been a lot of vandalism in the garden, and I hate to see this, I mean. I hate seeing locks on the gates because to me, you know, you have a big sign out here that says, "Community Garden."

Mutual trust is a social process that can cultivate feelings of safety. However, there is an acknowledgment by gardeners that threats to mutual trust can come in different forms, most notably vandalism and theft.

Collective decision-making

Gardeners described collective decision-making as key to the viability and sustainability of the community garden. Garden-based decisions, for example, required consensus among multiple decision makers about watering and weeding schedules or unacceptable behaviors in the garden:

There's ways to work things out without having a major problem... where you come together with an idea that's agreeable to everyone, everyone gives and no one's feeling like they're not listened to.

Overwhelmingly, gardeners emphasized communication as an integral component of collective decision-making in the garden:

And so, we just enjoy each other's company, interacting, trying to reach consensus, and ah, I think the fact that we have such good communication with our gardeners, and let them know what the expectations are, the rules, clean up, then there's no surprises.

However, open communication did not come easily for all gardens and garden leaders. One gardener noted that it was difficult to come to a consensus in her garden because only a small group of gardeners were involved in the decision-making process:

And you can't vent or voice anything, because it's the same four people that show up.

Garden leaders described the type of help they provided to train other gardeners to facilitate communication, engage gardeners in garden-level decision-making, and in some instances help mediate conflicts in the garden. One leader described the process she used to get input from the garden membership and buy-in for the ideas that would be put into action:

Well, one thing about a community garden is we need to get the gardeners back and then we need to find out what they want. And so I don't want to just like bulldoze through just 'cause I think it is a great idea. So, the first thing we'd need is buy-in from the gardeners, the people who work here and/or different better ideas.

A variety of conflicts occur in almost every garden, which leads to the use of collective decision-making to reach resolution. One gardener, discussing theft in the garden, described a decision to use mediation as a means to resolve the problem:

We had another woman who had come with her husband and his musical instrument and he'd sit on the side away from where she was picking. So she would pick while it was getting dark and then she'd walk out of there with bags of stuff. ... And she had only garlic and dill in her own garden. No way she could and she was seen taking. So then we went through mediation with her because she was totally in denial...

In many instances, the gardeners described conflicts as opportunities to engage people representing different opinions. For many garden leaders, using garden-wide communication and getting buy-in among garden participants to address conflicts inside the garden setting was paramount to resolving conflicts and serves as a good model for community healing and neighborhood strengthening.

Social norms

Community gardeners repeatedly spoke of established rules and regulations that all gardeners were expected to follow, as well as patterns of behavior that were acceptable in the garden:

So, yeah, that's part of the community; we have that trust which is that we have some rules and we all agree to them. We have our guidelines and we hope that people will be responsible enough to follow them. But you can't really police it.

Individuals in the garden accepted standards established by the collective, in exchange for the assurance that everyone else would adhere to the same standards:

See something wrong, take care of it. So that promotes a feeling of friendship and in a small way it's a community effort. That way we all help each other.

In the case of one garden, a shift in normative behavior came as a result of a school program promoting garden practices:

[In the past] the garden was a place to come and screw around and mess around and grab vegetables and throw [produce] against the wall and the sidewalk or cars and things like that. But that has changed considerably. This year we've only had minimal vandalism with the corn and it's very small, and we've only had a couple of times where we've had things that are getting stolen. But they're not destroying the plants which in the past things would just get ripped up and thrown around and messed up. That I think is a direct result that's changing because the kids are going through the gardening [program] and now there is more ownership and this is their area and you don't mess around with it. But five years ago it was everything got ripped up and thrown around."

This program essentially broadened garden social norms to include youth. Thus a change in social norms via the garden resulted in a change in the community environment.

Civic engagement

Gardeners described efforts to identify and address issues of public concern. Many mentioned opportunities for donating surplus harvest to organizations and populations without access to fresh produce; attracting community members to participate in the garden; securing funds for garden maintenance and development; and collaborating with voluntary associations and local businesses. Nearly every interview documented the involvement of gardeners with at least one voluntary association in the community such as student groups, social service programs, neighborhood schools and churches, and health-related organizations.

On the topic of food distribution and garden donations, one gardener described the need for more processes to support garden donations of produce to those in need:

In a lot of the gardens you have people with extra produce and they're not really sure what to do with it. I'd like to maybe see a

way that, you know, they could be funneled to where there's a place they could bring it to or a pickup or something so that food could get out to the communities like people around the [neighborhood center] who don't have good quality produce. ... And it's just real, really great, you know, to share the benefits of the garden like that. Cause not only has it helped you, get the joy of growing it and working out the stress and all that stuff for growing that. But then you get that really good feeling that you been able to give this to someone who really needs it.

One garden located near a community health center reported that they recruited adolescents seen at the clinic and connected them with a mentor in the garden:

And what it does is while you're out there, you're working with them. One, you're planting something that they're gonna grow, that they're gonna be able to eat, but it also gives them time to learn to get to know you. And then after awhile they start opening up and they can talk to you about their problems and what's going on in their life... It's really cathartic for them because they can start trusting you, that they can talk to you...

The community gardens offered a setting that allowed for the exchange of ideas and values among diverse members. Participation in the garden was often a catalyst for engagement in other community activities. As one gardener said:

I think we tried to get people involved in the garden just to kind of, you know, keep them in sort of the loop of what was, you know, of things that need to be addressed. You've got people that are coming together at the garden, for example, and then you've got something else that's important in the neighborhood, you'll be able to talk about it and hopefully, you know, engage those people in, you know some kind of action that's important to take.

The descriptions from many respondents about their garden experiences reflected an ongoing battle for survival in the neighborhood, related to broader land tenure insecurities, crime, and neighborhood instabilities. The garden social environment engaged members on issues that affected the entire community:

It's going to be so successful not just because of what it can be as a garden itself, but it's a symbol of recovering this neighborhood. It's a symbol saying that we don't want to have any needles on that site anymore. We don't want to have any prostitution in the neighborhood anymore. We want to get those things out. We want this to be a safe place for families to live, and this can very definitely be a catalyst for a number of other activities that we're all invested in to improve this neighborhood.

The whole idea of this neighborhood's survival has to do with people learning about surviving politically, you know. And I think the garden, we're back to the garden again, is a good example and it's a learning example for people that have gone through that process at one level or another.

Community building

Respondents spoke about the garden as a place where diverse people come together to form a community that is working toward a common goal. Gardeners labored together in the community garden, regardless of class, race/ethnicity, and age. As one respondent expressed it, "gardening is the leveler." The

garden was described as a place to bridge social barriers and build social networks:

And I think it's the face to face communication opportunity that people have through a community garden that will really help strengthen the community and help people to watch out for one another and work out problems and enjoy the neighborhood together.

Like you have people who know how to garden. You have people who know how to work with teenagers and all like that. Then you bring the school in where you're teaching the kids, one, about the community; you're teaching them about nature. And you're teaching them about giving. And I think it just builds a big wonderful network.

You have some people that are a little more affluent and some people would have more garden knowledge... And I think it's just a way, you know, bridge the communities. This is your part of town, this is my part of town ...but a garden is everybody's area.

Additionally, gardeners spoke about increased sense of belonging as a result of garden participation:

I think it's more of a sense of community, and that's what our garden has. I never was a joiner of much of anything and this garden has really, kind of, brought me out of myself.

I found when I first joined that a lot of people who join were in some sort of transition in their lives. Like they just quit their job or they just moved here or they just got out of a relationship or maybe just got married... it was like a way for people to kind of rejoin something after they've maybe had some sort of change or loss or something.

It's infrastructure because the things that grow out of that, you know, kids learning, our neighbors socializing and becoming comfortable and feeling they have a real community, those things are the products in addition to whatever is grown. But, I mean, the social products of the garden are really the results and the garden itself is simply infrastructure.

In the experience of these gardeners, the garden environment promotes more than social connection, trust, and reciprocal relationships—it provides something to which they can belong.

Garden activities that support key social processes

There were many examples of activities that seemed to promote the social processes described above. We identified four activity types that appeared to have the strongest role in the social life of the garden: volunteer activity, leadership activity, organized neighborhood activity, and recruitment activity.

Volunteer activity

Active participation in the community garden encouraged individuals to lead more engaged lives. The gardeners spoke about volunteering in their garden to do work beyond the minimum requirement of maintaining their individual garden plot: weeding the communal areas, picking up litter and refuse, securing funds for the garden through grant writing, and building garden sheds and compost bins:

It's because people contribute as they can what they can and how they can there's really no political motivation or you know, side agendas, hidden agendas. Just people love to improve the place and, you know, just contribute.

There is one other thing for me, it's a sense of accomplishment. I mean, you see litter and you see weeds and then when you're

done cleaning it up, you've accomplished something and it looks good and you feel good.

We hypothesized that volunteer activity in a collective space such as a community garden helps support social norms for taking good care of the garden. It can also enhance social connections if other gardeners express appreciation. Actively improving the overall garden environment creates ownership, which supports collective responsibility and mutual trust.

Leadership activity

The majority of community gardens had either a garden leader or a leadership council that orchestrated activities in the garden. The leaders openly displayed their willingness to intervene in the activities of the garden for the good of others and encouraged gardeners to assume responsibility for the community garden. Several respondents mentioned other individuals who were champions in the garden—"key ingredients" of the garden's success—even though they were not identified as leaders. These champions adopted major projects such as getting the garden established or coordinating the installation of an irrigation system and often signed up for additional tasks when asked:

I think you have to have committees and people working on different issues so that you balance out somebody who is too verbose or too, you know, not strong enough in certain areas. So that everybody's strengths are balanced by the ones that don't have those strengths. That you can embrace each other's talents and utilize them and, you know, everyone feels welcome and worth it like they have value.

One of the real turn-ons though is getting other people involved. And it might be getting them involved in the gardening, but then getting them to realize... all the other things that are necessary just to keep this plot of ground here. Politically speaking, community-wise, the whole bit, you know. And I think she's probably one of the good people being developed, because of her involvement not just in the garden, but.... her leadership.

Leadership activity has the potential to shape and support the overall social environment of the garden, but the analysis showed that it was particularly significant for promoting collective decision-making, social norms, and mutual trust. Leadership activity provides mechanisms for getting tasks done, communicating effectively, and promoting membership and belonging.

Organized neighborhood activity

Gardeners described their involvement in activities organized by the garden and included events such as community work days, picnics and potlucks, yard and produce sales, harvest festivals for the entire neighborhood, pumpkin carving contests with students, and collecting surplus produce for donation:

And it became an annual event and people started I mean then, you know, you not only knew the people you were gardening with, but you started to get to know other people in the neighborhood and it's just been a really positive influence, I think. Even though we haven't had the garden, we have kept up the party.

The other thing we do during our work day, although it's only once a month, we patrol the outside and pick up all the trash and garbage, which we didn't create, but nonetheless we clean it up and at least for a day it looks good. For that day, before it starts all over, we've taken that responsibility upon ourselves.

If you imagine the people in the mansions are inviting us for a picnic and we all work together and do something. We come together as a community.

Descriptions of these events portray how community gardens act as a catalyst for neighborhood activity, which supports a number of important social processes. Planning and decision-making take place, and social connections are cultivated, both among gardeners and between gardeners and other neighborhood residents. These activities were often aimed at community building and generating civic engagement, opportunities for gardeners (and the broader community) to demonstrate collective efficacy—the ability to act together for the common good. In addition, the garden as an example of healthy living and collaborative spirit became more visible to neighborhood residents through events that drew new people into contact with the garden.

Recruitment activity

Methods for recruiting new community garden members included posting advertisements near the garden sites and in local newspapers and distributing fliers to neighbors, as well as more casual approaches such as giving impromptu tours to individuals passing by the garden. One gardener also mentioned appealing to civic responsibility as an effective recruitment approach:

And we're telling them, if you want your homes protected... if you really want to improve your community, then you need to be obligated to your community. Then you need to come out here and work your community.

So I think it's really important to make sure that you've [got] a core group of volunteers that are active in developing and supporting the garden and sort of self managing the garden so we can keep bringing new people in regardless of where they live because I don't think that we can count in the long run on this particular population gardening here year after year after year.

It's just a matter of communicating to people and letting them know about it and then asking, inviting them to come and participate.

The ongoing need to recruit new gardeners not only required gardeners to act collectively, but also to articulate the value of the garden for themselves as well as for the neighborhood at large. Recruitment activity presented the garden as a neighborhood social environment that provides a sense of belonging without being exclusive, and a sense of openness that is not impersonal.

Discussion

Gardens as a place in the neighborhood represent one aspect of "community *esprit*," a social structure that arises from collective effort and shared goals, from trust and investment in a common space (Sviridoff, 1994). Our findings indicate that gardens serve as a positive social influence within neighborhoods and also as a catalyst for other positive place-based social dynamics. Gardeners talked about the process of gaining trust with one another through shared common goals and interests. These findings are consistent with Sempik and Aldridge's (2005) evaluation of the social and therapeutic horticulture in the United Kingdom. In their evaluation, they found that gardens represent a range of activities that have purpose and coherence, promote social inclusion, and give rise to health benefits. The experiences and activities described by gardeners in Denver illustrate a number of social

processes that are cultivated within garden environments and give way to the development of high levels of collective efficacy.

As suggested by several examples from the interview material, collective efficacy in the garden has the potential to mediate health by encouraging social support and access to resources that are protective against poor health (Milligan et al., 2004; Browning and Cagney, 2002; Wen et al., 2003; Cohen et al., 2006). At most garden sites, the gardeners are a cohesive group of people willing to look out for each other and intervene when trouble arises (Cohen et al., 2006). The relationships that grow in the garden are relied upon for more than assistance with weeding and watering the garden plots. Gardeners look out for each other in the face of illness or difficult times. They unite to protect not only the garden but also the well-being of their fellow gardeners and that of the broader neighborhood.

Like any other social setting, gardens are not immune to tensions and conflict. Gardeners spoke of the collective decisions they made concerning the gardens—for example, when one gardener was found stealing produce from others, collaborative mediation resolved the issue. Such decisions were informed by a system of social norms that helped uphold a sense of shared responsibility and mutual accountability. Picking from other gardeners' plots violated a generally recognized norm, which led to the need for a group process to resolve the conflict. Considering tensions more broadly in the garden setting, the underlying collective spirit within the garden enables residents to engage with one another about local challenges such as vandalism, as well as interpersonal conflicts that may arise within or outside the garden setting (Sampson et al., 1997). Thus, gardens serve as a neighborhood place to resolve conflicts, organize community members, and increase community capacity to address local tensions and concerns (Glover et al., 2005).

The ripple effect of collective efficacy from the garden outward is consistent with Glover and others, who found that “the effects of the community gardens [are] not necessarily bound within the context in which they were originally generated” (Glover et al., 2005). For example, community gardens give rise to social connections among neighbors who otherwise might never engage with each other. Gardeners describe how such relationships blossom into informal agreements to help one another inside and outside of the garden through mutual reciprocity and help to define acceptable behaviors around the garden place. Such social norms that discourage violence and crime can be contagious, diffusing across neighborhood boundaries (Sampson, 2003). The social norms and standards expressed by the gardeners in this study, such as the upkeep of the garden's appearance or the protection of safe public spaces, have the potential to become ingrained in a neighborhood and then spread through wider social ties to members of other communities.

In addition to buffering against violence and crime, the diffusion of social norms could be particularly important when it is food practices that are shared and diffused. The gardeners in our study talk about sharing recipes, tips for growing vegetables, and exchanging healthy foods at garden events, suggesting the potential for this set of social behaviors to impact health within and beyond the garden neighborhood. That is, gardens may act as important change agent in the community by supporting the spread of healthy food and food-related practices including food preparation, storage, and distribution to friends, family, neighbors, local institutions such as schools and shelters, and citywide establishments serving the broader population through farmers' markets, food pantries and organizations serving the urban poor, which can lead to healthier communities (Christakis and Fowler, 2007).

Concrete mechanisms supporting the development of collective efficacy within community gardens included volunteer,

leadership, neighborhood engagement, and recruitment activities. Volunteer activities aim to improve the garden support social connections and strengthen social norms. Leadership activity is vital to the functioning and health of many collective processes in the garden. The presence of informal leaders or “champions” shows other gardeners that individuals can be relied upon to achieve collective goals and are willing to take action whenever necessary. Organized neighborhood activities make visible the gardeners' efforts on behalf of the community as well as the garden. The coordination of such events further supports collaboration among gardeners, thus strengthening their sense of efficacy. Finally, recruitment activity aims to engage new members, thus broadening the range of social networks connected to the garden and providing an opportunity for gardeners to articulate the value of the garden for its members and the neighborhood.

This paper explores the meaning of gardens from a gardener perspective. This analysis does not reflect the views of non-gardeners who may have very different experiences with community gardens. Moreover, we know that community gardening is not for all. In light of this reality, there are numerous strategies under development that aim to allow people to garden at home or in other settings or connect residents to healthy local food so that individual needs are met. Such strategies include seeds and transplant programs for low income families; “grow a row” strategies that aim to convert landscaped lawns to productive use; container gardening in small dedicated spaces within the home; and subsidies for food shares through local community-supported agriculture (CSAs). Such alternatives help to broaden the continuum of environmental and social supports for healthy and active lifestyles.

Conclusion

The community garden as a neighborhood place captures two essential “seeds of urban revival”—that is, its place focus and its social organizational underpinnings (Sviridoff, 1994). Environmental change at the community level must evolve in tandem with strong social organizations to realize desired community development and neighborhood health outcomes and sustain such changes over time (Sviridoff, 1994). The social organizational underpinnings of gardens give rise to a range of social processes, including social connections, reciprocity, mutual trust, collective decision-making, civic engagement and community building, all important processes associated with improving individual health and strengthening neighborhoods (Twiss et al., 2003; Armstrong, 2000; Cohen et al., 2006; Landman, 1993). Such processes can be fostered through community gardens through key activities such as volunteerism, leadership, neighborhood activities and recruitment. The place-based social processes found in community gardens support collective efficacy, a powerful mechanism for enhancing the role of gardens in promoting health. Additional research is underway to understand whether and how garden-based social processes lead to better health.

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