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# Enrollment Challenges: Recruiting Children From Diverse Racial and Ethnic Communities to a Study of Physical Activity and Perceived Stress

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## Abstract

**Introduction:** Effective recruitment and retention can be particularly difficult when research involves children from diverse backgrounds. The purpose of this article is to describe productive methods for recruiting children from diverse racial and ethnic communities. A better understanding of this process will help researchers improve recruitment efforts and better address health disparities. **Method:** Using data retrieved from a cross-sectional study examining children's physical activity and stress, strategies and efforts for recruitment and retention were recognized and identified. **Results:** During a 5-month recruitment period, 92 potential participants contacted research staff after multiple strategies were executed. Among them, 83.7% were successfully recruited, and 93.5% completed the study; additionally, 54% were White and about 30% Hispanic. Although initial recruitment plans were school based, the majority were recruited by referrals from current participants. **Discussion:** Productive strategies varied by race, ethnic, and cultural backgrounds. Proactive strategies and limitations, such as the use of a smartphone or Quick Response code, are discussed.

## Keywords

children, recruitment, retention, underrepresented minority populations

## Introduction

As indicated in the *Healthy People 2030* framework (Office of Disease Prevention and Health Promotion, 2020), one of the foundational principles and overarching goals is to eliminate health disparities. One promising way to achieve this goal is to engage culturally diverse racial and ethnic populations in research studies. The need to increase minority participation in health research, including groups underrepresented in terms of race, ethnicity, culture, and socioeconomic status (SES), is multifaceted and scientifically driven. As the demographic composition of the United States becomes more diverse (Colby & Ortman, 2017), adequate minority representation is needed to ensure that research findings are applicable to various populations. The National Institutes of Health (NIH) has made statements emphasizing the scientific and ethical obligation to include minority participants in research studies (NIH, 2017). However, improving research participation among diverse groups, particularly vulnerable populations that include children, continues to be a challenge. The most commonly parent-reported reasons for enrollment refusal or study drop out were busyness, lack of interest in the research project, or unpredictable incidents (Karlson & Rapoff, 2009; Lamb et al., 2001). Making additional efforts and using various resources, such as incorporating technology, smartphones, or a Quick Response (QR) code, may improve recruitment and retention efforts, allowing researchers to reach sample sizes representative of the target population and conduct appropriate statistical analyses within shorter periods of time. Children are a common target group for health–behavioral studies seeking to improve care of pediatric populations and decrease health disparities. These goals may only be achieved with intentional and strategic efforts to engage diverse communities in research.

### *Low Participation of Minorities in Health–Behavioral Studies*

Health and behavioral researchers often draw inferences from a relatively narrow breadth of human diversity and assume the findings are generalizable (Henrich et al., 2010).

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Lack of diverse inclusion for research studies has further resulted in health disparities across population groups (Ashing-Giwa & Rosales, 2012; Henrich et al., 2010). Common barriers associated with low participation of underrepresented populations include mistrust of research and researchers, lack of community involvement, lack of access to information or care, research protocol demands, and provider perceptions (Ashing-Giwa & Rosales, 2012; Byrne et al., 2014; Diaz, 2012; Fisher & Kalbaugh, 2011; George et al., 2014; Otado et al., 2015; Staffileno & Coke, 2006; Yancey et al., 2006). For instance, especially among African Americans, there appears to be a general mistrust of medical research, possibly due to past abuses such as those reflected by the Tuskegee Syphilis Study and other historical exploitations (Byrne et al., 2014; Farmer et al., 2007; Fisher & Kalbaugh, 2011; George et al., 2014; Otado et al., 2015; Staffileno & Coke, 2006; Yancey et al., 2006). As suggested in the literature, recruitment of diverse populations usually requires additional efforts, such as increasing community involvement and acceptance of research studies, to build trust and improve participation (Diaz, 2012; George et al., 2014; Otado et al., 2015; Probstfield & Frye, 2011; Yancey et al., 2006). For example, some minority groups report not having information about accessing enrollment in studies (Byrne et al., 2014; George et al., 2014). Furthermore, compared with nonminority participants, minorities may have less health insurance coverage and limited access to medical care, resulting in a tendency to use emergency rooms that may not offer research participation (Arpey et al., 2017; Douthit et al., 2015).

Other potential reasons for inadequate inclusion of diverse populations in research may be due to protocol demands. For example, lack of culturally and linguistically responsive research plans have been identified as barriers to minority participation (Ashing-Giwa & Rosales, 2012; George et al., 2014). Therefore, recruitment efforts targeting on racial and ethnic groups using culturally tailored approaches have been suggested, such as ethnically matched recruiter (Yancey et al., 2006). However, limited research budgets may also prevent researchers from training culturally competent staff (Ashing-Giwa & Rosales, 2012) or restrict the availability of language-appropriate materials to facilitate research participation (George et al., 2014).

Researchers need to identify effective and efficient strategies that can accelerate the recruitment and retention process, especially for children from culturally diverse backgrounds (Schoeppe et al., 2014). However, few reports focus on successful recruitment and retention strategies for children from culturally diverse backgrounds (Backinger et al., 2008; Trapp et al., 2012). Building on the methodology and lessons learned from the research team's previous study of children's physical activity and stress levels, the purpose of this article is to describe the productive methods for recruiting and retaining children from culturally diverse communities with minority, immigrant, or low SES backgrounds.

## Method

### *Design and Setting*

Data for this secondary analysis were retrieved from a previous cross-sectional study, which explored the relationship between physical activity and perceived stress among children in rural northeast Ohio. Children wore accelerometers on their wrists to quantify their level of physical activity and completed a questionnaire to assess their perceived psychological stress. After data collections were completed, participants were able to keep the accelerometers as compensation for their time.

The recruitment took place in a school district, and the goal was to recruit 82 children between the ages of 8 and 12 years. Study procedures, such as advertising the study and recruiting participants, ensued following institutional review board (IRB) approval, and researchers collected data after receiving parental consent and child assent. Because the available language version of study instruments was limited, children aged 8 to 12 years who were able to communicate in English were invited to participate in this study. According to the Ohio Department of Education (2018), about 70% of enrolled students in this school district are racial and ethnic minorities with a Hispanic majority, and more than 95% are economically disadvantaged.

### *Recruitment and Retention Process*

Recruitment plans were executed within a rural school district in northeast Ohio comprising one middle school and three elementary schools with more than 1,000 students aged 8 to 12 years enrolled annually. To balance research costs with opportunities to recruit a diverse population, recruitment efforts focused on one elementary school with approximately 220 eligible participants. Initial recruitment plans were school based and included take-home color flyers (in English and Spanish) distributed to eligible participants throughout the school system. District schools also made weekly media announcements about this research opportunity in English and Spanish. Additionally, researchers accepted referrals from current participants and in compliance with IRB requirements responded to inquiries from parents. After obtaining parental consent, research staff approached potential child participants for their assent.

To complete the study, two face-to-face data collection interviews were required. During the first interview, researchers obtained completed parental consent and child assent, asked parents to complete a demographic sheet (either in English or Spanish), and asked child participants to complete an English-version questionnaire for assessing stress levels. Last, research staff introduced the accelerometer to child participants and their parents. Study participants received a USB connection cable to charge the accelerometer and kept this device as a study incentive if they completed the study. The second data collection interview was scheduled 7 days later

so research staff were able to retrieve accelerometer readings. During the 7-day study period, no particular retention strategy was used. Research staff who had initially contacted each participant made only one reminder call, sent one text message, or emailed one time the day before the prescheduled data collection interview. To meet the needs of participants, researchers offered rescheduling flexibility for both data collection interviews. Rates of successful recruitment and retention (i.e., study completion) were documented, and participant recruitment types were tracked.

During the first 2 months of study recruitment, the research team received no inquiries and recruited zero participants through school-based plans; therefore, recruitment strategies were revisited. Researchers identified barriers such as lack of access to potential participants, financial and time constraints of parents, language barriers, and lack of interest in study research. To address these concerns, research staff not only continued the previous recruitment strategies but also extended the research location scope from the school district to surrounding community partners, such as libraries, churches, and the Young Men's Christian Association (YMCA). In close proximity to the school district, the YMCA has a variety of programs for both adults and children and often provides free memberships to people in need who reside in this area. Research staff also attended several school district community meetings to introduce the study to community partners and seek their support promoting the study to potential participants. Additionally, researchers set up a booth at a school district event, a resource fair, to advertise the study. Since a certain amount of Spanish-speaking fair attendees (parents) was expected, the research team arranged for a bilingual interpreter to attend the resource fair along with research staff to explain the study to Spanish-speaking fair attendees to overcome language barriers, encourage engagement, and facilitate recruitment.

## Results

### *Recruitment*

After obtaining IRB approval, a school-based recruitment plan was implemented. Two hundred and twenty color flyers in English and Spanish were sent home to eligible child participants throughout the school system, and the school also made weekly media announcements (in both English and Spanish). Two months later, revised recruitment strategies were executed, including posting flyers at community partner locations, setting up a recruitment booth at the school district resource fair, and encouraging participant referrals.

As mentioned previously, although no inquiry was received during the first 2-month recruitment period, 92 potential participants contacted research staff during the 5-month recruitment period after multiple strategies were implemented. Despite these varied recruitment efforts (Table 1), however, no participants were recruited through take-home flyers, and only one participant was recruited through the school's weekly media announcement. The remaining 91 potential participants contacted research staff after either seeing flyers posted at community partner locations (libraries or the YMCA), receiving information from enrolled participants, or obtaining research information at the school district's resource fair. In sum, among the 92 potential study participants, 77 (83.7%) were successfully recruited and 72 (93.5%) completed the study (Figure 1). Demographic characteristics of study participants who completed the study are presented in Table 2. The two largest racial and ethnic groups of child participants were White (non-Hispanic) (54.2%) and Hispanic (37.5%) as self-identified.

Unsurprisingly, referral from current participants was the most effective way to recruit participants. As presented in Table 1, 35 participants (48.6%) who completed the study successfully were recruited from referrals, especially within the Hispanic population. The second most efficient recruitment strategy that worked well among White (non-Hispanic) participants in particular was flyer distribution at community partner locations (33.3%). Unfortunately, only three participants, including one Hispanic participant, were recruited by seeing flyers posted at libraries or the YMCA. The school district event, a resource fair, provided an opportunity for engagement with potential study participants: 16.7% of participants were recruited successfully using this strategy.

### *Retention*

The parent study required child participants to wear an accelerometer day and night for 7 consecutive days except for water activities. After accelerometer readings were retrieved, participants were able to keep the device and given a USB connection cable as compensation for their time. Without reminders, more than 90% of child participants completed the study successfully. Only four participants were lost to follow-up, and one withdrew from the study due to a fractured leg with limited levels of physical activity. Based on feedback from study participants and parents, accommodating participants' availability and schedules was the main reason for attending the second data collection appointment and completing the study.

## Discussion

The aim of this article is to present successful strategies and discuss challenges encountered with recruitment of children from diverse racial and ethnic communities for a study on physical activity and stress. Results revealed that while multiple recruitment and retention strategies were equally effective, the most useful strategies differed for various racial and ethnic groups. Posting and distributing flyers at community partner locations was sufficient for recruiting White

**Table 1.** Recruitment Type and Child Race/Ethnicity ($N = 72$).

| Recruitment Type | Child race/ethnicity | | | Total |
|---|---|---|---|---|
| | White (non-Hispanic); *n* (%) | Hispanic; *n* (%) | Other; *n* (%) | |
| Flyers (sent home) | 0 | 0 | 0 | 0 |
| Flyers (libraries and the YMCA) | 21 (29.2) | 1 (1.4) | 2 (2.8) | 24 (33.3) |
| Media announcements (school) | 1 (1.4) | 0 | 0 | 1 (1.4) |
| Referrals | 14 (19.4) | 20 (27.8) | 1 (1.4) | 35 (48.6) |
| School district event (resource fair) | 3 (4.2) | 6 (8.3) | 3 (4.2) | 12 (16.7) |
| Total | 39 (54.2) | 27 (37.5) | 6 (8.3) | 72 (100) |

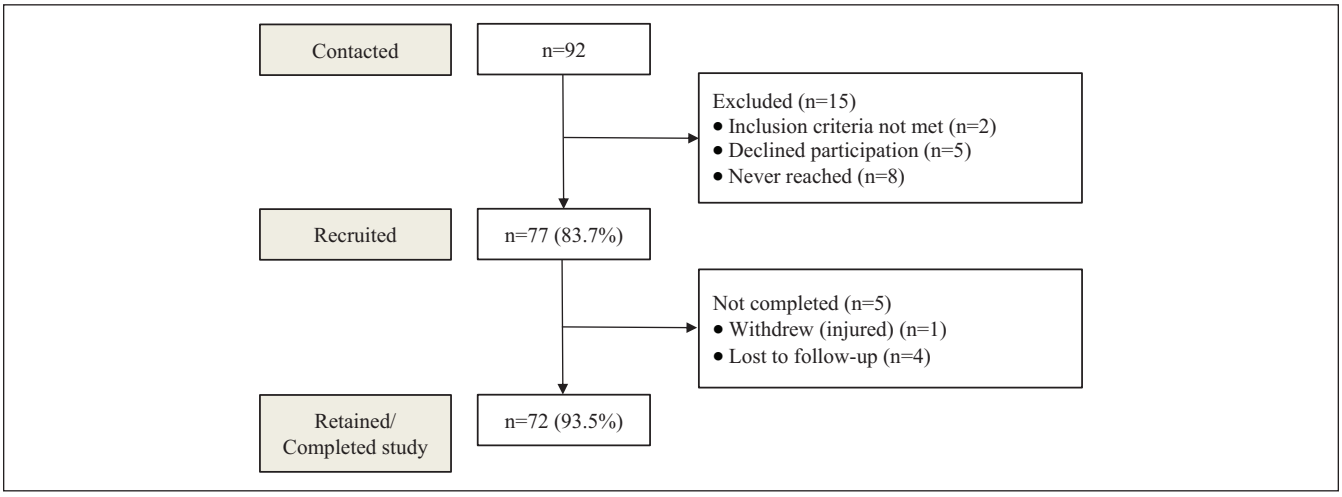


**Figure 1.** Flow diagram of recruitment and retention.

(non-Hispanic) participants; however, referrals from enrolled participants proved more effective for recruiting Hispanic participants. While research compensation might have offered strong motivation to participate in this study, flexible scheduling with reminder calls, texts, or emails was a successful strategy for participants to attend two face-to-face data collection interviews for study completion, regardless of specific racial and ethnic groups.

As stated in the literature (Diaz, 2012; Otado et al., 2015; Schoeppe et al., 2014; Staffileno & Coke, 2006), lack of access to underrepresented populations stemming from mistrust of researchers presents barriers to recruitment and retention of study participants. Building trust and cultivating community involvement take time but is necessary to remove these barriers. Likewise, gatekeepers at various levels (e.g., schools, health care settings, local authorities, parents/guardians, or caregivers) play a critical role in this process, especially for providing access to young people (Ozan et al., 2018; Savage & McCarron, 2009; Water, 2018). Consistent with the literature (De Las Nueces et al., 2012; Reidy et al., 2012; Yancey et al., 2006), enlisting the assistance of community liaisons or leaders, encouraging community involvement, and maintaining consistency with research staff were tremendously helpful in building trust and reducing mistrust of researchers. In the current study, for example, research staff not only visited the Board of Education for the participating school district, library, schools, local churches, and community centers and attended community meetings to introduce the study purpose and procedures to school leaders and personnel and community partners but also set up a recruitment booth at the school district event—resource fair. Hence, with support from school leaders and community partners, the research team was able to post recruitment flyers at numerous facilities and send flyers home to eligible children directly via the school system. School personnel also encouraged eligible participants and parents to participate in the study, building trust more easily among study participants, parents, and research staff. Additionally, the same research staff contacted and met with study participants and answered any questions during the study period. Consequently, engagement with families became stronger, accelerating the recruitment progress and increasing enrollment. After gaining a deeper understanding of the study and developing familiarity with research staff, parents realized the benefits of participation, such as better understanding their children's activity levels. Interestingly, parents showed their support of this study

**Table 2.** Demographic Characteristics ($N = 72$).

| Characteristics | Parent; *n*(%) | Child; *n*(%) |
|---|---|---|
| Gender | | |
| Female | 58 (80.6) | 32 (45.1) |
| Race/ethnicity | | |
| White (non-Hispanic) | 44 (61.1) | 39 (54.2) |
| Hispanic | 27 (37.5) | 27 (37.5) |
| Other | 1 (1.4) | 6 (8.3) |
| Education | | |
| Less than high school | 5 (6.9) | |
| High school | 22 (30.6) | |
| Some college | 10 (13.9) | |
| 2-year college degree (Associates) | 12 (16.7) | |
| 4-year college degree (BA, BS) | 18 (25.0) | |
| Master's degree or higher | 5 (6.9) | |
| Annual household income | | |
| Less than $10,000 | 12 (16.9) | |
| $10,000-$19,999 | 10 (14.1) | |
| $20,000-$29,999 | 8 (11.3) | |
| $30,000-$39,999 | 6 (8.5) | |
| $40,000-$49,999 | 5 (7.0) | |
| $50,000-$59,999 | 2 (2.8) | |
| $60,000-$69,999 | 4 (5.6) | |
| More than $70,000 | 24 (33.9) | |

by making referrals and inviting friends, relatives, or neighbors to participate, further increasing enrollment. Successful recruitment strategies executed in current study were shown to have the same effectiveness in a later intervention pilot study. Sixteen participants were needed for this pilot study, and recruitment was completed successfully within 2 weeks with more potential participants added to the waiting list.

Lower participation by culturally and linguistically diverse participants may be due to language barriers (Smith et al., 2018). As described previously, the majority of enrolled students in this school district are from racial and ethnic minority families (Ohio Department of Education, 2018). Furthermore, according to the U.S. Census Bureau (n.d.), Hispanic or Latino students constitute the largest non-White population in this school district. Literature has shown that having bilingual or bicultural personnel accessible to study participants is an important strategy for recruitment and retention of minority populations (Aguirre et al., 2018; Otado et al., 2015; Reidy et al., 2012; Talavera et al., 2016). For the current project, all study materials, such as recruitment and study information as well as consent documents, used culturally sensitive language. In addition to the bilingual coordinator from the school district, an interpreter was assigned to participate at the school's event (i.e., resource fair) to bridge communication barriers regarding this research study.

Consistent with previous studies, especially studies with low-income families (Cui et al., 2015; Nicholson et al., 2011; Pescud et al., 2015; Schoeppe et al., 2014; Wallace & Bartlett, 2013), lack of interest in research and time constraints among some parents or their children also affected recruitment efforts for this study. Some potential participants met at the resource fair sent inquiries and left contact information, but later they refused to participate because they were no longer available or not interested in the study. Studies have also reported that flexible scheduling for meeting times and locations is effective for both recruitment and retention (Schoeppe et al., 2014; Staffileno & Coke, 2006). In this study, two face-to-face data collection interviews were required. Accelerometers readings needed to be retrieved at the second face-to-face data collection interview so study participation could be completed. To recruit and retain participants successfully and increase the study completion rate, research staff tried whenever possible to adjust their own schedules, including weekend availability, to accommodate the most convenient times for participants. Although this flexibility may have resulted in what appeared to be an inefficient use of researchers' time, it was very effective in achieving the goal of recruitment and better retention of study participants. Moreover, having the same research staff make calls or send texts or email messages (Yancey et al., 2006) to remind parents about upcoming meetings (i.e., the second data collection interview) was found not only to increase retention but also to build relationships between participants and researchers.

Many scholars have suggested that matching race and ethnicity between researchers and potential participants serves as an effective recruitment strategy (Diaz, 2012; Otado et al., 2015; Yancey et al., 2006; Zamora et al., 2016). This strategy, however, did not seem to make an obvious difference for this study. Researchers for this study are primarily Asian. Some Hispanic or Latino participants or participants' parents did inquire if research staff were from outside of the United States and seemed comfortable sharing their immigration stories. Although matching ethnicity and race between researchers and potential participants did not occur in this study, social status, such as immigration status, seemed to be a key to connect the two parties.

Researchers discovered that most participants lacked a home computer. As described previously, low SES is noted as one of the barriers to recruitment and retention (Cui et al., 2015; Nicholson et al., 2011; Pescud et al., 2015; Schoeppe et al., 2014; Wallace & Bartlett, 2013). Surprisingly, technology, such as smartphones, may be particularly advantageous and have the potential to address this issue (Sugie, 2018; Swindle et al., 2014). A recent Pew Research Center (2019) survey showed that 96% of adults with household incomes below $30,000 had cell phones of which 81% were smartphones. Only 54% of lower-income U.S. adults (earning less than $30,000 a year) are desktop or laptop computer owners (Anderson & Kumar, 2019). Furthermore, more than 80% Whites reported owning a desktop or laptop computer compared with about 60% of Blacks or Hispanics (Anderson & Kumar, 2019). Young adults, non-Whites, and economically

disadvantaged groups such as Blacks and Hispanics were similar to Whites in their reliance on smartphones for online access, although smartphone ownership was similar across major ethnic and racial groups (Perrin & Turner, 2019). Despite the fact that computer ownership was low in this study population, most participants were found to have smartphones with internet access. Hence, considering potential participants' characteristics and their access to technology, incorporating a QR code in recruitment materials may serve as a cost-effective tool (Gu et al., 2016). Through an internet connection, a QR code allows users to be linked directly and instantaneously via the smartphone to a predetermined webpage encoded within the QR code. As opposed to the limited space available on a printed recruitment flyer, a QR code allows potential participants to access more comprehensive and transparent information promptly; moreover, it is quick and easy for those interested in participating in the study to leave contact information. Consequently, time needed to connect potential participants and research staff could be shortened, making the communication process more efficient.

## Conclusions

This article describes challenges with and successful strategies for recruitment and retention of children from diverse backgrounds for a research study. Study findings revealed that minority groups, especially among Hispanic populations, were recruited more successfully as a result of current participants' referrals and a school resource fair event. Moreover, a flexible scheduling mechanism and a reminder call, text, or email worked effectively for both recruitment and retention. The experiences described herein may differ for other studies and geographic locations with different populations, limiting its generalizability. Despite these limitations, we believe this discussion of recruitment and retention is valuable. Future studies should consider potential barriers to participant recruitment and retention proactively, as well as how technology may aid in these processes. Continuing research on ways to address recruitment and retention for research studies, especially studies involving child populations from diverse communities, would be helpful for future implementation efforts to promote the health of children and their families. It is imperative that researchers use multiple recruitment and retention strategies and adapt these strategies to meet the needs of the target population. Involving diverse racial and ethnic groups for research studies will help eliminate health disparities for all populations, making this goal not only promising but also attainable.

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