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The Paradox of Parks in Low-Income Areas: Park Use and Perceived Threats

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Abstract

Concerns about safety and perceived threats have been considered responsible for lower use of parks in high poverty neighborhoods. To quantify the role of perceived threats on park use we systematically observed 48 parks and surveyed park users and household residents in low-income neighborhoods in the City of Los Angeles. Across all parks, the majority of both park users and local residents perceive parks as safe or very safe. We noted apparently homeless individuals during nearly half of all observations, but very few instances of fighting, intimidating groups, smoking and intoxication. The presence of homeless individuals was associated with higher numbers of park users, while the presence of intoxicated persons was associated with lower numbers. Overall the strongest predictors of increased park use were the presence of organized and supervised activities. Therefore, to increase park use, focusing resources on programming may be more fruitful than targeting perceived threats.

Keywords

Parks; physical activity; safety; collective efficacy; mental health

Background

Parks are community resources that provide both space and facilities to support physical activity, but are often underutilized (Cohen DA et al., 2010; Cohen et al., 2013; Kaczynski AT & Henderson KA, 2007). As a consequence of not using parks, many people also do not get enough physical activity, which places them at greater risk for multiple chronic diseases, like heart disease, diabetes and cancer (USDHHS, 2008). Parks in low income neighborhoods are used less than those in high-income neighborhoods, but the reasons for this have not been fully delineated (Cohen et al., 2012). Perceived threats can be barriers to park use, and fears about crime, traffic safety, becoming injured, or being caught up in gang violence have all been cited as reasons some people avoid parks (Committee on Environmental & Tester, 2009; Parks, Housemann, & Brownson, 2003; Kimberly J. Shinew, Monika Stodolska, Caterina G. Roman, & Jennifer Yahner, 2013). A study of parks in New York City noted that although there may be more parks in lower income neighborhoods, there was lower social access because of higher crime, fewer park acres, and more noxious land uses (Weiss et al., 2011). Other contextual factors also influence park use including

street connectivity (Kaczynski, Koohsari, Stanis, Bergstrom, & Sugiyama, 2014) and land use mix (Frank et al., 2012). While one study indicated no difference in perceived accessibility to parks among different racial/ethnic groups (Carlson, Brooks, Brown, & Buchner, 2010), others have shown distinct differences in perceptions of park safety, with minority groups, including African Americans and Latinos, perceiving local parks as less safe (Boslaugh, Luke, Brownson, Naleid, & Kreuter, 2004; Tappe, Glanz, Sallis, Zhou, & Saelens, 2013).

Nevertheless, regardless of race/ethnicity or income level, positive community level social factors may reduce fear if park users have confidence that community members are looking out for each other. Measures of collective efficacy suggest that when community members trust each other, have similar values, and would intervene on behalf of one another, people may feel safer and enjoy better health (Sundquist et al., 2014) (Sampson, Raudenbush, & Earls, 1997). Parks constitute an important component of the social fabric in communities and at least two studies have found associations between parks or park use and collective efficacy (Broyles, Mowen, Theall, Gustat, & Rung, 2011; Cohen, Inagami, & Finch, 2008). Furthermore, parks have been associated with mental health benefits, possibly due to exposure to nature, positive social interactions that occur in parks, or directly as a consequence of physical activity (Sturm & Cohen, 2014).

Another layer of influence on park use and people's perception of parks involves management practices that impact the social environment. The degree to which parks are staffed, schedule programming and events, and maintain conditions, landscaping, and renovate facilities potentially plays a large role in drawing users to parks and potentially overcoming perceived threats (Dolash, He, Yin, & Sosa, 2015; K. J. Shinew, M. Stodolska, C. G. Roman, & J. Yahner, 2013). Because parks are generally used less in low-income neighborhoods, we conducted a study of high poverty area parks to understand the relative importance of perceived threats as well as the role of collective efficacy on objectively measured park use.

Methods

Conceptual Framework

To conceive of park use, we use relevant portions of a Conceptual Model of the Role of Parks in Public Health (Bedimo-Rung, Mowen, & Cohen, 2005). Specifically, we consider the factors that influence frequency of use and nonuse as influenced by two broad categories: the characteristics of potential park users and the environmental characteristics of parks themselves. Environmental characteristics include things like park features (size, facilities, and programming), condition (maintenance and incivilities), accessibility, aesthetics, safety (perceived and objective), and policies (management and budget). User characteristics such as age, gender, race-ethnicity, socio-economic status, and residential location can influence park use at both the intra- and inter-personal levels (Bedimo-Rung et al., 2005).

Data on Park Use and Park Social Environment—As part of an ongoing randomized controlled intervention trial, we collected baseline data in 48 parks in neighborhoods with a

poverty level above the median for the city of Los Angeles (> 19% households in poverty) between June 2013 and August 2014. These 48 parks comprised almost a complete census of eligible low income area parks with recreation centers in the City of Los Angeles. A few parks were excluded because of location (in a housing project with limited public access) or safety concerns. We mapped each park and divided it into distinct target areas for observation. In each park we counted all park users in every target area following a modified SOPARC protocol, in which we recorded the activity level, gender, and perceived age and race/ethnicity grouping for each person separately (Cohen et al., 2011). We conducted observations on six randomly scheduled days (3 weekdays and 3 weekend days) during 3 different times of the day over a six-month period (18 observation hours per park).

We also conducted intercept interviews with adult park users and with local residents living <1 mile from park. We randomly selected 30 households around each park, 10 within each of three strata—less than ¼ mile from the park, ¼-1/2 mile, and ½ mile to 1 mile. We conducted door-to-door surveys and asked respondents about their use of the park, their health, and included items to measure perceptions of the social environment in the park by adapting two subscales from Sampson’s index of collective efficacy i.e., one subscale measuring perceived informal social control and another measuring perceived social cohesion and trust (Sampson et al., 1997). The social cohesion and trust items were: “people around here are willing to help each other”, “people in this park can be trusted”, “people in this park generally don’t get along with each other”, and “people in this park do not share the same values”. The items were answered on a scale of 1–5 from strongly agree to strongly disagree with a series of statements. Informal social control includes the statements “people in the park would intervene if children were spray-painting graffiti” and “people in the park would intervene if a fight broke out in the park.” The responses were on a 5 point scale from very likely to very unlikely.

We also included the Kessler-6 (Cairney, Veldhuizen, Wade, Kurdyak, & Streiner, 2007) which asks about symptoms of depression and anxiety as a measure of mental health. Perception of safety was measured by asking “In general, how safe do you feel the park is?” We also asked about the safety of the neighborhood in which the park was located. Respondents answered whether they agreed/disagreed with statements: “There is a high crime rate in this neighborhood”, “The crime rate in this neighborhood makes it unsafe to go on walks during the day”, and “the crime rate in this neighborhood makes it unsafe to go on walks at night”. The safety items are adapted from Saelens, et al (Saelens et al., 2012).

Other survey items were adopted from already validated scales including the measures of safety, based upon Saelens et al (Saelens, Sallis, Black, & Chen, 2003) and the self-report of park visits, which were validated by Evenson et al (Evenson, Wen, Golinelli, Rodriguez, & Cohen, 2013). The self-report of physical activity is based upon the International Physical Activity Questionnaire (IPAQ)(Craig et al., 2003).

Contextual Measures of Perceived Threats, Incivilities and Park Conditions—

After each round of observing park users and their characteristics (3 times/day), trained field staff (all females, and observing in pairs) documented possible threatening or unpleasant situations and other conditions that might discourage park use. First, they noted whether

they saw any individuals that were smoking cigarettes or appeared to be intoxicated, the presence of any fighting, and of groups of people who seemed intimidating to them. They also noted whether there were apparently homeless individuals (defined as persons who had lots of belonging with them, including suitcases, backpacks, trash bags, carts, or sleeping materials). Finally, they recorded other park conditions, including if there were food vendors in and around the park and if there was on-going construction that might have interfered with park use. Our pilot study of these contextual measures had high inter-rater reliability (>.90).

Data analysis

We calculated descriptive statistics for park use, park characteristics, and for the park user and resident surveys at both the individual level and aggregate park level. We summed the presence of intimidating groups, fighting, and apparent gang members to one variable, (each of which was rare alone) which we named “interpersonal safety issues”. We used logistic regression to analyze the relationship between people’s perception of safety, and measures of mental health and collective efficacy, controlling for respondents’ characteristics as well as the fixed effects of parks. Park users and residents were analyzed separately because of the differences in recruitment and because they represent different populations. We fitted a generalized linear model between park use and park-level predictors, including park characteristics, park conditions, and survey measures aggregated at the park level. We used the negative binomial distribution to account for variance inflation in the number of park users. Time of day and the day of the week were modeled by binary indicator variables (e.g. morning, afternoon, weekday, weekend) to allow for flexible time trends in park use. Repeated measures in each park were handled by the generalized estimating equation (GEE). Observations refer to one complete rotation of recording all the target areas in a park.

Results

Field staff made 818 visits to the 48 parks and counted over 67,000 park users during their observations and surveyed 1445 park users and 1592 residents who lived within a mile radius of the parks. Table 1 presents the park characteristics and observed park conditions as well as observed characteristics of park users. The parks were relatively large (mean=8.3 acres), and all had full-time staff and were equipped with multiple facilities, including a gymnasium, a playground area, and a variety of courts and fields. Park users were largely Hispanic, male and, compared to the general population had a greater proportion of children and teens and fewer seniors. Two-thirds of park users were sedentary. On average 75.4 park users were observed at any given hourly observation ranging between 0 and 431 persons. Our field staff rarely noted any people fighting or intimidating groups, which together, occurred in 2.8% of all observations across 12 of the 48 parks.

We observed only a small number of instances of people appearing intoxicated (8.4% of observations) and smoking (7.1 % of observations) in 27/48 parks. In contrast, homeless individuals were seen in nearly all the parks (43/48) and during nearly half of all the hourly observations.

Table 2, which compares the socio-demographic characteristics and survey responses of park user and neighborhood household survey respondents, shows that park users were younger than the household respondents, had a lower educational attainment, and a higher percentage were male. A lower percentage of park users were African American and white than household respondents, and a larger percentage of park users were Hispanic than household respondents. Response rates were an average of 41% for park users and 83% for household respondents. Park users were 2.8 times more likely than household respondents to visit the park once a week or more often (83% vs 29%; $p < .01$) and they reported engaging in slightly longer exercise bouts (23 vs 21 minutes, $p < .01$). More park users (86%) thought the parks were very safe or safe compared with household respondents (78%). They also rated their health as slightly higher, but mental health scores did not differ between park users and household respondents. Park users and household respondents had similar perceptions of social cohesion and trust, but park users were more likely to think that other park users would intervene to help out when needed (i.e., higher perceptions of informal social control).

Table 3 reports the multivariate model predicting perceived safety in parks. Among household respondents, African Americans were more likely as those of other race/ethnicities to perceive parks as safe (Log odds 2.13, $p < .04$). Household respondents with less than a high school education were least likely to perceive the park as safe (Log odds -1.73 , $p < .01$). Household respondents who thought that other park users would intervene to help others were more likely to perceive the park was safe (Log odds 1.15 $p < .01$).

Park conditions associated with greater perceptions of safety among household respondents included the presence of vendors around parks. Conditions associated with lower perceptions of safety included construction, the presence of homeless people, and intimidating groups or fighting. Among park users, women were less likely than men to perceive the park as safe, and the presence of interpersonal threats, such as seeing intimidating persons had a significantly negative relationship with the perception of safety. The presence of smokers was also negatively related to park users' perception of safety.

Table 4 presents the models predicting the number of observed park users. Consistent with findings in the existing literature, supervised activities, organized activities, and accessibility were positively related to park use (all three p -values < 0.01). Activities have a particularly high magnitude of association, as each additional supervised or organized activity is associated with about 25% additional park users. The presence of homeless people in parks was positively associated with park use (27.9% increase in the number of users, $p < 0.01$), as was the presence of food vendors in parks (38.7% increase, $p < 0.01$) and around parks (21.5% increase, $p < 0.01$). Factors negatively related to park use included the presence of intoxicated persons (20.7% decrease, $p = 0.02$), and construction in parks (26.4% decrease, $p = 0.04$). None of the aggregated survey items (park-level perception of safety, mental health index, social cohesion and trust, and informal social control) had any significant relationship with the number of observed park users. We found similar results when the outcome was total minutes of moderate-to-vigorous activity (MVPA) that occurred in the park.

Because the presence of intoxicated persons was negatively related to park use, using a model very similar that in Table 3, we also examined a model to predict the presence of intoxicated persons in parks (data not shown). The only significant predictor was collective efficacy among park users, such that for every increase in one unit of perceived social cohesion and trust (perception that others have the same values and are trustworthy), there was a 20.7% decrease in the likelihood of observing intoxicated persons in the park. (log odds ratio = -0.36 , $p=0.01$).

Discussion

We found significant differences in the relative importance of environmental and user characteristics with respect to park use and park-based physical activity, with environmental features having stronger associations with park use and physical activity (Bedimo-Rung et al., 2005). With the exception of the presence of intoxicated persons, most incivilities and potentially perceived threats in parks were either positively or not at all related to observed park use in these low-income neighborhood parks. Most surprising was the finding that the presence of homeless persons was apparently not a barrier to park use. The parks studied are relative large about 8 acres and at any given time we counted an average of 75 park users. It's possible that given the large spaces, potential threats or incivilities may not be encountered by park users who stick to specific target areas. For example, if only using the playground, the homeless people in the picnic area may be too far away to be considered a threat. On the other hand, homeless persons may deliberately choose to stay in parks with more people because of the relative safety of having many people around, or possibly they are choosing parks generally perceived as more accessible and pleasant and thus are used more. Similarly, although we see a relationship between vendors and the number of park users, it is more likely that the people in the park are attracting vendors, rather than the other way around.

Because this is a cross-sectional study, it is not possible to be confident of the direction of associations. Nevertheless, it isn't plausible that homeless individuals would attract other park users, although food vendors might. On the other hand, it is possible that intoxicated persons might drive park users away-- as much as the likelihood that intoxicated persons choose parks with few other patrons, considering that others might not tolerate intoxicated behaviors.

A study by Gobster of minority park users in Chicago also found that minorities were highly likely to perceive their local parks as safe, but were concerned about being in the park after dark or in poorly lit areas (Gobster, 2002). In particular Mexican-American adults interviews about were concerned about gang activity around parks, but they also recognized the important role of parks as a setting for social and physical activities (Stodolska, Shinew, Acevedo, & Izenstark, 2011). A qualitative study of Mexican-American adolescents found that although the youth were concerned about crime in their neighborhoods, they were able to adopt strategies that allowed them to take advantage of parks and recreational spaces at times when they perceived the area was safe, for example, during daylight hours and when there were many other people present (Stodolska, Shinew, Acevedo, & Roman, 2013).

At the park level, there was no substantial variation in average informal social control and social cohesion and trust, collective efficacy and little variation in average mental health, and neither aggregated measure was associated with the number of park users. The construct of collective efficacy is intended to be a group aggregated variable (Sampson et al., 1997), however it has been used at the individual level in other studies (Broyles et al., 2011; Lindblad, Manturuk, & Quercia, 2013). At the individual level, we did see associations with perceptions of safety in the hypothesized direction; greater collective efficacy, in particular the subscale of informal social control, was associated with greater perceived safety. The only relationship between collective efficacy and park use was at the individual level. Where collective efficacy was higher, the likelihood of encountering intoxicated persons in the park was lower.

Another limitation is the geographic concentration in a single city. The majority of the respondents were Hispanic, and the findings may not be fully applicable to other populations. The low prevalence of seeing people smoking in the parks was impressive—especially because it was less frequent than seeing intoxicated persons. At the time of our study both smoking and drinking alcohol were illegal in local public parks, but the ban on smoking was relatively new. The low smoking rate could be a reflection of California having an overall very low rate of smoking compared to other states.

There was a very strong relationship between programmed activities, both supervised and organized, and the number of park users—much stronger than any relationship with perceived threats, a finding seen in other studies of youth who are attracted to activities like team sports (Cohen et al., 2010; Perry, Saelens, & Thompson, 2011). In the qualitative study cited above, Mexican-American adolescents also stated that the presence of supervised activities made the parks safer and increased their own participation in physical activity (Stodolska et al., 2013). The effects of supervision are very large, given that each additional supervised activity was independently associated with 24.8% more park users and each organized activity was associated with 25.3% more park users. There is room for many more supervised and organized activities, given that each park had an average of 26.8 target areas where supervised activities could potentially occur, yet at any given time, there were fewer than one such activity occurring. Whether simply offering activities is sufficient to draw more park users is unknown. It is possible that user characteristics may be barriers: a population that has few resources may have less leisure time than higher income groups. For example, if local residents rely on mass transit, which may take longer than a private vehicle, if they have more than one job, or have young families requiring childcare, their busy schedule would preclude park use (Carlson et al., 2010).

The relatively low prevalence of concerns about safety among residents and park users is supported by the limited threats observed in park settings. Since the majority of residents and park users consider their local parks as safe or very safe, in order to increase park use, it might be more fruitful for park systems to focus resources on programming and stimulating the demand for programming, rather than on targeting perceived threats.

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Table 1

Characteristics of 48 study parks in low-income neighborhoods

Variable	Mean	SD
Acres	8.3	6.5
Population (1-mile radius) (10,000)	4.6	1.8
Poverty rate	25.7	8.1
# Accessible target areas	26.8	14.4
# Target areas with supervised activity	0.4	0.8
# Target areas with organized activity	0.7	1.0
# users per observation (round/day)?	75.4	72.9
Weekly use (estimated person hours) *	7389	7139
Observed Park Users		
	#	% of total
Male	44,632	66.1%
Female	22,914	33.9%
Seniors	1,711	2.5%
Adults	34,607	51.2%
Teens	11,114	16.5%
Children	20,112	29.8%
Sedentary	45,408	67.2%
Moderate	17,901	26.5%
Vigorous	4,235	6.3%
Apparent Race/Ethnicity		
African American	8,586	12.7%
Latino	52,650	78.2%
White	3,057	4.5%
Asian/Other	3,076	4.6%
Park Contextual Measures		
Variable	% total observations with condition	# parks with condition (total=48)
Interpersonal safety concerns (gangs, intimidating groups, conflicts)	2.8	12
Intoxicated persons	8.4	27
Persons smoking	7.1	27
Vendors in parks	30.0	38
Vendors outside parks	31.0	39
Construction	13.9	19
Homeless individuals	49.8	43

* Assuming a park was usable 14 hours a day and for 7 days a week.

Table 2

Survey respondent characteristics and measures

	Park Users N=1445	Household Respondents N=1592	p-value
Respondent Demographics			
% Male	48.6	37.7	<0.01
Age group (%)			
18–29	20.6	19.3	0.18
30–39	36.4	22.3	0.21
40–49	20.9	21.6	<.01
50–59	13.1	23.1	<.01
60	9.0	13.8	<.01
Self-Reported Race/Ethnicity			
% African American	6.1	10.1	<0.01
% Hispanic	87.5	73.3	<0.01
% Non-Hispanic White	3.4	10.2	<0.01
% Asian	1.6	1.2	0.35
% Other race or ethnicity	1.4	5.2	<0.01
Education			
% Less than High School	35.1	30.4	<0.01
% High School Graduate/GED	41.1	34.9	<0.01
% Greater than High School	23.9	34.8	<0.01
Respondent Park Use and Perceptions			
% using park once a week or more	83.3	29.1	<0.01
# days of park use in the past week	2.8	0.9	<0.01
# weekly exercise sessions	2.5	2.3	0.03
Duration of usual exercise session (minutes)	23.1	21.0	<0.01
% Self-rated health (good to excellent)	81.9	78.1	<0.01
% saying park is safe or very safe	86.3	78.3	<0.01
Average perception of neighborhood safety (scale 1–4—higher is safer)	2.9	2.9	0.97
Social cohesion and trust (scale 1–5; higher is more trust)	3.0	3.0	0.33
Informal social control (scale 1–5; higher more control)	3.0	2.9	<0.01
Mental health (Kessler-6) (scale 1–5; higher better mental health)	4.6	4.6	0.70

Table 3

Model estimates for respondents' perception of safety in parks

Variable	Household Respondents			Park users		
	Estimates (log odds)	SE	P	Estimates (log odds)	SE	P
Race/Ethnicity						
African American	2.13	1.06	0.04	-*	-	-
Hispanic	0.25	0.70	0.72	-0.41	0.79	0.60
Others	1.14	1.03	0.27	-0.18	1.00	0.86
Non-Hispanic White	-	-	-	-	-	-
Female	0.09	0.42	0.84	-0.80	0.28	<0.01
Age	0.02	0.02	0.37	0.00	0.01	0.83
Education						
Less than high school	-1.73	0.71	0.01	0.24	0.50	0.63
High school graduate/GED	-0.10	0.42	0.80	0.50	0.33	0.12
Greater than high school	-	-	-	-	-	-
Self-rated health						
Excellent	0.27	1.33	0.84	1.08	0.93	0.24
Very good	0.50	1.22	0.68	0.69	0.81	0.39
Good	0.23	1.16	0.84	0.72	0.79	0.36
Fair	-0.65	1.16	0.58	-0.20	0.75	0.79
Poor	-	-	-	-	-	-
Mental health index (Kessler-6)	0.09	0.34	0.80	-0.30	0.25	0.24
Social cohesion and trust	0.07	0.48	0.88	1.41	0.28	<0.01
Informal social control	1.15	0.28	<0.01	0.29	0.17	0.08
Vendors in parks	-0.02	0.07	0.76	0.04	0.05	0.41
Vendors around parks	0.17	0.07	0.02	0.04	0.04	0.30
Construction in parks	-0.15	0.07	0.03	-0.05	0.04	0.27
Homeless in parks	-0.09	0.04	0.04	-0.06	0.03	0.08
Interpersonal safety issue in parks	-0.49	0.23	0.03	-0.28	0.14	0.04
Intoxicated persons in parks	-0.22	0.13	0.10	-0.10	0.11	0.35
Smoking persons in parks	-0.22	0.22	0.31	-0.38	0.12	<0.01

An insufficient number of African American park users took the survey to estimate the race effect.

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Table 4

Model estimates for park use

Variables	Estimates of log(mean)	se	P	Magnitude of multiplicative effect
Park characteristics and conditions				
Acres	-0.01	0.01	0.29	-1.3%
Percent households in poverty	-0.01	0.01	0.53	-0.5%
Population within 1-mile radius	0.04	0.03	0.19	3.8%
Presence of homeless	0.25	0.07	<0.01	27.9%
Interpersonal safety issues (gang, intimidating group, conflict)	0.07	0.18	0.70	7.1%
Persons smoking	0.07	0.10	0.48	7.3%
Persons intoxicated	-0.23	0.10	0.02	-20.7%
Areas under construction	-0.31	0.15	0.04	-26.4%
Food vendors in park	0.33	0.10	<0.01	38.7%
Food vendors around park	0.19	0.07	<0.01	21.5%
# of accessible target areas	0.03	0.01	<0.01	3.2%
# of supervised activities	0.22	0.04	<0.01	24.8%
# of organized activities	0.22	0.06	<0.01	25.2%
Aggregated survey respondent measures				
Household: safety perception	0.74	0.77	0.34	109.2%
Household : mental health index	0.51	0.56	0.36	66.6%
Household : social cohesion and trust	1.74	1.22	0.15	467.9%
Household : informal social control	-0.70	0.39	0.08	-50.2%
Park user: safety perception	-0.97	0.87	0.26	-62.1%
Park user: mental health index	0.32	0.46	0.49	37.6%
Park user: social cohesion and trust	-0.64	0.65	0.32	-47.3%
Park user: informal social control	-0.09	0.30	0.76	-8.8%