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Assessing Physical Activity Determinants in Urban Settings: Comparison of Perceptions and Environmental Audit Findings

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Implications for Extension

Assessing Physical Activity Determinants in Urban Settings: Comparison of Perceptions and Environmental Audit Findings

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Sedentary lifestyles are a contributor to obesity and urban adolescents are less physically active than rural adolescents. Supportive physical activity environments, understood as the geography, observations, and perceptions of features such as recreational facilities, sidewalks, bike lanes, traffic patterns, etc., have been positively associated with adolescent physical activity behaviors within urban settings. As part of a Socio-Ecological intervention to improve physical activity behavior, the Physical Activity Resource Assessment (PARA), the Active Neighborhood Checklist (ANC), and focus groups were used to assess the physical activity influences within an urban middle school and surrounding community. The assessments suggested that lack of parks, lack of walkability in the streets, perceptions of crime, lack of school programs, parental and peer influences were barriers to physical activity opportunities. The ANC, PARA, and focus groups each added valuable

information for program planning to improve adolescent physical activity behavior.

Obesity is a multifaceted, complex problem, but a sedentary lifestyle is a major contributor to this national health issue (Weinsier, Hunter, Heini, Goran, & Sell, 1998). Approximately one-third of children nationwide are overweight or obese, and low-socioeconomic status (SES) and minority children have the highest prevalence rates (Ogden, Carroll, Kit, & Flegal, 2012). While the percentage of children aged 6–11 years in the United States who were obese tripled from 1980 to 2012, the percentage of adolescents aged 12–19 years who were obese quadrupled from 5% to nearly 21% during the same time frame (Ogden, Carroll, Kit, & Flegal, 2014). Obese adolescents are more likely to have prediabetes, than any other age group that is obese (Ogden et al., 2014). Aligning with obesity rates, previous research on adolescents has suggested that low-income, urban, African-American and Hispanic ethnic socio-economic factors were each associated with physical inactivity (Gordon-Larsen, McMurray & Popkin, 1996; Joens-matre et al., 2008; Liu, Bennett, Harun, & Probst, 2008; Sallis, Prochaska, & Taylor, 2000). A review of health education interventions suggests that interventions aimed specifically at targeting only physical activity within adolescent populations have been more effective improving physical activity behavior than interventions targeting multiple health behaviors, including physical activity (Hadley, Mbwana, & Hair, 2010).

According to the socio-ecological theory (SET), an individual's health behavior, including physical activity, is influenced by intrapersonal (knowledge, skills, motivations), interpersonal (friends, families), organizational, communal, and policy factors (McLeroy, Bibeau, Steckler, & Glanz, 1988; Sallis et al., 2000). Recently, there

is a growing interest in the idea that physical activity environments influence adolescents' physical activity patterns in addition to inter and intrapersonal influences (Anderson & Butcher, 2006; Rose & Bodor, 2010; Sallis & Glanz, 2006). The idea of the physical activity environment has been conceptualized as the geography, observations, and perceptions of features that might influence physical activity such as recreational facilities, sidewalks, bike lanes, traffic patterns, etc. (Brownson, Hoehner, Day, Forsyth, & Sallis, 2009; Saelens & Glanz, 2009). Measuring community features that support or inhibit physical activity is an important activity for public health obesity interventions targeting multiple levels of the socio-ecological model (Brownson et al., 2009; Ohri-Vachaspati & Leviton, 2010). Socio-ecological theory has guided interventions aimed at improving physical activity in adolescents. One recent study demonstrated that by targeting interventions within schools, homes and communities, significant improvements in physical activity, reductions in sedentary behaviors, and weight reductions can be achieved (Simon et al., 2014).

Socio-ecological theory could be applied within the urban context to understand influences on adolescent physical activity behavior. Urban adolescents (living in a city of 50,000 or more people found within a metropolitan statistical area) are more physically active if they perceive community parks to be of higher quality, available, and widely used by friends (Giles-Corti & Donovan, 2002; Prins, Oenema, van der Horst, & Brug, 2009). Prins et al (2009) found that perceptions of park availability were more associated with physical activity than objective measures of physical activity such as an analysis of the distance to parks, and recreational facilities using Geographic Information Systems (GIS). Perceptions of crime within a community have been shown

to contribute to physical inactivity in urban areas as well (Molnar, Gortmaker, Bull, & Buka, 2004).

Objective

Using baseline data of a multi-state project targeting obesity in 6th-8th graders entitled “Ignite: Sparking Youth to Create Healthy Communities” in Ohio, Kansas, and South Dakota, this manuscript describes several methods that assess physical activity influences at one urban middle school in Ohio, compares their findings and finally discusses their implications for planning interventions to promote physical activity by addressing socio-ecological influences (increasing opportunities, changing perceptions, etc.) within urban settings which could be expanded to future Extension programming.

Method

Our target community was a low-income, urban Jr. High school and surrounding community (est. 20,000) embedded within a medium size Midwestern City (pop. 65,000). Almost all students (98.5%) qualified for free and reduced priced lunch. The school has 175 enrolled students and is predominately 72% African-American.

Measuring the Physical Activity Environment

A physical activity environmental audit was conducted within a one mile radius of the school. The one mile radius was chosen to capture where students might recreate and is within a reasonable walking distance from the school. Previous research suggests that a ½-1 mile radius is a reasonable walking distance within urban communities (Rundle et al., 2009; Ver Ploeg et al., n.d.) . Key leaders in the community also verified that the one mile radius was adequate for the assessment.

One Extension professional conducted the assessments following training by the multi-state research coordinator during an annual face-to-face meeting. The assessment instruments were found at the “Built Environment Assessment Training Institute” (BEAT) website developed by the Pennsylvania Prevention Research Center (Pennsylvania, 2016). The instruments were chosen because they were free, appropriate for both rural and urban settings, and aligned with the multi-state projects research objectives. The multi-state project coordinator learned how to train others by taking an on-line course offered by the website.

The Physical Activity Resource Assessment (PARA) was one of the instruments used in the assessment and is a reliable and valid way to measure the built environment within urban low-income areas (Lee, Booth, Reese-Smith, Regan, & Howard, 2005). The PARA identifies any public or private setting or equipment that promotes exercise, recreation, or physical activity (i.e. parks, community centers). The PARA may be used for indoor and outdoor facilities and examines the availability, accessibility, safety, and quality of resources; resources are rated based on their features (ball fields, sidewalks, etc), amenities (bathrooms, benches, drinking fountains, etc.), and incivilities (litter, graffiti, maintenance issues, etc.). Higher scores indicate greater number and quality of features and amenities and fewer incivilities. The trained Extension professional identified parks and recreational facilities within the community by speaking with public health officials, community leaders, and by looking at maps. The Extension professional walked through the identified parks and facilities and completed the PARA scoresheet (paper and pencil) which was later entered into a spreadsheet for the analysis.

The physical activity environment was also assessed using the Active Neighborhood Checklist (ANC) (Hoehner, Ivy, Brennan Ramirez, Handy, & Brownson, 2007). The ANC examines street-level features that may be conducive to physical activity. These features include land use, public transportation, street characteristics, environmental quality for pedestrians, and walkability/ bikeability of the streets. Street segments within the radius were identified and numbered. If the segment was not fully included in the radius (i.e., intersection-to-intersection), it was not included in the analysis. All segment numbers were entered into a random number generator and randomized to include 23 (1/3 of total in defined community) segments for analysis. The trained Extension professional walked down each identified street and completed the ANC scoresheet (paper and pencil) which was later entered into a spreadsheet for the analysis.

Measuring Perceptions of Physical Activity

Perceptions of the physical activity environment as well as other socio-ecological influences were assessed using focus groups of adults and students. Following a review of the literature, the focus group questions were developed by the multi-state project team and content experts using a SET framework. Questions asked perceptions of behaviors, personal characteristics, and environmental factors that influence physical activity among students. More specifically, individual influences (physical activity preferences), interpersonal influences (e.g., parent and peer influences), and environmental influences (e.g., school) on adolescent health were assessed. A separate moderator's guide was created for the adults to guide discussion of their

perceptions regarding students' physical activity behaviors. Focus groups continued until a saturation of themes was reached.

Six focus groups, two consisting of parents, one consisting of teachers, and three consisting of students were conducted by trained moderators and all conversations were recorded and transcribed. The focus groups were conducted following the PARA and ANC assessments. Participants were recruited via flyers that were sent home and also distributed within the school as well by word of mouth. The school principal, nurse, after school program leader, and county Extension Educator were highly involved in the recruitment process. Youth focus groups were conducted at the middle school; they lasted one hour, whereas adult focus groups lasted one and half hours. All adult participants received \$25 cash and student participants received a \$15 gift card. The (state) State University IRB approved this study.

The verbatim transcripts were analyzed by three researchers using Grounded Theory (Corbin & Strauss, 1990). Grounded theory provides procedures and canons for qualitative researchers to understand phenomena and minimizing bias. Theories are generated by identifying reoccurring discussion of themes which are agreed upon by more than one researcher. In the analysis, code words were identified by recurring themes and were coded by NVivo (version 10, QSR International, Doncaster, Victoria, Australia). After open coding, axial coding was used to identify subthemes within the original themes. An iterative process was used to identify how the transcripts were to be coded. Each researcher independently read the focus group transcripts and identified themes. The researchers then convened to agree upon a common set of themes. The

transcripts again were recoded independently by the researchers using the agreed upon themes. Finally, the group reconvened and coded to consensus.

Results

Physical Activity Environment Assessments

The environmental assessments suggested that the surrounding community was not supportive of physical activity. Only one park within the delineated area was found for audit with the PARA. The park had only a few features (for example 3 out of 13 possible, such as a couple of baseball fields) to accommodate different types of physical activities. However, the park was in relatively good condition, having several amenities including lighting, sidewalks, benches, drinking fountains, bathrooms, etc. (8 out of 12 possible) that were of high quality (all scored at the highest possible rating), and there was only one incivility (some graffiti on the bathroom walls). For the ANC, the mean score for the street segment sample was 24.55 (range 0-59, with 59 representing the highest score for physical activity). Thus the streets that were sampled scored on average very low in terms of walkability as determined by the researchers.

Perceptions of Physical Activity

Demographics of the two parent, three students (6th – 8th grade), and teacher focus groups are detailed in Table 1. The focus group themes are provided in Table 2. Focus group themes that emerged in the analysis were “Barriers to Adolescent Physical Activity, Supports to Physical Activity, Common Adolescent Physical Activities.”

Barriers to physical activity subthemes were more commonly perceived by coders as “inter/intrapersonal” or “organizational” within SET. For example, when asked why it is easy or hard for students to be physically active, adults cited “laziness” and not

being able to deal with “discomfort” as reasons. Adults and students mentioned that it was “easier” and “more fun” to be sedentary, especially with smart phones and video games. Students and parents also reported being inactive due to “interpersonal” social influences from friends or family. For example, adolescents suggested that they often would not play outside because their friends would rather play video games or watch TV. Other barriers related to “organizations” were discussed as well. A general lack of opportunities at the school was often cited as limiting physical activity. Minimal sports teams and other activities especially for those not athletically inclined were suggested as key factors in preventing children from being more physically active. Adolescents also felt that even in gym class there was a lack of opportunity for activity. Some perceived barriers related to the “community.” For example, there was consensus in the focus groups that the neighborhood was unsafe to be outside and be physically active.

However, parents, adolescents and teachers also mentioned supportive influences within the community. Community centers, classes such as dance, and events such as Relay for Life were several examples that were offered by focus groups. However, cost and transportation to these opportunities were also brought up as barriers for some students.

Discussion

Focus group perceptions contributed insights beyond the PARA and ANC. Although objective assessments demonstrated low access to physical activity, crime was the major concern among focus group participants. Although the built environment has been shown to be associated with participation in physical activity, (Kaczynski &

Henderson, 2008) again it is important to consider residents' perceptions of their neighborhood. Perceptions of crime and safety have been shown to be predictive of physical inactivity in previous studies (Molnar et al., 2004). Focus groups also suggested that there was a lack of non-competitive opportunities sponsored by the school, such as dance. Previous research has suggested that participation in organized activities was predictive of overall physical activity rates (Sallis et al., 2000).

The focus groups and environmental assessments both contributed valuable information for understanding physical activity influences and for program planning using a socio-ecological approach. At the community level, building or improving parks and sidewalks might be an important and sustainable goal for the community; yet it could be costly in the long-term. Also, none of the focus group themes related to the idea that lack of walkable streets or parks could negatively influence physical activity, possibly suggesting a need for building awareness around this topic. Addressing crime or perceptions of crime might also be needed prior to any expensive long-range plans. Safe Routes to School, or Walk to School Day events might raise awareness and action around these topics. Other less costly and achievable goals for the school and community might be improving gym class, sponsoring scholarships and/ or offering transportation to community centers (YMCA), events or dance classes. Social marketing campaigns that address intrapersonal barriers identified by the focus groups might also be effective and less costly as well. For the purposes of discussion, the researchers had identified the above recommendations but ultimately, the community needs to identify both the issues and solutions that best work for them.

The study has some limitations. For one, being a mostly qualitative, mixed-methods study, the results (focus group themes, etc.) should not be generalized to other urban communities. The focus groups had mostly female participants, so much of the male viewpoint might have been missed. If conducting focus groups or interviews for program planning in the future, Extension professionals might intend to have more balance in terms of gender representation.

Finally, from the initial experiences, environmental audits and focus groups are relatively easy to conduct by Extension professionals, working in partnership with a school and community and support a socio-ecological approach to improving physical activity within an urban setting. Although the PARA and ANC were easy to use in an urban setting, other tools can be found as well in the literature (Saelens and Glanz, 2009) or on non-profit websites such as Active Living Research (University of California, 2016) . Safe Routes To School for example, also has a several community walking and biking assessment tools (Center, 2016).

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Table 1. Demographics of Focus Groups

Focus group	Gender	Ethnicity	Number
Focus group 1- teachers	80% Female	40% African-American; 60% African American	5
Focus group 2- parents	75% female	75% African-American, 25% Hispanic	4
Focus group 3- parents	69% female	78% African-American, 8% Hispanic, 15% Caucasian	13
Youth focus group 1	60% female	90% African-American, 10% Hispanic	10
Youth focus group 2	100% female	80% African-American, 20% Non-Hispanic White	5
Youth focus group 3	100% female	100% African-American	4

Table 2: Focus group themes and socio-ecological sub-themes

Theme related to physical activity	Teacher and parent socio-ecological subthemes	Student socio-ecological subthemes
Barriers to Adolescent Physical Activity	<p>Intrapersonal: Adolescents aren't able to understand risk</p> <p>Intrapersonal: Easier and more desirable for kids to be sedentary</p> <p>Organizational: Not enough sports, and other activities especially for those not athletically inclined</p> <p>Communal: Expense and transportation</p> <p>Communal: Concerns about crime in neighborhood</p>	<p>Intrapersonal: Concerns about crime in neighborhood</p> <p>Interpersonal: Friends and family prefer sedentary activities</p> <p>Organizational: Gym class is perceived as too academic, not fun</p>
Supports to Physical Activity	<p>Organizational: After school activities that encourage physical activity</p> <p>Communal: Opportunities outside of school governance such as dance classes</p> <p>Communal: Events that encourage physical activity such as Relay for Life</p>	Communal: Community centers or YMCAs
Common Adolescent Physical Activities	<p>Communal: Unstructured activities such as playing outside</p> <p>Communal: Extracurricular activities including dance, and organized sports.</p>	<p>Organizational: Extracurricular activities including volleyball, basketball, football.</p> <p>Communal: Unstructured activities such as jump rope, dancing</p>

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