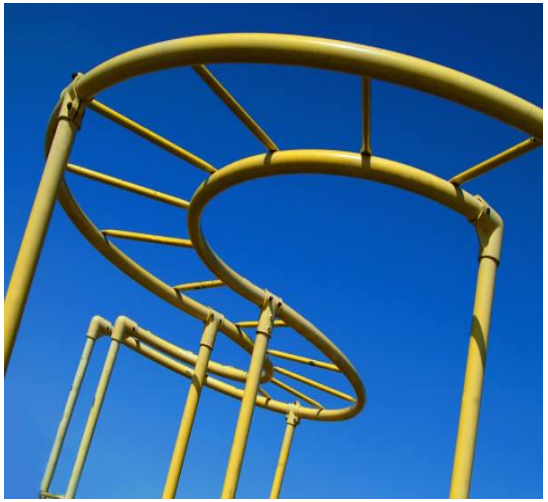
Predictors of Moderate-to-Vigorous Physical Activity in African American Young Adolescents



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UAB MEDICINE
PREVENTIVE MEDICINE

Presentation Outline

- What We Already Know
- What We Wanted to Know
- What We Did
- What We Found
- What We Think Really Matters

WHAT WE ALREADY KNOW

Childhood Obesity: A Public Health Problem

- Nearly 1 in 3 children in the United States are overweight or obese (BMI $\geq$ 85th percentile for age and sex). [1]
- Obesity is associated with multiple health consequences in youth including: sleep apnea, type 2 diabetes, depression/low self-esteem, teasing. [2-4]
- Additional risk factors are noted when obesity continues into adulthood: increased risk for certain cancers, cardiovascular disease, orthopedic complications, etc.[5-6]

[1]Bethell, 2010; [2]Abrams, 2011; [3]Robinson, 2006; [4]Young-Hyman, 2006); [5]Jemal, 2008 ; [6]Mensah, 2005

Racial/Ethnic Disparities

Table 2. Logistic Regression of High BMI for Age in Children and Adolescents, 2003-2006[a]

	Odds Ratio (95% Confidence Interval)					
	≥97th Percentile of the CDC Growth Charts		≥95th Percentile of the CDC Growth Charts		≥85th Percentile of the CDC Growth Charts	
	Boys	Girls	Boys	Girls	Boys	Girls
Age, y						
2-5	0.59 (0.40-0.87)	0.65 (0.47-0.90)	0.64 (0.47-0.86)	0.65 (0.49-0.87)	0.63 (0.49-0.81)	0.59 (0.49-0.71)
6-11	0.80 (0.64-1.01)	1.00 (0.76-1.31)	0.98 (0.76-1.26)	0.94 (0.73-1.20)	0.96 (0.77-1.19)	0.98 (0.75-1.28)
12-19	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
Race/ethnicity						
Non-Hispanic black	1.38 (1.06-1.79)	2.38 (1.70-3.33)	1.15 (0.91-1.46)	2.03 (1.52-2.72)	0.96 (0.77-1.20)	1.56 (1.27-1.92)
Mexican American	1.88 (1.36-2.59)	1.69 (1.17-2.43)	1.68 (1.29-2.19)	1.47 (1.12-1.95)	1.52 (1.21-1.91)	1.33 (1.10-1.61)
Non-Hispanic white	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]

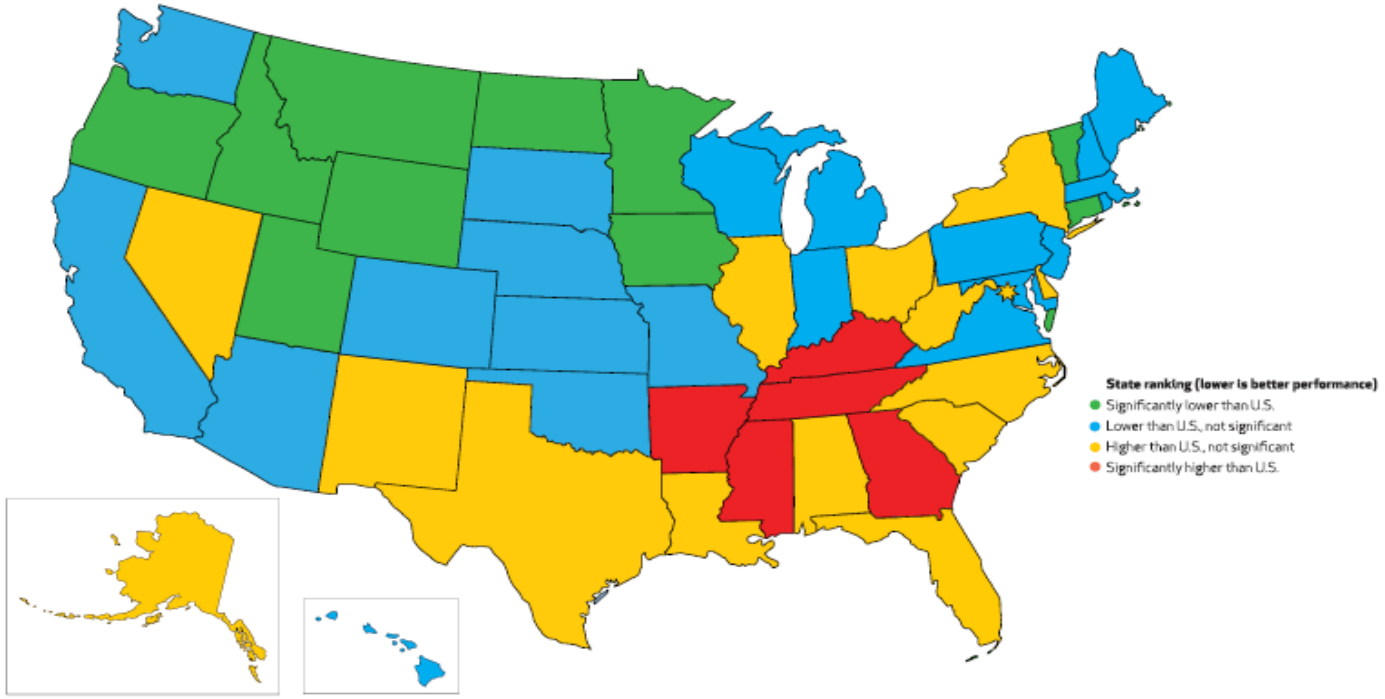
Abbreviations: BMI, body mass index (calculated as weight in kilograms divided by height in meters squared); CDC, Centers for Disease Control and Prevention.
[a] Data come from the National Health and Nutrition Examination Survey (NHANES).

Source: Ogden, C. L., Carroll, M. D., & Flegal, K. M. (2008). High body mass index for age among US children and adolescents, 2003-2006, *JAMA*, 299 (20), 2401-2405.

Geographic Disparities

EXHIBIT 3

State-Level Overweight And Obesity Prevalence, By Significance Of Differences From National Estimate, 2007



SOURCE: Child and Adolescent Health Measurement Initiative. 2007 National Survey of Children's Health indicator data set. Portland (OR): CAHMI; [cited 2010 Feb 1]. Available from: http://www.nschdata.org **NOTES** National prevalence estimate: 31.6 percent. Range across states: 23.1–44.4 percent. Statistical significance: $p < 0.05$.

Bethell, et al. (2010). National, state, and local disparities in childhood obesity. Health Affairs, 29(3), 347-356.

Physical Activity and Youth

- African-American youth residing in the South are at high risk for physical inactivity and obesity.[7]
- Activity-friendly environments alone may not lead to increased activity among minority youth.[8]

[7]Gordon-Larsen, et al., 2000; [8]Babey et al., 2008

Physical Activity and Youth

- Social/cultural factors may interact with the built environment and limit the use of activity-friendly environments even when accessible.[9]

- Family and friend influences deemed most important among sample of African American youth.[10]
  - Both instrumental support (e.g., providing resources such as transportation or money to engage in physical activity) and emotional support (e.g., encouragement) were rated highly

[9]Martinez, et al., 2009; [10]Baskin et al., 2011

Summary of What We Know

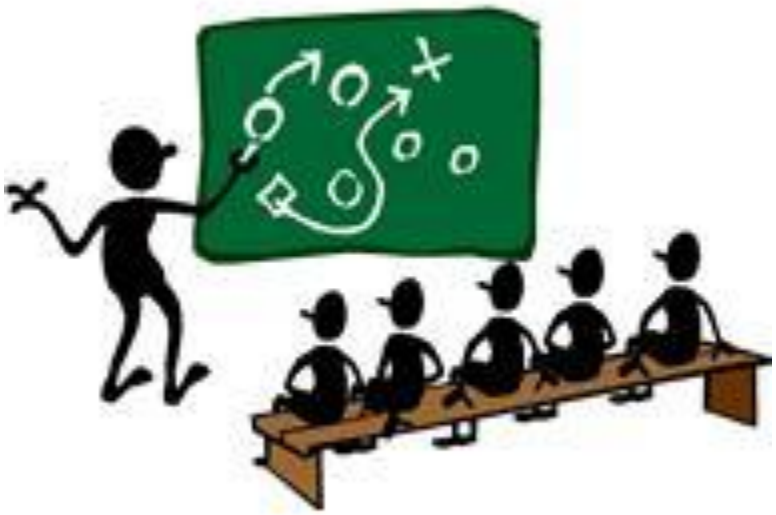
- African American youth residing in the South are at high risk for obesity and physical inactivity.
- A growing body of evidence suggests that persons living in activity-friendly environments engage in more physical activity (PA); however, access alone may not be sufficient.

WHAT WE WANTED TO KNOW

Research Question

- What are the demographic and sociocultural predictors of moderate-to-vigorous physical activity (MVPA) among African American young adolescents residing in metro Birmingham, AL?

WHAT WE DID



Study Design

- Using a cross sectional design, we collected self-report data from 116 African American young adolescents (ages 12-16) and their 86 parents on variables previously linked to physical activity in youth including child and parent demographic characteristics, socioeconomic status, social support, and perceived safety.

- In addition, youth physical activity was measured using Actigraph (model # GT1M) uniaxial accelerometers over the course of one week.

Data Analysis

- Descriptive statistics were used for all variables to characterize the participants. Cross tabulations using the χ^2 statistic or ANOVA as appropriate.
- Multivariate linear regression models were estimated to identify the predictors of moderate-to-vigorous physical activity (MVPA) in our study sample.
- Youth physical activity was calculated according to currently recommended youth cut-points for moderate (4 to 6.9 METs) and vigorous ($\geq$ 7 METs) physical activity.

WHAT WE FOUND

Table 1. Select Descriptive Statistics by Gender

	Girls (n=66)		Boys (n=50)	
Variable	**Mean**	**St Dev**	**Mean**	**St Dev**
Child Age (years)	13.95	1.41	14.12	1.26
Number of TVs in Home	4.12	1.36	4.17	1.16
Neighborhood Safety[a]	3.77	1.18	4.10	1.18
Watch Child Participate in PA[a]	2.71	1.37	2.96	1.40
Encourage Participation in PA[a]	3.51	1.43	3.51	1.63
Provide transportation for PA[a]	3.39	1.50	3.61	1.36
Participate in PA with Child[a]	2.21	1.26	2.98	1.58
Praise for Participating in PA[a]	3.51	1.54	3.41	1.73
Minutes of MVPA/Week[b]	146.59	121.99	288.10	152.27

[a]Responses were coded using the following scale: 1 = never, 2 = 1-2 days, 3 = 3-4 days, 4 = 5-6 days, 5 = everyday;
[b] $p<.0001$

Results

- Youth in the study spent an average of 30 minutes per day engaged in moderate to vigorous physical activity, with noted difference by gender ($p<.0001$).
  - Boys: 41.16 Min/Day
  - Girls: 20.94 Min/Day

Table 2. Best multivariable linear regression model: predictors of a child's moderate to vigorous physical activity[a]

Variable	Estimate	P-value
Intercept	172.5481	0.2727
Age	-16.9105	0.0952
Male	159.0676	<.0001
Parental Education	6.47073	0.4655
Household Income	3.75635	0.6797
Parent Marital Status	14.65553	0.173
Parent Perception of Neighborhood Safety	15.7172	0.1603
Number of TVs in Home	-0.51498	0.9579
Social support for phys activity- Watch child participate in PA	21.38941	0.0234

[a]Number of minutes of MVPA per week

Results

- Results from multivariate models suggest that increasing age is negatively associated with time spent in weekly moderate-vigorous physical activity ($p<0.10$).
  - The estimated number of minutes spent in MVPA per week decreases by 16.91 minutes for every additional year in child age.

Results

- Male gender was a positive, statistically significant predictor of increased time for weekly MVPA ($p<0.0001$).
  - The estimated number of minutes spent in MVPA per week increases by 159.07 minutes for male vs. female participants.

Results

- Parental social support for physical activity, in particular-“watching the child participate in physical activity item” was a positive, statistically significant predictor of increased time for weekly MVPA ($p<0.05$).
  - The estimated number of minutes spent in MVPA per week increases by 21.39 minutes as parents increase the number of days per week they watch their child participant in PA.

Results

- Parental perceptions of neighborhood safety, parent demographics (e.g., parental education, household income, marital status), and number of TVs in the home were not significant predictors of minutes of weekly MVPA for our participants.

Summary of What We Found

- African American young adolescents in this study engaged in half of the current recommendations for youth physical activity.
- Similar to prior studies younger teens and boys were more likely to engage in MVPA than older youth and girls.
- Further, parental social support were key predictors of increased activity.

Study Limitations

- Limited sample size
- Used parent-reported data on social support
- Cautions about generalizability
  - Urban area
  - Higher parental education
  - Moderate to high household income

Study Strengths

- Objective measurement of physical activity
- Good representation of girls and boys

WHAT WE THINK REALLY MATTERS

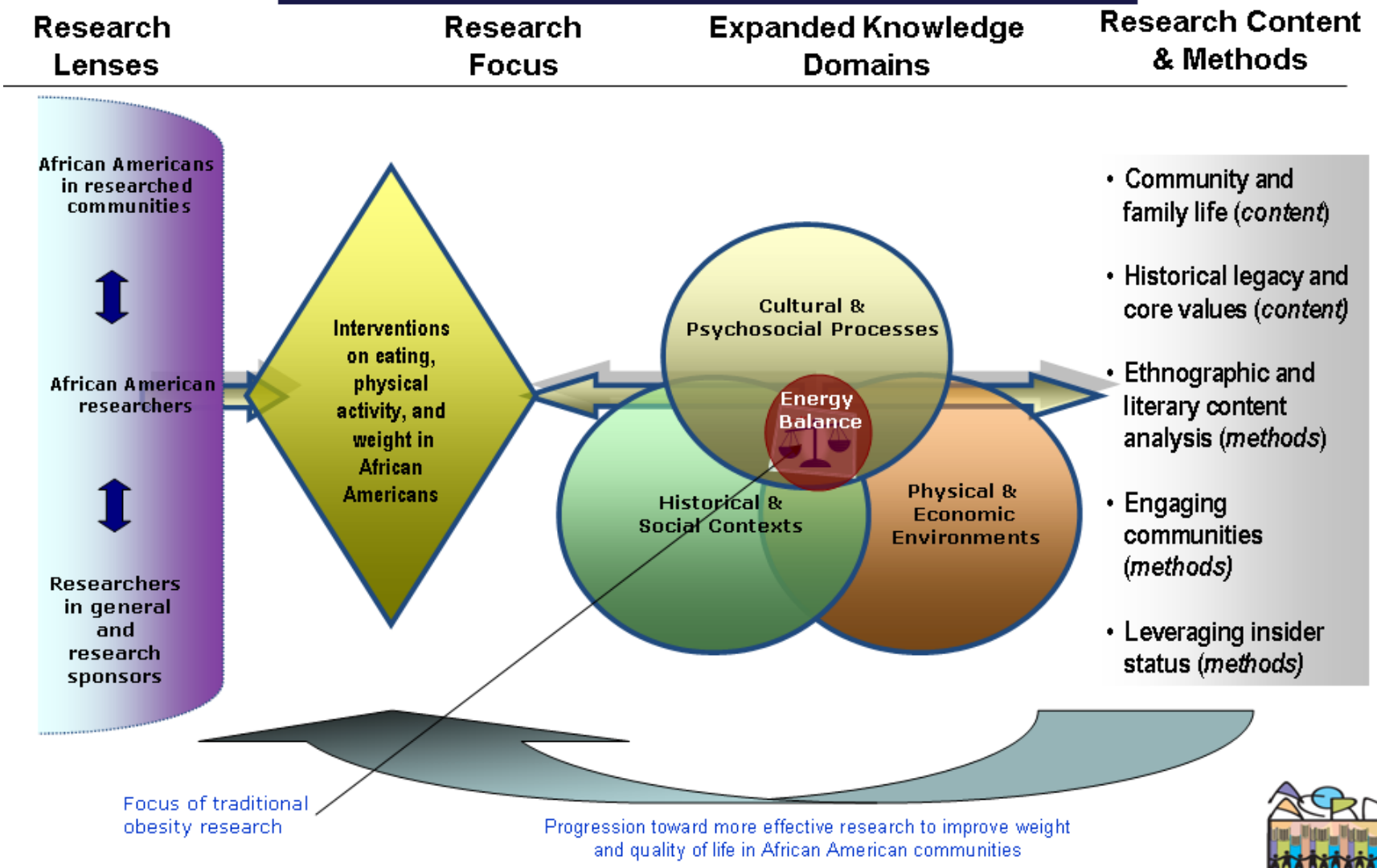
Discussion

- Nearly two decades since the 1996 Surgeon General's Report on Physical Activity and Health, what we know then is still the case:
  - Minority, particularly black youth are less physically active than their white counterparts
  - Boys are more likely than girls to participate in regular physical activity
  - Level of physical activity dramatically declines with age

Discussion

- Need for more sophisticated models to better understand and address the complex issues of inactivity among minority youth (including social and cultural influences).

AACORN'S Expanded Obesity Research Paradigm



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Summary of What We Think Really Matters

- We've made little progress is moving the most vulnerable populations to recommended levels of physical activity to support improved health and obesity prevention.
- An expanded framework that recognizes the roles of historical and social factors, cultural values and beliefs, and physical and economic environments in behaviors determining weight loss is important to better understand the unique issues of African American youth.
- Innovative interventions that address the relevant contextual variables are needed.

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