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# Neighborhood Built and Social Environment, Walking Adherence and Depressive Symptoms in African American Women



- Depressive symptoms higher in middle-aged African American than White women (Bromberger et al., 2004)
- Depressive symptoms are even higher among African American women who live in disadvantaged neighborhoods (Cutrona et al., 2005)
- African American women who are physically active may be less likely to have depressive symptoms (Wise et al., 2006)
- Physical activity interventions for African-American women have not examined the mental health benefits within the context of their built and social environments.
- It is unknown whether increasing physical activity can lessen the impact of adverse environments on depressive symptoms in African American women.

- To examine relationships among
  - aspects of the neighborhood built environment (deterioration),
  - aspects of the neighborhood social environment (crime),
  - adherence during the adoption phase (24-weeks) of a home-based walking intervention, and
  - depressive symptomsin midlife African American women.

# Hypotheses

1. Compared to a minimal treatment group, an enhanced treatment group will exhibit greater decline in depressive symptoms at 24 weeks.
2. Walking adherence will be associated with lower depressive symptoms at 24 weeks
3. Neighborhood deterioration and crime will be associated with higher depressive symptoms at 24 weeks
4. Compared to objective indicators, perceptions of neighborhood deterioration and crime will have stronger associations with depressive symptoms at 24 weeks
5. Walking adherence will moderate the effects of neighborhood deterioration and crime on depressive symptoms at 24 weeks

- Women's Walking Program
  - Eligibility: AA women, 40-65 years of age, sedentary, contemplation SOC, no major CVD signs or symptoms
  - 279 women participated (adoption 2002-2005)
  - Intervention
    - Minimal treatment group (MT):
      - Tailored walking prescription
    - Enhanced treatment group (ET):
      - Tailored walking prescription
      - Motivational workshops weeks 1-4
      - Tailored, supportive phone calls weeks 5-23

- Objective
  - Mean of two standardized scores ( $\alpha = 0.79$ ):
    - % vacant houses in neighborhood\* (Source: Census 2000 Summary File 1)
    - % net land area in neighborhood\* that is predominately abandoned buildings/rubble lots (Source: NIPC 2001 Land Use Inventory for Metropolitan Chicago)
- Perceived
  - Single item: abandoned buildings in neighborhood measured on 3-point scale
    - Dichotomized for analysis (0= “not a problem,” 1 = “somewhat of a problem” or “big problem”) (Source: Elder & Eccles, 1995)

\* Neighborhood: 1-mile Euclidean distance buffer of home address

- Objective
  - Annual total number of police-reported violent crime incidents (homicides, aggravated assaults, robberies, criminal sexual assaults) in neighborhood\* (Source: Richard Block/Chicago Police Department 2002-2005; IL Annual Uniform Crime Report 2002-2005)
  
- Perceived
  - Neighborhood crime problems
    - Mean of 7 items (stealing, destroying property, drug use, prostitution, rape, robbery), measured on a 3-point scale (1= not a problem, 3 = big problem) (Source: Elder & Eccles, 1995)
  
  - Neighborhood safety from crime
    - Single item, measured on 4-point scale (1= extremely safe to 4 = not safe at all) (Source: Ainsworth, Bassett, & Strath, 2002)

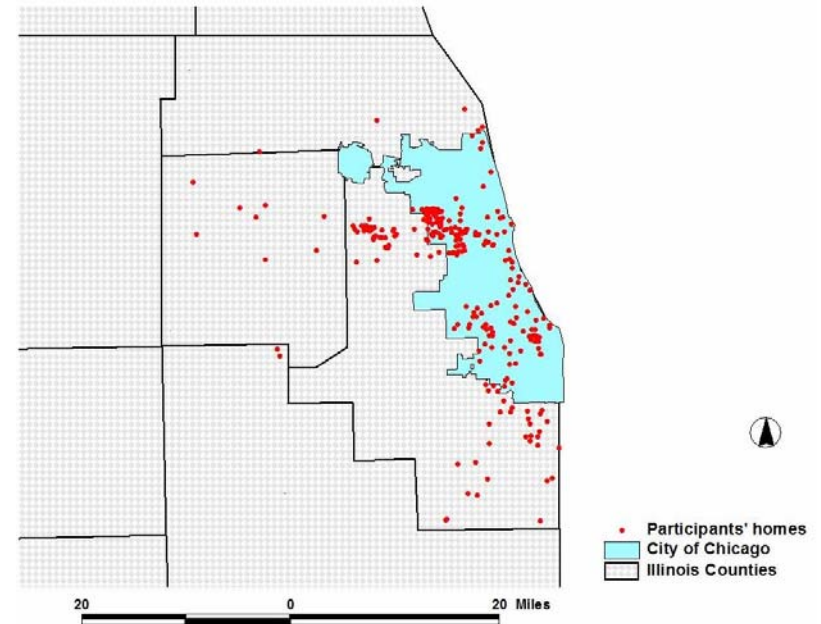
\* Neighborhood: 1-mile Euclidean distance buffer of home address

- Walking adherence during adoption phase (24-weeks)
  - Obtained via:
    - Heart rate monitors
    - Exercise logs
    - Telephone response system
  - Measured as:
    - % of expected walks (68 walks over 24 weeks)
- Depressive symptoms CES-D





Characteristics	Percent
Married	41
College degree	36
Annual household income $\geq$ 50K	43
Depression $\geq$ 16	25
	Mean
Age (range 40-65)	49
Depressive symptoms	11.2



70 zip codes;  
37 municipalities

## Depressive symptoms by treatment group

Treatment	Baseline (Mean)	24 Weeks (Mean)	P value
Minimal	11.0	10.8	0.715
Enhanced	11.5	9.9	<b>0.004</b>

**Results**

## Correlation between depressive symptoms and adherence

	Walking adherence
Depressive symptoms at 24 weeks	-.13*

\*p= <.05

## Results

## Correlations between objective and perceived environmental measures

	Perceived crime problems	Perceived safety <sup>a</sup>
Objective violent crime incidents	<b>.41*</b>	<b>.51*</b>
	Perceived neighborhood deterioration	
Objective neighborhood deterioration	<b>.34*</b>	

<sup>a</sup> Higher scores correspond with lower safety

\*p= <.001

## Results

# Correlations between depressive symptoms and environmental measures

Depressive symptoms	Environmental Measures				
	Perceived neighborhood deterioration	Perceived crime problems	Perceived safety from crime <sup>a</sup>	Objective neighborhood deterioration	Objective violent crime incidents
<b>Baseline</b>	<b>.15**</b>	<b>.12*</b>	<b>.24***</b>	<b>.05</b>	<b>.08</b>
<b>24 weeks</b>	<b>.27***</b>	<b>.21***</b>	<b>.26***</b>	<b>-.02</b>	<b>.07</b>

<sup>a</sup> Higher scores correspond with lower safety

\* $p < .05$ , \*\* $< .01$ , \*\*\* $< .001$

## Results

## Regression of depressive symptoms at 24 weeks

Predictor	Coefficient	S.E	P value
Baseline depressive symptoms	0.523	0.05	<.001
Demographics			
Age	0.040	0.06	0.5299
Married	0.391	0.92	0.6727
Education	0.054	0.27	0.8331
Income	-0.344	0.17	<b>0.0473</b>
Walking adherence	-0.024	0.01	<b>0.0290</b>
Neighborhood deterioration			
Objective	-1.591	0.57	<b>0.0057</b>
Perceived <sup>a</sup>	2.418	1.01	<b>0.0174</b>
Crime			
Objective crime incidents	-0.0003	0.001	0.7256
Perceived safety <sup>b</sup>	0.935	0.62	0.1332
Perceived crime problems	0.184	0.14	0.1875
Adjusted R <sup>2</sup> = 0.39			

<sup>a</sup> Reference group = “perceived no problem”

<sup>b</sup> Higher scores correspond with lower safety

<sup>c</sup> Interactions between adherence and environmental measures were added in separate regression models, but were not found significant

## Results

- In multivariate analysis, lower depressive symptoms at 24-weeks associated with
  - Higher walking adherence
  - Higher income
  - Lower perceived neighborhood deterioration
  - Higher objective neighborhood deterioration
- Women who had a higher incomes, but lived in deteriorated neighborhoods, may have been able to overcome the negative effects of deterioration on their mental health
- Walking adherence did not lessen the negative impact of perceived neighborhood deterioration on depressive symptoms.

- Improving neighborhood physical conditions may promote better mental health, as well as support active lifestyles.
- Physical activity interventions may have positive mental health benefits.
- Neighborhoods were not sampled to assure maximum variation in environmental characteristics.
- Use of 1-mile radius to define neighborhood for objective measures may not correspond well with environment to which participants were exposed.





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