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# Using Social Cognitive Theory to Predict Physical Activity in Inner-City African American School Children

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Researchers using social cognitive theory and employing built environment constructs to predict physical activity (PA) in inner-city African American children is quite limited. Thus, the purpose of our investigation was to evaluate the ability of important social cognitive variables (e.g., self-efficacy) and built environment constructs (e.g., neighborhood hazards) to predict African American children's PA. Children ( $N = 331$ , ages 10–14) completed questionnaires assessing social cognitive theory constructs and PA. Using multiple regression analyses we were able to account for 19% of the variance in PA. Based on standardized beta weights, the best predictors of PA were time spent outside and social support derived from friends. These findings illuminate the valuable role of PA support from peers, as well as the simple act of going outside for inner-city African American children.

**Keywords:** health, children, fitness

Understanding the determinants of minority children's physical activity (PA) behavior is important. Minority children are less likely to participate in both non-school moderate-to-vigorous PA and physical education-based PA (Gordon-Larsen, McMurray, & Popkin, 1999; Kann et al., 1996; Lindquist, Reynolds, & Goran, 1999) and are less fit (Lindquist et al., 1999), compared with Caucasian children. The importance of consistent PA is well documented and provides benefits including enhanced self-esteem, reduced stress, colon cancer, breast cancer, diabetes, high blood pressure, and heart disease (Friedenreich & Orenstein, 2002; U.S. Department of Health and Human Services, 1996).

The various benefits associated with PA in minority at-risk children make research in this area important. Much of the research in this field has focused on social and cognitive constructs with less attention devoted to built environment variables (Norman, Schmid, Sallis, Calfas, & Patrick, 2005; Sallis, Prochaska, & Taylor, 2000). For example, in their research with three different minority groups (i.e., African American, Mexican American, and Arab American), Martin and colleagues (Martin et al., 2005; Martin, Oliver, & McCaughtry, 2007; Martin,

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McCaughy, & Shen, 2008), using only social cognitive variables, accounted for a small amount of variance (e.g., 10%) in PA.

There has been less attention on the environmental influences of PA, despite Bandura's (2005; 1997, p. 6) triadic reciprocal causation model of behavior highlighting the role of the built environment (BE) in health behavior. Although scientists have started to correct this shortcoming (e.g., Mota, Almeida, Santos, & Ribeiro, 2005; Motl, Dishman, Saunders, Dowda, & Pate, 2006; Romero, 2005; Romero et al., 2001; Timperio, Crawford, Telford, & Salmon, 2004), they typically fail to assess both social cognitive and BE variables, although exceptions exist (e.g., Garcia et al., 1995). Finally, few researchers have examined social cognitive and BE constructs with African American children from inner cities. Social scientists have reasoned that the BE is particularly important to consider in inner-city environments because these settings typically have more barriers (e.g., lack of green spaces) than urban or rural settings.

Perceptions of BE constructs typically fall into characteristics and qualities thought to logically promote PA (e.g., parks) or inhibit PA (e.g., crime). We refer to these two broad dimensions as neighborhood facilitators and neighborhood barriers. Examining the inner-city BE is important because of the inequities that exist between groups of low- and high-socioeconomic status (SES). For instance, Gordon-Larsen, Nelson, Page, and Popkin (2006) reported that neighborhoods with many minority residents of low SES had fewer PA facilities compared with high-SES block groups. Neighborhoods with more PA facilities were associated with fewer overweight people and a greater likelihood of obtaining at least 5 hr of moderate-to-vigorous PA (MVPA) per week. Duncan and colleagues also found that residents' perceptions of the PA opportunities in their specific neighborhoods were positively related to their PA levels (Duncan, Duncan, Strycker, & Chaumeton, 2002). Furthermore, residents in neighborhoods with more PA opportunities reported more PA compared with residents of neighborhoods with fewer PA opportunities (Duncan et al., 2002).

In contrast to their 2002 findings, Duncan and coauthors have also reported that neighborhood PA facilities and opportunities for PA were negatively related to youth PA (Duncan, Duncan, Strycker, & Chaumeton, 2004). In other words, youth were less active when they perceived the neighborhood as having more PA opportunities and documented as having more PA facilities (Duncan et al., 2004). Recently, Ries and colleagues (2008) examined inner-city adolescents' perceptions of the influence of the environment on PA. Many of the top-10 influences, in terms of importance, reflected negative factors such as crime, violence, drug use, and gangs (Ries, Voorhees, Gittelsohn, Roche, & Astone, 2008).

We examined the following social cognitive theory (SCT) variables for theoretical and empirical reasons. We first selected self-efficacy because it is a primary determinant of behavior (Bandura, 1997). Many researchers have found that self-efficacy is related to exercise behavior in minority children (e.g., DiLorenzo, Stucky-Ropp, Vander Wal, & Gotham, 1998; Motl et al., 2002; Trost et al., 2002a). For instance, in a study of predominantly African American fifth-grade students, children reporting strong self-efficacy for seeking support for their PA involvement were more likely to be vigorously physically active compared with less efficacious children. Similarly, Hausenblas and colleagues (2002) found that urban middle school children, in general, had increasingly stronger barrier self-efficacy across

the stages of change for free time exercise (Hausenblas, Nigg, Symons Downs, Fleming, & Connaughton, 2002). In other words, children who had been exercising regularly for over 6 months had stronger barrier self-efficacy compared with children who were not exercising and had no intention to begin exercising. Finally, Beets, Pitetti, and Forlaw (2007) found strong support (e.g.,  $\beta = .33$ ) for the relationship between barrier self-efficacy and PA with adolescent girls.

Next, we examined social support. The social support and PA link has been consistently upheld in PA research. For example, Beets et al. (2007) found peer social support was a direct predictor of PA. Beets et al. (2007) have argued that social support should be examined from a multidimensional perspective to account for support offered by parents, siblings, and friends. In concert with the value of examining a multidimensional model of social support, they found that adult support was unrelated to PA, whereas peer support was related. In contrast, Hoefler, McKenzie, Sallis, Marshall, and Conway (2001) reported that parents transporting their children to PA locations had children who were more active than parents who provided less support. Other researchers have reported similar positive relationships among forms of social support and PA (Biddle & Goudas, 1996; Davison, 2004; Sallis et al., 2000; Stucky-Ropp & DiLorenzo, 1993). Therefore, we also measured multidimensional (i.e., parents, friends, siblings) social support.

We were also interested in an important affective variable and selected enjoyment given its strong positive relationship to PA (e.g., Sallis et al., 2000; Smith, 1999; Stucky-Ropp & DiLorenzo, 1993). Children who enjoy being physically active should engage in more PA than children who dislike PA. Finally, from a behavioral perspective, numerous researchers (e.g., Baranowski, Thompson, DuRant, Baranowski, & Puhl, 1993) have examined time outside (TO) based on the premise that the outside environment is more conducive to PA and has less competing sedentary activities (e.g., television). In their review of correlates of PA for children and adolescents, Sallis et al. (2000) found that TO was consistently and positively associated with PA. Thus, we also assessed TO.

As for the BE, we analyzed both neighborhood facilitators and barriers to youth PA. We did this partly because Evenson and colleagues studied sixth-grade girls and found that selected neighborhood factors were related to both PA and associated constructs (e.g., BMI; Evenson, Scott, Cohen, & Voorhees, 2007). In particular, seeing people being active, low crime, seeing children play, having a bike or walking trails in the neighborhood, and access to PA facilities were all related to lower body mass index (BMI). Having a bike or walking trails in the neighborhood, access to PA facilities, well-lit streets, and decreased traffic in the neighborhood were all positively related to PA. With the exception of crime, the above factors tend to reflect neighborhood facilitators.

For neighborhood barriers, both subjective and objective measures of crime and safety have been associated with less PA for girls (Gomez, Johnson, Selva, & Sallis, 2004). In a major Midwestern city similar to the current study setting, researchers found that children (11–16 years old) who perceived greater neighborhood crime and less neighborhood safety also reported lower PA compared with children rating the neighborhood as safer and less crime ridden (Molnar, Gortmaker, Bull, & Buka, 2004). Hence, examining social cognitive constructs and including BE variables should help increase our cumulative understanding of the determinants of minority children's PA. In addition, assessing a wide range of constructs (i.e.,

social, cognitive, affective, behavioral, and environmental) allowed us to determine the relative importance of each one.

To summarize, our major purpose was to examine the antecedents of PA in inner-city African American children. We hypothesized that children with strong barrier self-efficacy, perceptions of positive social support for PA, and who enjoyed PA, would report more PA compared with children who reported weaker self-perceptions in these areas. Similarly, children who perceived the BE as more facilitative of PA, with fewer PA barriers, and who spent time outside, would report more PA compared with children who viewed the BE as posing more barriers, being less PA friendly and who spend less time outside.

Examining our data for gender differences was a secondary purpose of our study. Researchers examining PA and related psychosocial variables have found a consistent pattern of gender differences favoring boys. For instance, boys are more active than girls (e.g., Gordon-Larsen, McMurray, & Popkin, 1999; Sallis, Zakarian, Hovell, & Hofstetter, 1996). If parents view PA as more appropriate for boys, compared with girls, they may provide greater social support for PA to boys. Similarly, it is plausible that if boys and girls internalize messages favoring boys' PA engagement over girls' PA involvement, they, in turn, may replicate that dominant cultural discourse. Hence, girls may receive less PA support from their friends and siblings compared with boys.

If girls sense less support from their parents, friends, and siblings, and have less experience in PA, it is reasonable to suspect that they may, in turn, express weaker efficacy. Furthermore, it is possible that perceptions of stronger efficacy and social support for PA could also contribute to heightened enjoyment of PA for boys compared with girls.

Few researchers have examined whether there are gender differences in perceptions of the BE or time spent outside. It would seem particularly important to document whether girls see the environment as more of a barrier to PA compared with boys. Girls, for example, have to be more concerned about sexual assaults compared with boys (Fisher, Cullen, & Turner, 2000). Ries and colleagues (2008) reported that crime, violence, and sexual offenders were three of the top four negative environmental influences impacting girls PA. In contrast, none of those factors made the top-10 for boys. Clearly, these same concerns could also contribute to girls' reluctance to go outside.

In summary, we anticipated that boys would report greater PA engagement, enjoyment, self-efficacy, parental, sibling, and friend social support. At the same time we also expected that boys would report more time outside and view the neighborhood as less of an impediment to PA compared with girls.

## Method

### Participants

A sample of 331 African American children from a large inner-city school district in the U.S. Midwest participated in the current study. Children ranged in age from 10 to 14 years ( $M = 12.1$ ,  $SD = 1.00$ ). Breakdown by gender was 55% female ( $n = 181$ ) and 45% male ( $n = 150$ ).

## Instruments

Students completed a demographic scale, questionnaires assessing PA, and all predictor variables. All questions were developmentally appropriate and have been used with similarly aged children before (e.g., Duncan, Duncan, & Strycker, 2005; Martin et al., 2005, 2007, 2008).

### Demographic Scale

The demographic scale asked students to report their school name, grade level, age, gender, and ethnicity.

### Social Cognitive Theory Variables

**Barrier Self-Efficacy (BSE).** Children responded to eight items on a 7-point scale. Items were derived from valid and reliable youth PA self-efficacy scales used previously (Barnett, O'Loughlin, & Paradis, 2002; Saunders et al., 1997; Trost, Saunders, & Ward., 2002b). A sample item was, "How confident are you of participating in physical activities that make you breathe hard or feel tired when you have a lot of homework to do?" Anchors were *not at all confident* (1) and *very confident* (7). All items were summed and divided by 8 to obtain an overall barrier self-efficacy score ranging from 1 to 7.

**Social Support (SS).** Children were asked three sets of five questions on a 5-point scale (Duncan et al., 2005). Duncan et al. (2005) obtained items from valid and reliable social support scales used previously in research with children (Sallis, Taylor, Dowda, Freedson, & Pate, 2002). A sample question for the parent/adult caregiver scale was, "How often do your parents or the adult that takes care of you, encourage you to do physical activities?" A sample question for the sibling scale was, "How much do your brothers or sisters do a PA with you?" A sample question for the friends scale was, "How much do your friends talk with you about your PA?" Anchors were *never* (1) and *very often* (5). All items were summed and divided by 5 to obtain three overall scores for parent/adult caregiver, sibling, and friend social support ranging from 1 to 5.

**Enjoyment of Physical Activity (ENJ).** Children were asked one question, "How much do you enjoy being physically active?" Anchors were *not at all* (1) and *a lot* (5). One-item scales of enjoyment of PA have demonstrated convergent validity in previous research with children (Stucky-Ropp & DiLorenzo, 1993).

**Time Outside (TO).** Children were asked two similar questions as follows: "How much time do you spend outside on an average school day" and ". . . on an average weekend day." Scores from these two questions were summed and averaged to obtain a composite TO variable. Anchors were *not at all* (1) and *a lot* (5). These two questions were based on identical or very similar questions used in research examining physical inactivity (e.g., television viewing) and PA (Bennett et al., 2006; Feldman, Barnett, Shrier, Rossignol, & Abenham, 2003; Ford, McDonald, Owens, & Robinson, 2002; Motl, McAuley, Birnbaum, & Lytle, 2006).

## Built Environment Variables

**Neighborhood Barriers (NB).** Children responded to eight items on a 5-point Likert-type scale adapted by Romero et al. (2001) from Aneshensel and Sucoff's (1996) neighborhood hazard's scale by using 8 of 11 items deemed most appropriate to PA. Research by Romero et al. (2001) and Romero (2005) indicates adequate internal consistency ( $\alpha = .76$  and  $\alpha = .78$ ). Research by Aneshensel and Sucoff's (1996) also demonstrated convergent validity through expected associations with depression and anxiety. The anchors of *never* and *very often* were used. An original example question is, "How much of a problem is a lack of access to parks?" Based on the author's recommendations and our research purposes, we rephrased questions to read how the barriers may have specifically prevented PA. For instance, we asked, "How much does a lack of access to parks prevent you from doing PA?" Other questions, phrased similarly, included the following potential neighborhood hazards that might limit PA: traffic, trash and litter, crime, noise, gangs, prejudice, and drugs.

**Neighborhood Facilitators (NF).** Children responded to five items on a 5-point Likert-type scale developed by Mota et al. (2005) that was designed to reflect the PA friendliness of neighborhoods. Research by Mota et al. (2005) and Bourdeaudhuij, Sallis, and Saelens (2003) has established adequate reliability and validity. The anchors of *strongly disagree* and *strongly agree* were used. An example question is, "Many stores are within walking distance of my home?" Other items referred to infrastructure for walking and biking, neighborhood safety, the social environment, aesthetics, and recreation facilities.

## Physical Activity Variable

**Physical Activity (PA).** We employed the Godin Leisure-Time Exercise Questionnaire (GLTEQ; Godin & Shephard, 1985), which yields reliable and valid scores (Sallis et al., 1996). Students read the header, "How many times in an average week do you do the following kinds of exercise for more than 15 minutes during your free time?" and responded to the next three statements: "Strenuous Exercise (Heart beats rapidly), Moderate Exercise (Not exhausting) and Mild Exercise (Minimal effort)." We used the phrase "breathe hard or feel tired" to enhance children's understanding. In addition, sample activities that are consistent with each exercise category were provided to further assist students' understanding. Students' answers for strenuous, moderate, and mild exercise were then multiplied by 9, 5, and 3 METs, respectively (Godin & Shephard, 1985). The GLTEQ has been successfully employed with similar aged minority children in previous research (Biddle & Goudas, 1996; Hausenblas et al., 2002; Martin et al., 2007, 2005, 2008; Sallis, Buono, Roby, Micale, & Nelson, 1993) and has been validated with children using objective measures of PA (Jacobs, Ainsworth, Hartman, & Leon, 1993).

## Procedures

We received permission from the university internal review board, the school principals, the full-time physical education (PE) teachers, and parental assent to

conduct our study. A team of researchers collected data during PE classes at three middle schools. Data were obtained from all children present that day in four PE classes at each of the three schools. For the purposes of the current study, we were interested only in the data obtained from the African American children. African American children represented approximately 82–88% of children enrolled in middle schools in this school district. No incentives were provided for completing the scales. Each question was read out loud to the students, and students who had difficulty understanding were given help. Students averaged about 35 min to complete the scales. Participants who gave incomplete or wrong answers were asked to clarify their answers.

## Data Analysis

The Statistical Package for the Social Sciences 15.00 was used for all analyses. We first examined for missing data and, despite checking each child's survey during data collection, we found five questionnaires with incomplete data and all of their data were discarded. We then examined internal reliability via alpha coefficients and conducted descriptive analyses. Next, we examined for gender differences using a MANOVA. All variables (i.e., barrier self-efficacy, three forms of social support, enjoyment, time outside, neighborhood barriers, and PA) were analyzed simultaneously. We then conducted a standard multiple regression (MR) analysis in which all the independent variables (IVs; i.e., barrier self-efficacy, three forms of social support, enjoyment, time outside, and neighborhood barriers) were entered simultaneously (Tabachnick & Fidell, 2001, p. 131). The value of this approach is that each IV is evaluated like it was entered last. Thus, the unique variance attributed to it in predicting the dependent variable (i.e., PA) can be determined. To guard against multicollinearity, we examined the variance inflation factors and tolerance figures. Both variance inflation factors (1.15–1.64) and tolerance figures (.61–.87) were indicative of a lack of multicollinearity using the criteria of above 10 and below .10, respectively (Cohen, Cohen, West, & Aiken, 2003).

## Results

### Descriptive Statistics

Means, standard deviations, ranges, skewness, kurtosis, and internal consistency (i.e., Cronbach's alpha; Cronbach, 1951) for all variables are presented in Table 1. Because the NF scale lacked adequate internal consistency ( $\alpha = .49$ ) it was deleted from any further analyses. It should be noted that the skewness and kurtosis components of the distribution of PA scores suggest some deviation from normality. In particular, the kurtosis score indicates a high peak in the distribution. Most of the children scored in the middle ( $M = 60.24$ ,  $SD = 33.01$ ) between 0 and 100. Tabachnick and Fidell (2001, p. 74) suggest that evidence of skewness and kurtosis are not major problems with large samples.

### Gender Differences

The MANOVA examining for gender differences was significant,  $F(8, 322) = 8.16$ ,  $p < .001$ , partial eta squared ( $\eta^2$ ) = .17). Follow-up tests found the following: Boys

**Table 1 Means, Standard Deviations, Ranges, Skewness, Kurtosis, and Alpha Values for Social Cognitive Theory Variables and Physical Activity**

Variable	<i>M</i>	<i>SD</i>	Range	Skewness	Kurtosis	$\alpha$
BSE	4.34	1.16	1.4–7.0	–.06	–.66	.76
PSS	3.64	.99	1.0–5.0	–.70	–.30	.80
SSS	2.85	1.20	1.0–5.0	–.05	–1.16	.84
FSS	3.12	1.05	1.0–5.0	–.20	–.77	.75
ENJ	4.16	1.06	1.0–5.0	–1.11	.41	NA <sup>a</sup>
NB	2.10	.96	1.0–5.0	.90	–.03	.85
TO	3.23	1.11	1.0–5.0	–.20	–.89	.67
PA	60.24	33.01	00.00–357.0	2.68	20.20	NA

*Note.* BSE = barrier self-efficacy, PSS = parental social support, SSS = sibling social support, FSS = friend social support, ENJ = enjoyment, NB = neighborhood barriers, TO = time outside, PA = physical activity.

<sup>a</sup>One-item scale.

reported more ( $M = 65.14$ ) total METs than girls, ( $M = 56.19$ ),  $p < .014$ ,  $\eta^2 = .018$ . Boys also reported more ( $M = 3.59$ ) time outside than girls, ( $M = 2.93$ ),  $p < .001$ ,  $\eta^2 = .088$ . Boys also reported greater barrier efficacy ( $M = 4.62$ ) than girls, ( $M = 4.12$ ),  $p < .001$ ,  $\eta^2 = .046$ , and indicated they enjoyed ( $M = 4.46$ ) PA more than girls, ( $M = 3.91$ ),  $p < .001$ ,  $\eta^2 = .068$ . Finally, for social support boys reported receiving more from their siblings, ( $M = 3.14$ ),  $p < .001$ ,  $\eta^2 = .048$ , than girls, ( $M = 2.60$ ),  $p < .001$ , and more from friends, ( $M = 3.39$ ),  $p < .001$ ,  $\eta^2 = .056$ , than girls, ( $M = 2.89$ ),  $p < .001$ . There were no statistically significant differences for parental social support and neighborhood barriers to PA. In general, the six effect sizes ( $\eta^2 = .018$  to  $.088$ ) are considered small to moderate (Cohen, 1988).

## Multiple Regression Results

Please see Table 2 for the multiple regression results. All predictor variables were entered simultaneously and given the gender differences noted earlier, we also entered gender. We accounted for 19% of the variance in PA,  $F(8, 322) = 9.16$ ,  $p < .001$ ,  $R = .43$ ,  $R^2 = .19$ . Based on the standardized beta weights and associated significance levels, it is apparent that TO and friends' social support for PA were the most critical variables.

## Discussion

The major purpose of this investigation was to predict African American children's PA with a particular goal of determining the relative importance of our various predictors. Before elaborating on the results relevant to this purpose, a brief overview of the descriptive findings is provided as a context for the multiple regression results.

The following visual overview of the mean values is based on each scale range and the accompanying scale labels. In an examination of scales based on a 5-point Likert scale, the highest rated variable was enjoyment, with children reporting high

levels. The social support scores revealed an interesting pattern with social support from parents, followed by friends and siblings, providing the most support. Next, children's self-reported TO reflected a moderate amount of time. In general, contrary to the rationale for examining the BE, these children did not view elements of the BE as strong barriers to their PA. When specifically asked whether traffic, litter, crime, noise, gangs, lack of parks, prejudice, and drugs prevented them from engaging in PA, they averaged a little above 2 on a 5-point scale. Finally, for barrier self-efficacy, children were slightly above 4 or the middle of the 7-point scale. Their efficacy in overcoming barriers to PA was roughly between being *a little confident* and *somewhat confident*. In summary, as a group, these children enjoyed being active, received varying levels of social support depending on the reference group, had moderate levels of efficacy and spent moderate amounts of TO. They did not view the BE as being a particularly strong barrier preventing them from engaging in PA.

With respect to our major research question, we were able to account for 19% of the variance in PA. This figure is roughly double the amount of variance accounted for in previous studies of minority children (e.g., Martin et al., 2005, 2007, 2008). In addition, it is very similar to the amount of variance (15–19%) accounted for by Zakarian and colleagues, who used 28 independent variables to predict vigorous PA in an elderly and low-SES minority population (Zakarian, Hovell, Hofstetter, Sallis, & Keating, 1994). It is also comparable to Garcia and colleagues (1995), who also accounted for 19% of the variance in exercise with 5th- to 8th-grade children (Garcia et al., 1995).

The strongest standardized beta weights were aligned with TO and friends' social support. The finding that friends' social support was an important predictor substantiates a quickly growing body of research that spans social support, peer acceptance, and friendship and their relationships to PA for adolescent children (e.g., 10–14 years old). For instance, Smith (1999) reported that both close friendship and peer acceptance were positively related to PA. Furthermore, friendship was related to more positive affect in PA (Smith, 1999). Beets and colleagues similarly found that peer support was positively related to PA, whereas, mothers' and fathers' support was not (Beets, Vogel, Forlaw, Pitetti, & Cardinal, 2006). Friends' support of PA was also a prominent predictor of vigorous PA in the Zakarian et al. (1994) study. Finally, like Duncan et al. (2005), we also found that friend support was more important to PA involvement compared with sibling and parent support.

The mechanism(s) behind these two findings might seem self-evident, but warrant articulating. For TO, there are clearly fewer constraints (e.g., no walls) to moving outside compared with inside. Although we found no support for the role of the BE based on the neighborhood barriers scale, the TO finding and its attendant rationale indirectly support the premise that the BE is a potentially important influence on PA. Based on the age of the children in our study, they are in a developmental phase whereby their peer group, in relation to their parents, is quickly growing in importance. Thus, the combination of a high status group seen as endorsing, valuing, and encouraging PA would logically seem to be more influential relative to other social support providers, and, as this study suggests, in relation to enjoyment and efficacy as well.

The lack of support for self-efficacy, given its dominant role in SCT, warrants comment. For instance, in the Zakarian et al. (1994) study, out of 28 predictors spanning demographic, psychological, social, behavioral, and environmental constructs, self-efficacy was the strongest (females) or second strongest (males) predictor of vigorous PA. As our results suggest, a lack of efficacy or having strong efficacy for overcoming barriers for PA was not particularly relevant for these children's PA engagement. Subtle but important differences in the two studies may explain the differences in the results. For instance, we examined "barrier" self-efficacy and we assessed mild, moderate, and vigorous physical activity. In contrast, Zakarian et al. (1994) examined what appeared to be a smaller (i.e., four items) and less barrier-specific measure of self-efficacy to predict vigorous PA only.

Self-efficacy may be more important when the intensity of the activity is higher, as it was in the Zakarian et al. (1994) study. In the current study, the combination of being in an environment conducive to movement (i.e., outside) versus a more PA-limiting environment (e.g., inside a house) and having friends as catalysts (e.g., playing games) for PA is more critical than self-efficacy cognitions.

There is limited research on the influence of the inner-city environment in both positive (i.e., green spaces) and negative ways (e.g., perceptions of crime) for youth PA. Thus, we were also particularly interested in determining how such factors might be related to PA. Although measurement error precluded our use of the neighborhood facilitator scale, we did assess our participants' perceptions of the ways that neighborhood barriers might specifically impede PA. We found no relationships between neighborhood barriers and PA. However, on the positive side, and contrary to media portrayals of inner-city environments, the children in our study did not perceive (based on mean scores) their environments as particularly limiting of their PA. This finding is consistent with Duncan et al. (2004), Zakarian et al. (1994), and Motl et al. (2006), who found no support for the influence of the neighborhood on PA.

A secondary purpose of the current study was to assess whether gender differences existed. With the exception of perceptions of parental support and neighborhood barriers, the remaining six variables varied according to gender. In relation to girls, boys reported being outside more, being more active, enjoying PA more, having greater efficacy, and receiving more support from siblings and friends for their PA engagement. This finding is consistent with a large body of research and along with that research illustrates that gender inequities in PA socialization processes exist (Greendorfer, 1993). Ries et al.'s (2008) results show that males and females view the significance of environmental barriers to PA differently. This suggests that it is important to consider gender differences in PA and BE research.

It should be pointed out that the children in the current study did not engage in particularly high levels of PA. Similar to other research (Martin et al., 2005, 2007, 2008) using the same PA scale, children in the current study only averaged between 3 and 4 bouts a week for a minimum of 15 min of mild, moderate, and vigorous activity during their free time. In other words, they averaged about a minimum of 3 hr per week of PA during their free time, which falls short of national recommendations (Strong et al., 2005; U. S. Department of Health and Human Services and United States Department of Education, 2000).

Some limitations of our research efforts should be acknowledged. For instance, given the correlational design of the study, causality cannot be ascertained. In addition, like all self-report research, particularly with young children, there is the possibility of measurement error and social desirability biases in their responses. In addition, our participants were young African American children living in a major Midwestern city, so generalizing our findings to dissimilar settings and populations should be done with care. Because of the low internal consistency of the neighborhood facilitator scale (Mota et al., 2005), we chose not to use it thereby limiting our ability to examine the positive impact of the environment on PA. It is possible that this particular scale is not valid for children in inner-city settings.

## Conclusions

To conclude, we were able to account for 19% of the variation in PA with friends' social support and TO as the most critical predictor variables. Perceptions of neighborhood barriers and PA were unrelated, and mean values indicated the children did not think the neighborhood environment was a significant factor in preventing them from engaging in PA. To our knowledge, this study is one of the first conducted with African American children from a large inner city examining PA and using social cognitive and BE constructs. An additional strength of the current study, with regard to the assessment of the BE, is that we specifically assessed whether neighborhood features were barriers of PA.

Future researchers studying adolescent minorities might consider whether the impact of friends and time outside varies according to the type of outdoor PA engaged in. For instance, basketball is an important vehicle for physical activity in the African American culture (Boyd, 1997), whereas soccer is a significant aspect of Latino culture (Arbena, 1988).

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