



Challenges recruiting diverse youth for physical activity research

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1. Introduction

Public health research applies participatory research strategies that target youth to identify the causes of, and solutions to, health concerns (e.g., childhood obesity) more now than in the past. The field, however, has not yet overcome the challenges to effectively recruit youth, particularly low-income youth of color who are at high risk for physical activity-related health problems (Yancey et al., 2006; Fredricks and Simpkins, 2012). Recruiting representative samples of diverse youth in research can generate tailored understandings of the health challenges faced by low-income youth, youth of color, and youth from urban and rural communities. Much has been written about the broader difficulties of recruiting adult participants and the more specific challenges of recruiting participants from underrepresented groups (Yancey et al., 2006; Newington and Metcalfe, 2014; Archibald and Munce, 2015). While most studies recruit participants from one or two underrepresented groups, this paper focuses on the nuanced challenges of recruiting multiple subgroups of low-income youth of color for physical activity-related studies.

Factors like study design, participation fatigue, lack of sufficient recruitment resources, and characteristics of the recruiter can make recruitment difficult (Archibald and Munce, 2015; Newington and Metcalfe, 2014). When recruiting participants from federally-defined underrepresented groups - African American, Latino, and American Indian - these challenges are amplified and additional barriers emerge, including cultural or language barriers, mistrust, and socio-economic characteristics (Yancey et al., 2006). Youth from these same historically underrepresented groups may face similar barriers to participation as well as additional barriers ranging from existing power dynamics

between youth and adults to transportation and scheduling (Wattar et al., 2012; Noone et al., 2016; Archibald and Munce, 2015).

Despite these barriers, solutions have been identified that support participation of low-income youth of color, including those from urban and rural environments. These include actions ranging from authentic and sometimes long-term community engagement to leveraging community-based networks for outreach (Archibald and Munce, 2015; Yancey et al., 2006). Youth-focused studies require other approaches such as researchers receiving cultural sensitivity training or being skilled and experienced to work with diverse populations, providing food and transportation, and time-intensive one-to-one interactions (Trent et al., 2015; Hooven et al., 2011; Noone et al., 2016). The latter approach encourages youth participation by addressing the barriers they face outside of the study's research domain (Noone et al., 2016). Utilizing online data collection is another option that can be more visually engaging, less time consuming, anonymous and more convenient when this is what the subpopulation prefers (Cantrell et al., 2017).

This paper expands the existing literature by outlining specific challenges and opportunities to recruiting multiple subgroups of low-income youth of color for four studies from the Physical Activity Research Center (PARC). The main aim is to report experiences of multi-group recruitment, apply principles from prior recruitment papers in interpreting our observations, and contribute to improved recruitment of underrepresented youth in future studies. The paper ends with a discussion highlighting lessons from these studies on recruitment challenges, subgroup differences, and promising practices for future studies.

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1.1. Study overviews

PARC was established in 2016 by the Robert Wood Johnson Foundation to build evidence to identify policies, practices, and aspects of the built environments that promote safe and equitable opportunities for developmentally appropriate physical activity for youth and their families (Botchwey et al., 2018). PARC has worked toward achievement of this mission with studies that focus on children in lower-income communities from diverse racial and ethnic groups, who typically have fewer opportunities to be active (Sallis et al., 2019). The four studies included: The a) *Physical Activity and Recreation in Children in Communities of Color – PARC³*, b) *Play Streets*, c) *Summertime Physical Activity*, and d) *Youth Engagement and Action for Health – YEAH!*. Collectively the studies engaged over 1100 male and female youth across 6 race and ethnic groups, in urban, suburban and rural environments, from 3 to 18 years old. Geography was defined at the census tract level by Rural-Urban Commuting Area Codes (RUCA) codes with additional consideration in select studies based on population density and walkability. RUCA codes are used across policy and research studies to differentiate between settlement sizes (Danaher et al., 2007). An overview of each study's recruitment plan, subgroup differences, challenges, and promising practices follows.

1.2. Study 1: PARC³

The *Physical Activity and Recreation in Children in Communities of Color – PARC³* project studied public park use and physical activity among children in low-income and racial and ethnic minority communities in Raleigh and Durham, NC, and New York City to inform planning decisions about park design and programming (Huang et al., 2019).

1.2.1. Targeted recruitment plans

PARC³ targeted park-based physical activity among 5–10 year olds from low-income neighborhoods and from at least one of three racial/ethnic groups: African American, Asian, and/or Latino. PARC³ incorporated three primary research and recruitment strategies – Observe, Monitor and Survey – that included three unique samples.

In the first strategy, 'Observe', over 150 days of park-based systematic observations were recorded in 20 parks in New York City, and 20 parks combined in Raleigh and Durham, NC. Parks were located in census tracts at or below 80% of the median household income for their county and had a high proportion of children from the identified races and ethnicity. The System for Observing Play and Recreation in Communities (SOPARC) (Evenson et al., 2016) was adapted to include recording of the age group 5–10 years as well race/ethnicity (White, African American, Asian, Latino, Other/Unsure) (Marquet et al., 2019).

For the second strategy, 'Monitor', in each state 6 of the 20 parks were identified for accelerometer and GPS monitoring. Parents of children observed to be between the ages of 5 and 10 years were approached and asked to participate. Parental consent and child assent, available in English, Spanish, and Mandarin, were obtained. Children wore an accelerometer and GPS for a minimum of 15 min while in the park, and parents responded to a brief survey.

Our final research and recruitment effort, 'Survey', was a national survey of low-income parents of children. We used a Qualtrics panel of respondents and restricted the 1600 participants to parents of at least one child ages 5 to 10, self-reported household income at or below the federal poverty level, and 80% identifying as a racial or ethnic minority (final sample was 19.7% White non-Hispanic).

1.2.2. Subgroup differences and challenges

Our focus on subgroup differences presented several challenges. Intraclass correlation between observers was highest for observed Asian children (0.929) and lowest for observed African American children (0.770). Especially challenging were probable Afro-Caribbean children

in New York City, as the observation training and form limited race/ethnicity to one response. Given popularity and ubiquity of systematic observations in park use and park-based physical activity research, the lack of race and ethnicity data is a noted limitation (Evenson et al., 2016). African American male children are often assumed older than they are, a potentially important difference in systematic observations studies that cannot be accounted for here (Goff et al., 2014). These challenges with observational data collection can broadly influence researchers and remain a not-insurmountable concern in these types of studies. The addition of race/ethnicity in observation studies necessitates not just reliability across researchers, but future validation studies of training procedures and data collection.

Afterschool park use may have been muted for non-White populations. According to the Afterschool Alliance, 29, 24, and 20% of African American, Latino, and Asian American children, respectively, participate in afterschool programs, compared to only 12% of White children (Afterschool Alliance, 2014). These percentages could explain limited numbers of children playing in parks and thus recruited or observed in our study on weekday afternoons.

For the community parental survey we originally targeted census tracts around the 40 parks in North Carolina and New York. For the online and phone survey we worked with a consultant to mail 11,200 postcards and place 8326 calls. Additional recruitment efforts included providing links to the survey through NextDoor, Facebook, and similar online outlets. Following eight weeks and 268 h of calls, only 29 computer-assisted telephone interviews were completed. Of the over 8000 calls made, 89.0% were not answered, 5.7% declined, and 2.8% were unqualified (no children). We switched companies and used a Qualtrics national panel of available respondents to complete the survey. The survey had to be adapted to a broader US context and still required 6.5 weeks of data collection to complete the 1600 surveys from an 80% racial/ethnic minority and low-income sampling frame.

1.2.3. Promising practices and lessons learned

Including at least one researcher fluent in Spanish and Mandarin proved essential in recruiting families to participate in the in-park survey and wearing of accelerometer and GPS monitors. Better yet, we recommend employing community members as research assistants. For systematic observations, we maintained acceptable and even strong inter-observer agreement of race and ethnicity, but categories were mutually exclusive and limited to African American, Asian, Latino, and White, leaving no room for subpopulations (e.g., Indian, Chinese). Trainings both in New York and North Carolina had rich, and difficult, conversations around race and ethnicity that improved reliability and delved into why these variables are important in park-based physical activity research. The guided discussion included asking why a specific race or ethnicity was selected, especially when identification by researchers differed. Having a diversity of researchers in the training, and in the parks, allowed for the exchange of experiences and addressing of stereotypes.

1.3. Study 2: Play Streets

Play Streets are temporary street closures that for a specified time (e.g., 3 h once a week in the summer) create safe spaces for active play. Play Streets have been primarily implemented in cities and involve closing a street block and planning, offering, and advertising play activities like jump rope, soccer, dance, and inflatables/bounce houses so children can play in the street, with adult supervision. The Play Streets study examined whether Play Streets could be adapted to and implemented in low-income rural communities to increase physical activity among elementary and middle school-aged children (Umstatt Meyer et al., under review).

1.3.1. Targeted recruitment plans

Recruitment for this study primarily occurred at the community

level. Four community organizations were recruited from rural counties in various regions of the U.S. that agreed to implement Play Streets. Community organizations were located in low-income rural counties, with most of its population from the following race and ethnic groups: African American, American Indian, Latino, or White, non-Hispanic. Within these county-level parameters (i.e., rural, low-income, specific race and ethnic populations), we used our networks to identify potential community partners in Maryland (a local health department), North Carolina (a church), Oklahoma (a Tribal Health Services Authority), and Texas (an AgriLife Extension) that had experience implementing community events and were interested in implementing Play Streets during Summer 2017. Between one and three visits to each community, and multiple phone calls, were necessary to recruit these partners, develop trust between the study team and the community organizations to implement Play Streets, and for the researchers to study implementation processes. Recruitment efforts to identify potential communities and community partners occurred during Fall 2016, and efforts to contact and develop relationships with partners occurred between January and May 2017.

1.3.2. Subgroup differences and challenges

There were no recruitment goals for individuals who would attend each Play Street. Rather, each organization was instructed to advertise the Play Streets to attract as many people as possible. Overall, each community used most or all of the following recruitment strategies: fliers to residents, door-to-door canvassing, Facebook postings, newspaper ads, notices given to students for the Play Streets that had dates identified before the school year ended, and notifying partners to help spread the word. Once the Play Streets began, and they became more familiar to residents, word-of-mouth was an additional recruitment strategy that developed in the communities.

Regarding subgroup differences, the community partner targeting Latino residents had greater challenges recruiting residents from this subgroup. This was unexpected as these Play Streets were paired with a summer lunch program that served predominantly Latino families. This challenge appeared to diminish as community members became more familiar with Play Streets and realized they were truly free and open to anyone. The community partner received this feedback and printed additional fliers in both English and Spanish that were disseminated through the summer meals program and emphasized Play Streets were open to everyone at “no cost.” Word of mouth seemed to be the most important form of communication for this subgroup. Surprisingly, except for the Latino community that encountered a challenge and needed to adapt their strategy, there were few differences between these low-income rural communities in how they sought to attract residents to the Play Streets. Each community hoped to have participants attend multiple Play Streets; however, retention in its traditional sense was not relevant for this study.

The main recruitment challenge was the time involved in building relationships to secure buy-in from each community to partner on this implementation research. Once community organizations were identified that met the county-level and organizational inclusion criteria in these states, the Co-PIs drove, or flew and then drove, hundreds of miles for multiple in-person visits with each community organization to build trust, obtain buy-in, and gain the necessary approvals from organizations and community leaders. In at least one community, obtaining approvals involved multiple phone calls and traveling nearly 450 miles via plane and car to attend a 10-minute meeting with the organization's leadership. We knew that obtaining organizational buy-in was critical, and while it was challenging to make the time for these visits, doing so was key for successful implementation. Moreover, we knew that building these relationships would be important for researcher-community partnerships overall, since a couple of these organizations had never before partnered with researchers to implement an intervention.

1.3.3. Promising practices and lessons learned

Our main recruitment lessons relate to the significant time it took to develop relationships with the four community partners. Once we identified potential communities and organizations using our existing networks, we devoted time to obtaining buy-in and building trust. Working with communities to implement programs takes time, trust, and respect. General recruitment challenges included making the communities aware of Play Streets, since the concept was new in each of the partnering communities. Identification of locations, dates, and times for hosting Play Streets to ensure they were accessible for all residents was important. Communication to residents about these details was also imperative for successful recruitment, attendance, and retention across multiple Play Streets.

1.4. Study 3: summer time physical activity

The *Summer Time Physical Activity* study examined summer time versus school-year physical activity patterns in diverse, lower-income adolescent populations (Sallis et al., 2019).

1.4.1. Targeted recruitment plans

The target population for the summer time physical activity study was adolescents 11–17 years old, living in lower income areas, and representing one of five race/ethnic subgroups (self-reported): African American, American Indian, Asian/Pacific Islander, Latino, and White, non-Hispanic. Most recruitment efforts were focused in Southern California, with additional outreach in Mississippi and Hawaii. American Indians were recruited in New Mexico. Lower-income was defined based on a median split of census-based household income in the county (San Diego County, Hawaii, New Mexico) or state (Mississippi, central California) using 2010 census data. Adolescents completed a survey and wore an accelerometer during the school year and summer break. Recruitment took place in 2017–2018. A total $n = 207$ adolescents completed surveys at both time points: 56 African Americans (39% girls), 30 American Indians (53% girls), 21 Asian/Pacific Islanders (52% girls), 49 Latinos (57% girls), and 51 White, non-Hispanics (41% girls).

Initially, lists were purchased from a marketing company that identified households with adolescents. Recruitment letters were mailed to explain the study, followed by up to eight telephone calls. This recruitment method, which has been successful for other studies conducted by the University of California San Diego (UCSD)-based team (King et al., 2011; Sallis et al., 2009, 2018), was inadequate for meeting recruitment targets for the present study. The marketing company data misidentified 46% of contacted households as including adolescents. We stopped the procedure of making numerous telephone calls after mailings and began mailings across larger-scale geographies that fit the lower-income and race/ethnic target populations. We made one phone call and revised the recruitment letter to ask interested and eligible persons to contact researchers rather than having them wait to be contacted.

To broaden recruitment efforts, we considered beginning an effort to recruit through schools. This approach was rejected because there was not sufficient time to obtain permission and collect data before the end of the school year. The next strategy was to contact multiple ethnic-oriented community organizations, and we arranged for staff to make in-person presentations to potential participants at meetings of adolescents or adults. Consent forms and study fliers were distributed, and adolescents were asked to show the materials to their parents and contact the toll-free study number if interested in participating. This method yielded very few enrollees.

Overall, once eligible contacts were identified, reasonable participation rates were achieved. Of the 1684 households where contact was made, 45% ($n = 757$) had an age-eligible adolescent living there. Of these eligible households, the adolescent participation rate was 41%, with 310 of the eligible 757 contacts consenting to participate and

providing some data (survey or accelerometer) at least at one time point (school year or summertime). Of the 310 enrolled participants, $n = 207$ (67%) comprised the study's repeated-measures analysis sample by completing surveys at both time points (loss-to-follow up rate = 33%). Within race/ethnic subgroups, the rates for those with surveys at both time points were: 67% of African Americans, 61% of American Indians, 70% of Asian/Pacific Islanders, 72% of Latinos, and 65% of White/non-Hispanics.

1.4.2. Subgroup differences and challenges

Multiple recruitment strategies were implemented, with methods and results varying by race/ethnic and geographic groups. Continued mail and phone contacts, along with online Craigslist ads, were relatively successful for White non-Hispanic, Latino, and African American adolescents. Asian and Pacific Islander organizations were identified and contacted, but even targeted in-person presentations did not result in many adolescents signing up. American Indian adolescents were largely recruited by teachers at a public charter school in Albuquerque, New Mexico. Although bilingual and bicultural Spanish-speaking staff were employed, we did not have staff representing each targeted race/ethnic group who may have been more effective in developing relationships with community groups. It was particularly challenging to reach rural adolescents by phone, and staffing was not adequate to travel and develop relationships in these areas. An original recruitment target for rural teens was dropped from the study.

Incentives were offered for participating in both phases (school time and summer break). The \$30 incentive was useful in garnering initial interest but may have been inadequate to sustain interest for the second assessment.

1.4.3. Promising practices and lessons learned

Perhaps the most important lesson was that recruitment of adolescents from lower-income communities of color and from rural areas likely required more targeted approaches and development of relationships with key organizations than we were able to implement in the time available. School-based recruitment could have been effective if we had planned it from the beginning to allow sufficient time to procure district- and school-level approvals. In the present study, effective subgroup-specific recruit strategies were not identified, so subgroup-specific approaches should be developed in future studies with input from targeted communities. More effective approaches will likely require a larger recruitment budget and more diverse staff than was available in the present study.

1.5. Study 4: YEAH!

The *Youth Engagement and Action for Health – YEAH!* study assessed how training youth to be advocates for changes in the built environment can foster health and produce positive policy and environmental change (Botchwey et al., this issue).

1.5.1. Targeted recruitment plans

The YEAH! study aimed to recruit African American, Latino, Asian/Asian American, Pacific Islander, and American Indian youth. To recruit participants for YEAH!, the research team focused on creating partnerships with existing clubs, after-school groups, and community-based programs that served low income, minority youth. The YEAH! team translated materials from English to Spanish and Mandarin for non-native English speakers.

1.5.2. Subgroup differences and challenges

Staff found recruitment challenges that differed by demographic groups. As a result, we pivoted to a tailored recruitment strategy specific to each minority population. Initially, the research group aimed to directly recruit students through existing school- and community-based clubs, and in particular, Boys and Girls Clubs of America (BGC) with

support from a local BGC staff member. However, this strategy was only successful for recruiting rural African American youth. In response, researchers relied on leaders from the study communities or with relationships in the study communities who introduced and recommended us to local youth serving organizations. These introductions led to more authentic conversations with institution leaders in which we sought to recruit the organizations to host a YEAH! group. These calls and meetings translated into many groups opting to participate in the study. These leaders or project champions were identified by research staff based on their previous academic and programmatic contributions to this field and their engagement with targeted sub-populations.

Researchers found that it was difficult to identify BGCs that specifically served American Indian populations and were initially unable to connect with organizations targeted to American Indian youth. Building trust with institutions that serve this community and navigating independent tribal institutional review boards (IRB) and the Indian Health Service (IHS) IRB, which must approve projects that utilize IHS facilities or resources, was difficult within the time available. Project leads pivoted to a focus on the BGCs with support from a community champion from the national BGC office. This led to partnerships with BGCs in Maine serving American Indian youth who would be willing to participate in the study given access to anonymized data.

Similar challenges existed for recruitment of Pacific Islander participants. When the research team initiated its recruitment efforts with BGCs in Hawaii, staff made many calls to clubs on every Hawaiian island. During these calls, the clubs responded they would consider working with the YEAH! team, but given the nature of the cold calls and challenges with mainland/island culture, the hoped-for partnerships did not materialize. Eventually, a study champion from the Centers for Disease Control and Prevention introduced the team to the program lead at Get Fit Kauai, who connected researchers to BGC Lihue and the West Hawaii Health Center. From that introduction, YEAH! was able to successfully partner with organizations on two Hawaiian Islands that recruited Pacific Islander youth.

Recruiting Latino youth required an external champion and a departure from the BGC model. Because of a relationship with the former Mayor of Miami Gardens, Florida, YEAH! was able to foster a successful partnership with Big Brothers, Big Sisters. The team also built a relationship with a teacher in Broward County, Florida who supported the study by coordinating clubs at her school.

Asian American youth were also recruited outside of a BGC. Unable to find a sufficient number of BGCs that served Asian American students, the team relied on Asian American Lead (AA Lead), an organization with six after-school programs. The geographic scope of the organization allowed YEAH! to conduct recruitment with greater economies of scale. AA Lead was a particularly effective recruitment partner because it had sufficient internal capacity to complete the YEAH! Study.

1.5.3. Promising practices and lessons learned

Successful recruitment required individuals who were willing to introduce and foster YEAH! partnerships with target institutions, demonstrating the importance of a champion to establish and build trust. Maintaining club participation was most successful when adult leaders were enthusiastic about the curriculum, committed to its delivery, had the capacity to navigate their institutional challenges and liaison with University researchers, were willing to make notes after each session, were self-motivated, and were interested in seeing youth grow throughout the experience. Lastly, to carry out the program successfully, clubs benefited from an upfront financial commitment of \$1500 to support staff who led YEAH! Student groups through the curriculum and followed the study protocol as outlined in the training and weekly check-ins. Although financial incentives are realistic for research projects, this is likely not a sustainable approach for long-term programming.

2. Discussion

The experience across the PARC teams with low-income youth of color largely aligned with existing research on recruitment challenges and solutions in adults (Yancey et al., 2006; Newington and Metcalfe, 2014; Archibald and Munce, 2015). In particular, teams that included culturally-sensitive, committed, persistent and non-judgmental researchers, and targeted recruitment plans that contained culturally-responsive outreach and research designs, strong community engagement plans, and established partnerships and champions were critical to success. Bilingual team members were helpful in outreach to non-native English speakers, demonstrating the importance of diverse research teams. Research teams noted that building relationships with community members made contact with race/ethnic subpopulations possible, and community champions helped access harder-to-reach populations.

During the recruitment process, all teams found differences among youth subgroup populations (e.g., race/ethnicity), necessitating tailored recruitment approaches. As mentioned, non-native English speakers required translated materials and bilingual staff members. Policies and laws impacted the likelihood of participation and affect subgroups differently. For instance, Latino populations may be more likely to have concerns about immigration policies that influenced their willingness to participate in studies. Lastly, institutional homes differed by subgroup. Organizations that serve as community pillars and recruitment centers varied by subgroup, and thus, recruitment plans should be generated with institutional identification in mind that are specific to each subgroup. This is particularly important, as some of the organizations that study teams partnered with for youth outreach required processing through their own IRBs, highlighting the need for customized approaches.

Each research team identified some promising practices and lessons learned, as well as points for future research. Across the four studies, teams identified the necessity of adapting recruitment plans throughout the research process. Given the difficult nature of recruitment in diverse communities, if the initial recruitment strategy is unsuccessful, it is important that teams have the capacity to try new plans and engage in an iterative recruitment process. Some teams found that empowering youth participants to contribute to programmatic design, so they could see their ideas implemented, encouraged participation.

Authors note two key limitations to this work. First, this paper does not report response rates for the various recruitment strategies due to the multiple approaches used across the studies and race/ethnicity, age and geography subpopulations. Second, all themes and recommendations were based only on investigator perceptions, not systematic data collection or interviews with participants. However, PARC experiences of recruiting from multiple underrepresented groups of youth is relatively unusual. Thus, the observations summarized here may assist youth recruitment efforts in future studies and provide hypotheses that can be evaluated.

3. Conclusion

As more research is conducted with multiple underrepresented groups of youth, there will be opportunities to evaluate various recruitment strategies. Future research should examine the role of incentives in recruitment (e.g., what is the appropriate amount? when should it be allocated?); study the impacts and solutions to time constraints on identifying communities, obtaining buy-in and building trust; and identify ways to translate successful recruitment strategies into successful retention strategies.

Given the importance of identifying subgroup-specific solutions to physical inactivity and obesity, more attention should be devoted to recruiting diverse samples of youth for research studies. All PARC teams reported substantial time was required to develop and implement subgroup-specific recruitment plans, especially those working in rural communities. The amount of time ranged from study to study and

within subpopulations and geographies depending on organizations' and individuals' prior experience with the researcher or university, research studies in general, trust in the researcher or point of contact, study host's organizational capacity, etc. For example, in the YEAH! study, researchers called and emailed the Hawaii BGCs a minimum of 6 times each over two months without clubs showing interest in participating. However, immediately after trusted community leaders and organization partners recommended the program to these organizations, four clubs enthusiastically agreed to participate. In one club, the community champion participated in the majority of the club meetings and facilitated access to decision makers. In the summer time study working with Asian and Pacific Islander organizations was not successful, but working with an American Indian school was successful. Future studies targeting multiple subgroups should make sure to plan for the time and appropriate personnel to develop effective and sustainable relationships. As such, grant reviewers and research funders should also be alert to the need for sufficient financial resources to support the necessary subgroup-tailored recruitment activities prior to even implementing the study.

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