Adolescents' Perceptions of Environmental Influences on Physical Activity

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***Objectives*: To examine African American adolescents' perceptions of environmental influences on physical activity and identify physical activity promotion strategies. *Methods*: Concept mapping with 50 adolescents was used to obtain cluster maps of conceptual domains affecting physical activity. *Results*: Seven domains were identified, including physical activity settings, social support, negative social influences, parental control, negative environmental influences, transportation and technology issues, and financial issues. Their relative importance to physical activity varied by gender. *Conclusions*: This research identified salient environmental characteristics that can be measured in future studies as well as strategies for increasing physical activity in urban youths.**

***Key words*: physical activity, adolescents, African Americans, qualitative research**

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Obesity has reached epidemic proportions in the United States and is increasingly affecting young people. African American adolescents are disproportionately affected: 21% are overweight compared to 14% of their non-Hispanic white counterparts.[1] There are numerous consequences of obesity for children's health, including high blood pressure, type 2 diabetes, and psychosocial problems.[2,3] Some suggest that the current obesity epidemic may result in today's population of youths living shorter lives than their parents.[4] Furthermore, health care costs attributed to obesity are significant, accounting for 4.3 to 5.7% of total direct health care costs in the United States.[5,6]

Efforts to reduce obesity focus on increasing physical activity because of its direct effect on energy expenditure. Energy expenditure is an important component of the energy balance equation in which an imbalance of energy intake and expenditure leads to weight gain or loss.[7] Increasing physical activity is also beneficial because it is associated with multiple health benefits, including decreased risk of cardiovascular disease, stroke, hypertension, and diabetes and improved

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mental health.[8] In youths, physical activity may reduce cardiovascular disease risk factors[9-11] and has psychological benefits, including increased self-esteem and reduced anxiety and stress.[12]

Despite the physical and mental health benefits, many youths do not meet the recommended levels of physical activity. Data from the 2005 Youth Risk Behavior Surveillance (YRBS) show that only 36% of high school students met the recommendations.[13] Furthermore, engagement in physical activity declines considerably during adolescence,[13,14] and declines are more pronounced in young women than young men.[13,15] There are clear racial and ethnic differences in physical activity levels. African American adolescents have lower levels of physical activity than white and Hispanic adolescents. According to the 2005 YRBS, 29.5% of African American adolescents met recommended physical activity levels compared to 38.7% of white and 32.9% of Hispanic adolescents. Of all racial/ethnic and gender groups, African American adolescent females had the lowest activity levels, with only 21.3% meeting the recommendations.[13]

Current research efforts to identify the determinants of physical activity behavior have moved beyond the examination of demographic and psychosocial variables to consider environmental influences on physical activity. This approach is informed by the social ecological perspective on human behavior which suggests that behavior results from an interaction of the social and physical environments.[16] Furthermore, health behavior is thought to be influenced by factors acting at multiple levels, including the personal, sociocultural, environmental, and policy levels.[17,18] Several studies show associations between physical and social environmental characteristics and physical activity in adults.[19-22] Research on youths and minority populations, however, is limited.[23,24]

Research findings suggesting that environmental characteristics impact physical activity as well as evidence for the limited success of interventions that target individual correlates of physical activity[25-27] have contributed to a growing consensus that environmental change may be a successful population-level physical activity promotion strategy. Furthermore, environmental change may contribute to the effectiveness of individual behavior change strategies by moderating their impact on physical activity. In light of this, public health leaders are promoting the development of interventions that use environmental change to increase physical activity.[28,29]

Future environmental intervention efforts should target high-risk populations, such as African American youths who have disproportionately low levels of physical activity and high rates of obesity.[1,13] The development of age and culturally appropriate interventions is, however, limited by the lack of research on environmental influences on physical activity in minority populations and youths.[23,24] We know relatively little about these groups, but have reason to believe that they may experience unique environmental influences. Youths' experiences are likely to be different from those of adults because of greater free daytime hours, reduced access to transportation and money, and preferences for different types of activities. Minority populations may also experience and perceive the environment differently as a result of residing in neighborhoods with different sociocultural and environmental characteristics.[24]

The aim of this research was to use qualitative research methods to explore urban African American adolescents' perceptions of environmental characteristics that impact physical activity and identify physical activity promotion strategies. Qualitative research is important for addressing the existing gaps in the literature. This open-ended approach can identify salient environmental characteristics that should be examined in future quantitative studies in this population. The findings would contribute to the development of environmental interventions that are tailored to the group's needs and preferences.

METHODS

The Baltimore Active Living Teens Study (BALTS) aims to investigate associations between physical activity and environmental variables in urban adolescents. The formative research presented here is a subcomponent of the larger BALTS study. The research was conducted from October 2005 to May 2006 with the purpose of identifying environmental factors relevant to the study popu-

lation. The results have been used to inform the development of age-appropriate and culturally appropriate data collection instruments and identify potential intervention strategies for future work.

Concept mapping was used in this study. This participatory research methodology uses both qualitative and nonparametric statistical methods to display a group's ideas on a topic in the form of a map.[30] Concept mapping involves multiple structured group data collection activities that are largely controlled by the participants.[31,32] Concept mapping has been applied successfully to studies examining environmental influences on health behavior, including intimate partner violence,[32,33] nutrition, and physical activity.[34]

Participants

BALTS participants (N=377) include 9th through 12th graders from 2 magnet high schools located in Baltimore City, Md. A magnet school is a public school that draws students who are interested in specific subjects from surrounding regions. In Baltimore City, admittance to magnet schools is dependent on test scores. One of the study schools focuses on math and engineering. Its diverse student body is 70% African American, 26% white, 3% Asian, 1% Hispanic, and 0.4% American Indian. Twenty-five percent of students receive free school lunch, and 10% receive reduced school lunch.[35] The other study school has a liberal arts focus. The student body is 84% African American, 13% white, 2% Asian, 0.5% Hispanic, and 0.4% American Indian. Thirty-two percent of students receive free school lunch, and 11% receive reduced school lunch.[36] At both study schools, several noncore classes were selected for participation in the BALTS study with the goal of obtaining participants from all grades. Participation was then solicited through in-class presentations about the study. Students who returned signed parental consent forms were enrolled.

A subset of the enrolled students participated in concept mapping. A list of all participants and their home phone numbers was used to identify students who were eligible for and interested in participating in concept mapping. Eligible participants self-identified as African American and completed consent forms in accordance with University of Maryland Institutional Review Board procedures. They were offered additional incentives to participate in the 3 concept-mapping activities, which included generation ($10), structuring ($15), and representation and interpretation ($10). To encourage continued participation, students attending all 3 activities received a total of $50. An effort was made to recruit an equal number of male and female participants and to ensure representation in each age gender category. Twenty-three students participated in the generation activity, 50 participated in structuring, and 18 participated in representation and interpretation. Nine participants attended all 3 activities. Of the 50 students who participated in the structuring activity, there were 23 male and 27 female participants with a mean age of 15.5 years.

Data Collection and Analysis

Data collection involved 3 primary activities: generation, structuring, and representation and interpretation. Activities took place after school and were held on multiple days to ensure adequate participation while maintaining a small group size conducive to discussion.

Generation. The objective of the generation activity was to obtain a participant-generated comprehensive list of environmental characteristics that influence physical activity. We held small-group brainstorming sessions in which participants were asked to respond to the question "What things in the environment, both good and bad, might influence physical activity among adolescents?" We defined environment broadly as "anything outside yourself." We defined physical activity as "activity you get from exercise or playing a sport and activity you get from walking or riding a bike to get somewhere." All verbal responses were recorded on large notepads and displayed throughout the brainstorming session. When the group could not generate additional ideas, each participant was provided with a piece of paper and pencil and asked to write down any items that he or she did not want to share verbally. These items were then added to the displayed items. The participants and facilitator discussed each item on the list and addressed any questions.

Three generation activities were held for 1.5 hours each. There were 9 participants at the first generation activity, 10

at the second, and 4 at the third. In total, these 23 participants generated a list of 253 environmental characteristics. The first 2 authors condensed this list to 71 items with the goal of combining overlapping items while using participant wording and maintaining detail. The list was entered into Excel where duplicate items were marked and deleted. Six items were added to the list that were not generated by participants, but were identified as potentially influencing physical activity through literature searches and participant interviews. The final list of 77 items was the basis for the structuring activity.

Structuring. The objective of the structuring activity was for participants to sort and rate the brainstormed items. Each participant was provided with a stack of cards, each containing one of the 77 items. The student was asked to independently sort the cards into piles that made sense to him or her and create a name for each pile. Participants also rated each item on its relative importance to physical activity using a Likert scale where 1 corresponded with "not important at all" and 5 corresponded with "extremely important."

A total of 50 participants, including 27 young women and 23 young men, participated in the 2-hour structuring activity, which was held on 5 different days with anywhere from 3 to 19 participants attending a session. Participants included 17 individuals involved in the generation activity and 33 additional students recruited to achieve a desirable sample size.[37] Upon completion of the structuring activity, data were entered for analysis using Concept Systems software.[38]

Data Analysis

The data analysis for concept mapping involved several steps. First, data from the sorting exercise were used to create a matrix of similarities for each participant. For any 2 items in the matrix, a 1 was assigned if the participant placed the 2 items in the same pile, and a 0 was assigned if the participant did not place them in the same pile. An aggregate similarity matrix was then obtained by summing across the individual matrixes. The values in this matrix corresponded to the number of participants who placed the pair in the same pile.

Second, the matrix was analyzed using multidimensional scaling (MDS) with a 2-dimensional solution. MDS produced a configuration, or map, where items piled together more frequently were located more proximately than those piled together less frequently. The goodness of fit of the configuration is indicated by the stress value, a measure of how well the aggregate similarity matrix corresponds with the map. The equation for the stress value is $\text{Phi} = \Sigma\ [d_{ij} - f\ (\varsigma_{ij})]^2$ where d_{ij} represents the distances reproduced on the map and ς_{ij} represents the observed values from the aggregate similarity matrix. A lower value indicates a better fit, as there is less difference between the reproduced and observed values.[34] A study examining 33 concept mapping projects found an average stress value of 0.29 with a range of 0.155 to 0.352.[39] The stress value for this analysis was 0.24.

Third, hierarchical cluster analysis was used to create clusters of items representing conceptual domains. The MDS configuration provided the input for cluster analysis, which partitioned the configuration into nonoverlapping clusters in 2-dimensional space. Ward's algorithm[40] provided the basis for defining a cluster. Because no criteria exist for determining the appropriate number of clusters,[34] participants examined maps with successively fewer clusters and chose the final cluster solution. Finally, data from the Likert scale ratings were averaged across participants for each item and cluster. These results are depicted in a concept rating map where cluster height represents the average importance rating for all items in the cluster. These analyses were conducted using Concept Systems software,[38] which was developed specifically for conducting concept mapping.

Representation and Interpretation

The objectives of the representation and interpretation activity were to generate and interpret a concept map and discuss implications for increasing physical activity. The facilitator and small groups of participants used the Concept Systems software[38] to conduct the analysis described above. This generated several maps with successively fewer clusters. Participants examined these maps, came to a consensus on the appropriate number of clusters, and named the clusters. The final cluster map was then displayed using the rating data to show which clusters were rated as most important to

Table 1
Items Influencing Physical Activity by Cluster and Their Average Importance Ratings

Item #	Items by Cluster	Importance Rating
	#1: Places for Physical Activity	
1	Places for physical activity (ie, recreation centers, basketball courts)	**4.34**[b]
37	Physical activity or sports programs outside of school	**3.86**
42	Fields in the neighborhood	**3.71**
44	Places to go (like stores, restaurants, movies, etc)	3.40
3	Free space/Open lots	3.35
14	Lights on basketball courts	3.35
77	Green space[a]	3.27
69	Dance clubs for younger people (age 14-18)	3.24
75	Cross-walks and pedestrian signals[a]	2.94
73	Aesthetics[a]	2.88
58	Convenient stores in your neighborhood	2.86
27	Useable water fountains in parks	2.82
74	Bike lanes[a]	2.82
55	A backyard	2.72
47	Advertisements for physical activity	2.61
30	Trails	2.47
29	Sidewalks	2.26
	#2: Encouraging and Supportive People	
70	Friends you can be physically active with	**3.90**
43	Neighborhood teams	**3.43**
17	Good supervision at facilities	3.40
64	Siblings encouraging you to be active	3.36
67	Parental support for physical activity	3.34
6	Friends/peers encouraging you to play sports	3.27
33	People telling you that physical activity is healthy	3.24
4	People your age in your neighborhood	3.24
2	Athletic competition with people in your neighborhood	3.06
49	People in the neighborhood who are always nice	2.90
	#3: Negative Social Influences	
5	Crime	**3.94**
52	Violence	**3.90**
19	Drugs and drug dealers	**3.74**
40	Sexual offenders	**3.72**
38	Gangs	**3.56**
41	Police/adults harassing groups of teenagers	**3.50**
65	Strange guys/people trying to talk to you	3.16
36	People that harass you	3.14
24	Police patrolling your neighborhood	3.06
20	Prostitution	2.86
9	People that will beat you up	2.84
68	Culture that emphasizes being thin	2.84
76	People loitering[a]	2.82
61	Liquor stores and people around them	2.80
62	Neighbors you can't trust	2.66

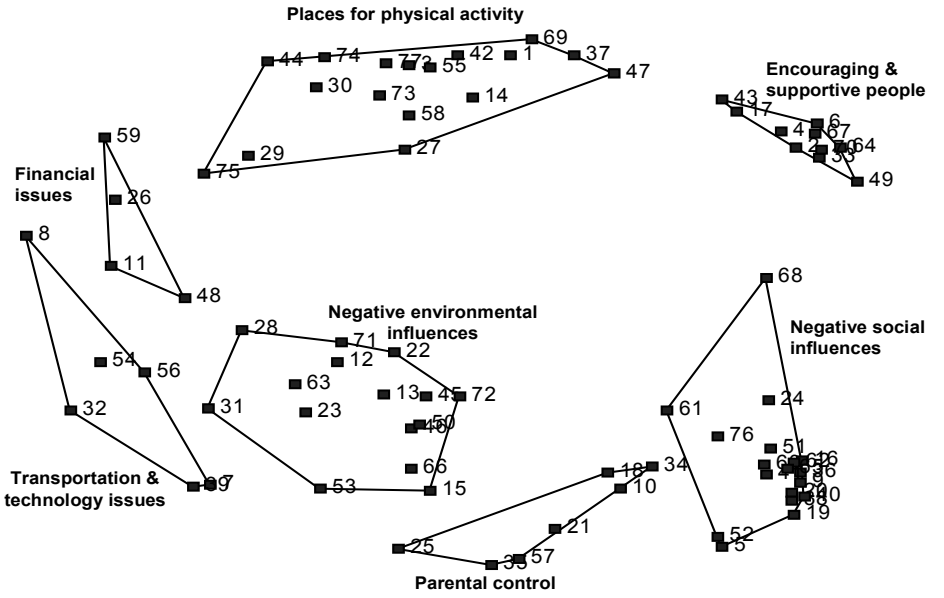
(continued on next page)

Table 1
Items Influencing Physical Activity by Cluster and Their Average Importance Ratings (continued)

Item #	Items by Cluster	Importance Rating
16	People in your neighborhood that don't like you	2.24
60	People you don't like in your neighborhood	2.00
51	People making fun of you for being physically active	1.88
	#4: Parental Control	
57	Siblings (ie, taking care of them)	3.40
25	Curfew	3.30
10	Parents that won't let you go outside if it's unsafe	3.27
35	Punishment by parents so that you can't go outside	3.22
18	Unwanted supervision at facilities	2.64
34	Parents who don't exercise	2.47
21	Vandalism (ie, graffiti)	2.40
	#5: Negative Environmental Influences	
31	Weather	**3.70**
45	Unsafe facilities for physical activity	**3.70**
53	Dark outside when you get home from school	3.58
46	Rules and restrictions at places for physical activity	3.46
66	Neighborhood rules (ie, no ball playing, riding bikes, etc)	3.40
13	Poorly maintained facilities	3.29
12	Facilities not open when you want to use them	3.24
63	Poor lighting in certain areas	3.20
71	Construction work blocking off places for physical activity	3.06
23	Air pollution	2.90
50	Trash/litter	2.90
22	Litter at places for physical activity (ie, courts, parks)	2.84
15	Things that bite you (dogs, cats, mosquitoes)	2.58
72	Abandoned houses[a]	2.47
28	Cracks in the sidewalk	1.70
	#6: Transportation and Technology Issues	
54	Traffic/busy streets	3.22
32	Inefficient transportation (ie, bus)	3.08
8	Access to transportation (ie, car, bus)	3.04
56	Distance to facilities for physical activity	3.04
39	Technology (ie, prevents walking and other activity)	2.80
7	TV/computer in the house	2.57
	#7: Financial Issues	
59	Money to go places	3.38
48	Cost of physical activity/sports programs	3.24
26	Money to buy stuff for physical activity (ie, shoes, equipment)	3.18
11	Cost of joining a club, gym, the Y	3.00

Note.
a Item added by the investigators.
b Bolded items indicate the 10 items with the highest average importance ratings.

Figure 1
Seven-cluster Map with Cluster Items and Names[a]



Note.
a Numbers refer to item numbers in Table 1.

physical activity. Participants interpreted the map and discussed the results. Finally, participants used the results to brainstorm strategies for increasing adolescent physical activity.

Three 1.5-hour representation and interpretation sessions were held with a total of 18 participants. Nine had participated in both the generation and structuring activities, and 9 had participated in one of the 2 activities. Upon completion of these activities, the investigators created one map that best represented the maps created in the 3 sessions. This was a straightforward process, as all 3 groups had chosen a map with 7 clusters and identified similar cluster names.

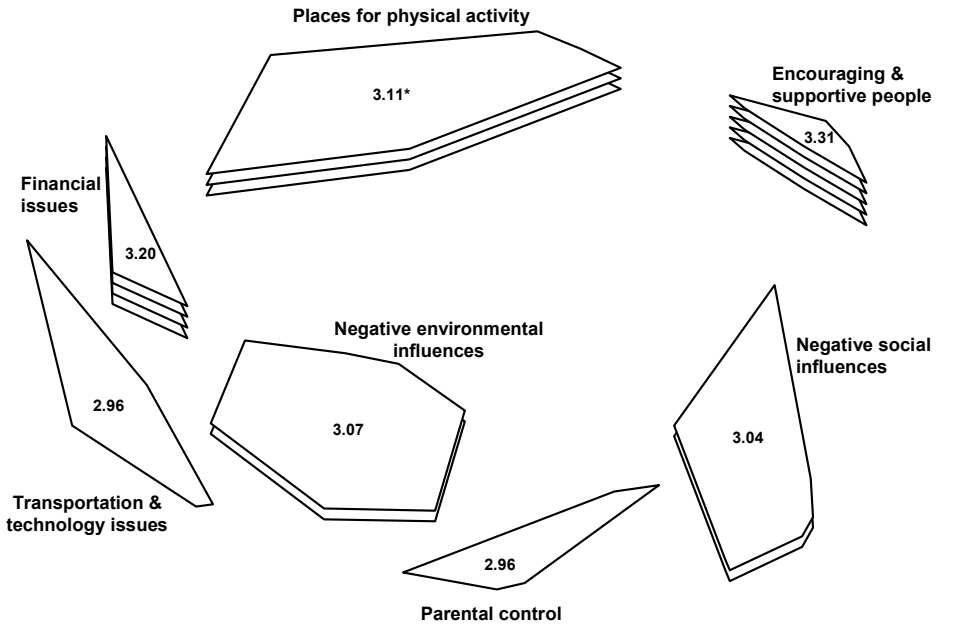
RESULTS

Environmental Characteristics

The 77 environmental characteristics influencing adolescent physical activity are listed in Table 1. Participants identified a wide range of factors, including structural factors, such as physical activity facilities and proximity to stores; social influences from peers, parents, and other community members; and financial and transportation issues. Many of the items describe the social environment, which participants defined as relating to the people around them. As noted by participants themselves, the list includes many more negative influences than positive ones.

Table 1 lists the items by cluster. The clusters are also displayed in the concept map in Figure 1 where items and clusters that are conceptually similar are located more proximally. Overall, positive influences are located on the top of the map, and negative influences are located on the bottom. Cluster 1 ("places for physical activity") includes places where adolescents can be active as well as destinations that facilitate walking and biking.

Figure 2
Seven-cluster Rating Map for Male and Female Participants[a]



Note.
a More layers indicate greater average cluster importance rating.
*** Average cluster importance rating**

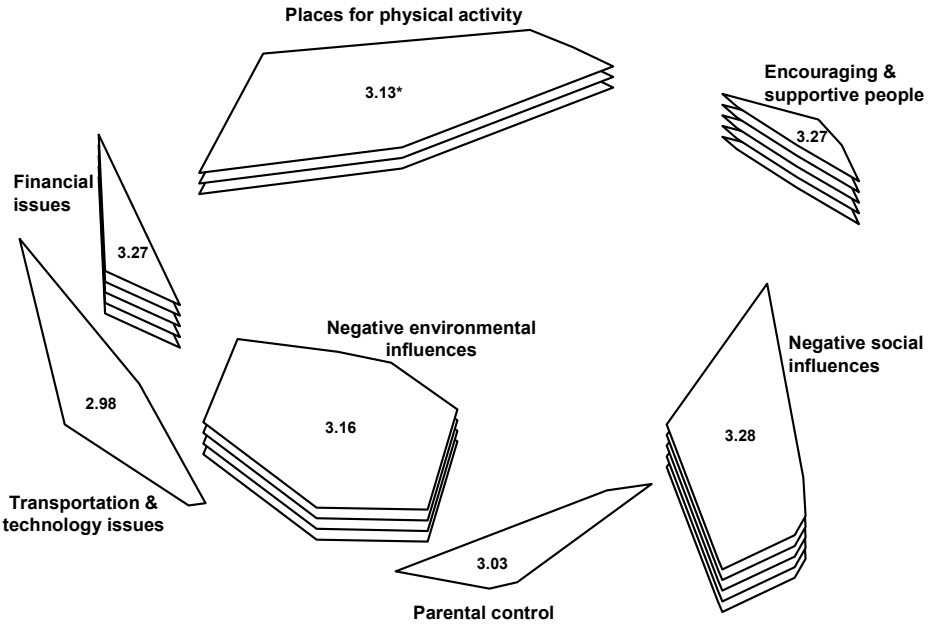
Cluster 2 ("encouraging and supportive people") contains items related to friends, family members, and others who positively influence physical activity. Cluster 3 ("negative social influences") includes aspects of the social environment that negatively impact physical activity. In cluster 4 ("parental control"), there are several items related to parents and family. Cluster 5 ("negative environmental influences") describes characteristics of the physical environment that can prevent physical activity. Participants also described this cluster as "issues beyond your control." Cluster 6 ("transportation and technology issues") includes items describing how transportation affects access to physical activity settings and technology prevents activity. The items in cluster 7 ("financial issues") describe the impact of financial resources.

The results of cluster analysis tend to be less interpretable than MDS results. This is evident in the poor placement of a few items in the clusters presented here. For example, the item "vandalism" appears out of place in cluster 4 ("parental control"). When examining the maps during the representation and interpretation activity, participants said that this item belongs in the nearby cluster 3 ("negative social influences"). Also, the participants felt that the item "advertisements for physical activity" in cluster 1 ("places for physical activity") could also belong in nearby cluster 2 ("encouraging and supportive people").

Ratings

The average importance rating for each item is listed in Table 1. The scores ranged from 1.70 to 4.34 with a higher

Figure 3
Seven-cluster Rating Map for Female Participants[a]



Note.
a More layers indicate greater average cluster importance rating.
*** Average cluster importance rating**

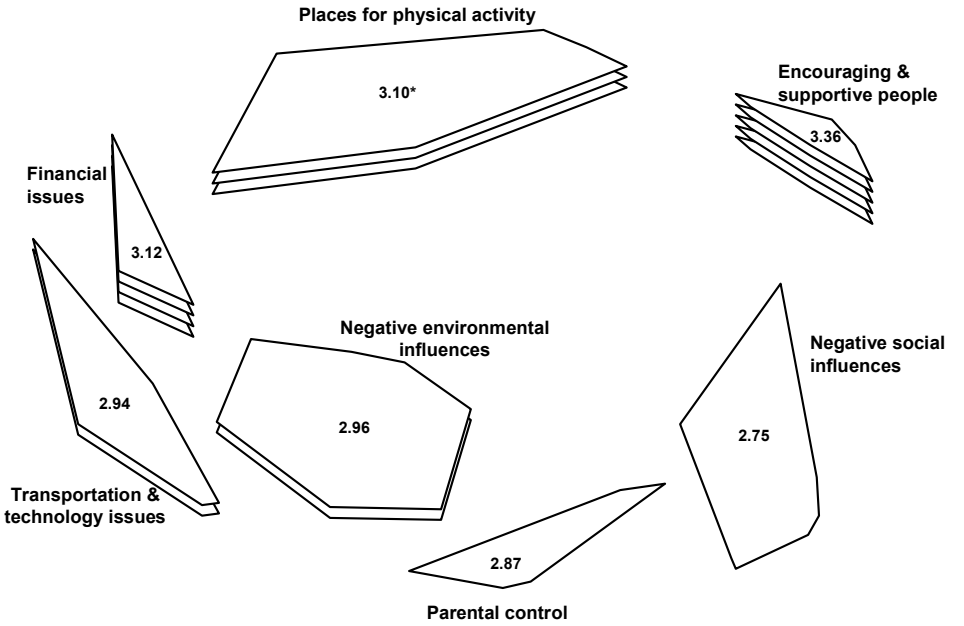
score indicating a higher level of perceived importance. The 10 most highly rated items shown in bold include (1) places for physical activity, (2) crime, (3) violence, (4) friends you can be physically active with, (5) physical activity or sports programs outside of school, (6) drugs and drug dealers, (7) sexual offenders, (8) fields in the neighborhood, (9) weather, and (10) unsafe facilities for physical activity. In general, items with higher rankings are related to physical activity facilities, safety issues, and peer influences. Regarding the presence of programs outside of school, participants expressed an interest in athletic opportunities that are less competitive and time intensive than those offered at school.

Figure 2 depicts the 7-cluster rating map where more layers indicate a higher average importance rating for the cluster. The cluster named "encouraging and supportive people" has the highest average rating (3.31) followed by "financial issues" (3.20) and "places for physical activity" (3.11). There are somewhat lower ratings for "negative environmental influences" (3.07) and "negative social influences" (3.04). "Transportation and technology issues" (2.96) and "parental control" (2.96) receive the lowest ratings. Based on these results, social support from peers, parents, and community members; financial concerns; and access to physical activity settings are most important to physical activity.

Gender Differences

Upon group examination of the cluster rating map, female participants were surprised by the results and explained that the cluster named "negative social influ-

Figure 4
Seven-cluster Rating Map for Male Participants[a]



Note.
a More layers indicate greater average cluster importance rating.
*** Average cluster importance rating**

ences" greatly influences physical activity. This prompted examination of the maps by gender. Figures 3 and 4 show the cluster rating map for females and males respectively. Although both young men and young women rate "encouraging and supportive people," "places for physical activity," and "financial issues" as important to physical activity, young women rate "negative social influences" and "negative environmental influences" much more highly than male participants do. An examination of the items with the top 10 ratings by gender displayed in Table 2 shows that young women rate items related to safety, including crime, violence, drug dealers, and sexual offenders, as most important whereas young men rate items related to social support and physical activity settings as most important.

Participant Interpretation and Implications

After interpreting and discussing the maps, participants brainstormed their implications for increasing physical activity among young people. There were several suggestions related to physical activity facilities, including building more facilities, fixing those that are poorly maintained, reducing cost of admission, and creating family-oriented facilities with activities for people of all ages. Many participants reiterated the need to increase encouragement for physical activity from family, peers, and other community members. They recommended providing neighborhood activities, such as after-school programs and local sports competitions. Reducing crime was suggested; and participants, particularly young women, felt that increasing police

Table 2
Top 10 Ratings for Item Importance to Physical Activity by Gender

#	Young Women	Young Men
1	Crime (4.52[a])	Places for physical activity (4.30)
2	Violence (4.37)	Friends you can be physically active with (3.87)
3	Places for physical activity (4.37)	Physical activity or sports programs outside of school (3.78)
4	Sexual offenders (4.19)	Fields in the neighborhood (3.65)
5	Drugs and drug dealers (4.15)	Free space/Open lots (3.57)
6	Gangs (3.93)	Siblings encouraging you to be active (3.52)
7	Physical activity or sports programs outside of school (3.93)	Unsafe facilities for physical activity (3.52)
8	Friends you can be physical active with (3.92)	Lights on basketball courts (3.45)
9	Fields in the neighborhood (3.77)	Athletic competition with people in your neighborhood (3.43)
10	Dark outside when you get home from school (3.74)	Friends/peers encouraging you to play sports (3.43)

Note.
a Average item importance rating

patrolling of streets would reduce crime and parental concerns regarding safety. Some older male participants disagreed and explained that police harassment could be a barrier to physical activity. This emphasizes the need to carefully consider gender differences when developing interventions that address neighborhood safety.

DISCUSSION

This research identified characteristics of the environment that urban African American adolescents perceive to influence physical activity. A large majority of these items were negative, indicating that adolescents perceive that their environment offers more negative than positive influences on physical activity. Several of these items, such as distance to physical activity facilities, crime, and trails, have been previously identified in the literature.[19,41-44] Many environmental characteristics that have not been previously identified were elicited using qualitative techniques, including but not limited to the presence of dance clubs for young people, peers in the neighborhood, and harassment by police and other adults.

The concept map provides a visual display of these environmental characteristics and their perceived importance to physical activity. Support and encouragement from parents, peers, and other community members are very important to adolescents. This finding is not surprising given previous research showing that adolescents whose parents, siblings, and peers participate in and support physical activity engage in more physical activity than do adolescents without this support.[14,45-48] Physical activity settings, including facilities for sports and exercise and neighborhood characteristics that encourage walking and biking, are also important to physical activity. These findings are consistent with previous research in adults[19,49-51] and children.[42,52] Financial issues, such as cost of equipment and physical activity programs, were also important. Monetary barriers to physical activity were identified in another qualitative study on African American children and their mothers,[53] revealing the

need to consider this issue when developing interventions to impact physical activity among lower income minority populations. This is particularly true for school-aged youths who may have limited access to financial resources.

Examination of maps for male and female participants revealed gender differences regarding the perceived importance of environmental characteristics. Female participants reported that items related to safety were very important to physical activity. These issues were less of a concern for male participants who rated items related to peer support and physical activity settings as most important. Previous research on safety and physical activity among adolescents shows that high crime and perceptions of safety are associated with lower levels of physical activity.[43,54] In a study on Latino youth, however, safety impacted physical activity of female and not male participants.[55] Previous studies have not examined this issue in African American adolescents.

Participant discussion of the implications of the maps generated several ideas for environmental interventions. Suggestions included creating a positive social environment through increased social support and decreased crime, increasing access to and improving facilities, and decreasing costs associated with physical activity. Physical activity interventions that include multiple components and act on multiple levels of influence may be most effective.[17,56] To increase physical activity in African American youths, interventions should involve a combination of modifications to both the social and physical environments. For example, interventions could aim to increase the number and quality of low-cost physical activity facilities while using social networks to promote the use of these facilities by adolescents.

A major strength of this study is the use of concept mapping, an innovative participant-driven methodology that is unique in its ability to generate and summarize detailed information succinctly in the form of a map. The concept mapping activities allowed participants to share their opinions about aspects of their environment that are important to physical activity and generate ideas about how to increase physical activity. This study contributes a new perspective to the research literature on physical activity. Although others[57,58] have used qualitative methods with African American children and adolescents to examine social and psychological factors that influence physical activity, our study is unique in that it is the first qualitative study to elicit the perspective of urban African American adolescents on environmental characteristics that impact physical activity. This population is disproportionately affected by obesity and low levels of physical activity yet is underrepresented in the literature.[24]

There are some limitations to this research. First, the use of qualitative techniques to elicit environmental characteristics resulted in a detailed list of items, but concept mapping exercises alone do not provide more descriptive information about the context and meaning of these characteristics. This information was gleaned through group discussions, but is not visually portrayed in the maps presented here. Second, transferability of these study findings is limited due to the selection of participants from magnet high schools, which draw students with higher test scores than the larger Baltimore City school population. All participants came from city neighborhoods, however, and are exposed to many of the same environmental characteristics as their peers who attend other city schools. Finally, recruiting participants and ensuring participation in multiple activities were difficult given competing after-school activities. Encouraging participation in activities for extended time periods was also challenging.

These findings have important implications for future research and intervention efforts. The results increase our understanding of how the environment impacts physical activity among urban African American youths. This research identifies dimensions of the environment that are important to these adolescents and specific items within them, providing information regarding environmental characteristics that can be measured and examined in future studies. As evidence for the impact of the environment on physical activity grows, there is a need for the implementation of environmental interventions to improve health. This research provides several participant-generated ideas for physical and social environmental changes that may impact physical activity. These results should be

considered as researchers begin to develop interventions targeting urban youths.

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