Effects of Perceived and Objective Neighborhood Crime on Walking Frequency Among Midlife African American Women in a Home-Based Walking Intervention

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Background: Crime may be a significant barrier to physical activity for urban African American women, yet few studies have examined this relationship in intervention studies. This study examines relationships among neighborhood crime incidents, perceptions of crime and safety, and adherence in a walking intervention among urban, midlife African-American women. Methods: The sample includes 148 women living in the City of Chicago. Violent crimes, disorder crimes, gun violence, and crime-related safety were examined. Adherence to walking frequency was measured as the percentage of recommended walks completed. Results: Controlling for demographic characteristics and treatment group, multivariate regression analyses showed walking adherence was not associated with any of the crime measures or crime-related safety ($R^2 = 0.130$ to 0.147). The effect of enhanced treatment did not differ by levels of objective or perceived neighborhood crime or safety. Weak to moderate bivariate correlations were observed between objective crime measures and perceived disorder crime and crime-related safety ($r = 0.04$ to 0.25). Conclusions: Weak correlations between perceived and objective crime measures suggest they are measuring different aspects of the crime environment. Future studies should examine perceived and objective measures in other populations and settings and other neighborhood social factors which may moderate crime and safety effects on outcomes of physical activity interventions.

Keywords: disparities, exercise, walking, objective crime, perceived crime, crime-related safety, intervention

African American women experience a disproportionate burden of morbidity and mortality due to cardiovascular disease, for which physical inactivity is a significant risk factor. To date, most intervention studies have focused on personal determinants of physical activity behavior (eg, sociodemographics, self-efficacy), but these factors only partially explain adherence to exercise regimens. The social-ecological model underscores the role of neighborhood built and social environments in physical activity behaviors. According to this model, when the environment poses barriers to being physically active, behavioral changes to become active are challenged. Thus, the environment may play a key role in participants’ ability to adhere to behavioral interventions. Examining environmental influences on adoption of physical activity within intervention trials could contribute significantly to population health by informing new intervention strategies to optimize physical activity and reduce risk for chronic disease.

Qualitative studies among African American women find crime is a major barrier to physical activity, particularly among those living in urban neighborhoods with higher crime rates. Although cross-sectional, nonintervention studies including adult women have examined the association between crime and physical activity, studies vary in using various methods of crime measurement. As a whole, these studies lack consensus on the role of crime and safety in shaping physical activity behaviors. Among those using perceived measures of crime-related safety, most studies found greater perceived neighborhood safety from crime is associated with higher levels of physical activity. Yet, other studies using perceived neighborhood safety found no association. Among studies objectively measuring neighborhood crime using crime rates (eg, number of crimes per population) or crime incidents (eg, number of violent crimes), results are also inconsistent. Some of these studies found no association between neighborhood crime and physical activity, while others found an association or an association with related outcomes such as obesity risk. The majority of studies included predominantly White
samples of men and women, with only 3 studies focusing on women\textsuperscript{13,16,20} and 1 including an exclusively African American sample.\textsuperscript{20}

In a prior study, we were among the first to examine the effect of neighborhood characteristics, including crime, on urban and suburban African American women trying to become more physically active in a behavioral intervention.\textsuperscript{24} We found no association between objectively-measured neighborhood annual violent crime incidents and adherence to the intervention. However, consistent with prior studies, our examination was limited to violent crimes without specification for where crimes occurred (ie, indoor versus outdoor). Yet, physical activity behaviors may be influenced by other types of crimes reducing sense of safety in the neighborhood. For example, gunfire and crimes signifying disorder or a lack of social control (eg, prostitution, vandalism) may deter residents from being active.\textsuperscript{25–28} Furthermore, crimes occurring in outdoor environments (versus indoors) may be more likely to deter physical activity and walking behaviors. Thus, refinement of crime measures to include diverse crime types and those occurring outdoors may advance current understanding of the impact of crime on physical activity behaviors.

Given inconsistencies in measurement and lack of agreement in study findings, current thinking suggests incorporating both perceived and objective measures of environmental characteristics into studies.\textsuperscript{29} Research is needed to inform how perceived and objective measures of crime and safety correlate and relative effects on physical activity behaviors. Examining both within a study would allow for determination if one measure is more important than another and how crime impacts behavior. Results of these types of studies potentially offer important implications not only for measurement but also for interventions. Yet few studies have included both objective and perceived measures of crime and safety,\textsuperscript{14,17,21,22} and no study to our knowledge has examined both measures among African American women participating in a physical activity intervention.

Through a secondary data analysis of the Women’s Walking Program, this study explored effects of neighborhood crime and safety on urban African American women who were trying to become more physically active. Addressing several limitations in extant studies, we focused on urban residents and included perceived and objective measures of diverse crime types occurring in outdoor neighborhood locations. This study expands our prior studies on intervention outcomes (eg, adherence [frequency, duration, intensity], aerobic fitness, body mass index)\textsuperscript{11} and effects of the neighborhood built and social environment on walking adherence.\textsuperscript{24} The study had 3 objectives. The first objective was to explore relationships between walking adherence (frequency of walking) during the intervention and perceived and objective neighborhood crime and safety, controlling for treatment group. Second, we tested whether perceived or objective neighborhood crime and safety moderated the effect of the treatment on walking adherence. The third objective was to examine bivariate relationships among perceived and objective measures of neighborhood crime (violent crime, disorder crime, gun violence) and perceived crime-related safety.

**Methods**

**Design**

The Women’s Walking Program was a clinical trial with a 24-week intervention delivery adoption phase.\textsuperscript{31} In this analysis, we focus on outcomes of the adoption phase because our interest was how crime may influence adherence during intervention delivery. Using a quasi-experimental design, either an enhanced treatment (ET) or minimal treatment (MT) behavioral intervention was randomly assigned to one of two community health centers located in predominately African American communities in Chicago. Both community health centers were federally-qualified with greater than 65% of the residents in the surrounding community being African American and 25% of the population living below the poverty level. To facilitate intervention delivery, women were staggered into the intervention over three and a half years, with women completing the adoption phase between 2001 and 2005.

**Sample.** Eligibility requirements included ages 40 to 65 years, no major signs or symptoms of cardiovascular disease, sedentary lifestyle (defined as reporting no participation in regular moderate or vigorous exercise for 30 minutes, 2 or more times a week in the past 6 months), and in preparation or contemplation stage of behavior change.\textsuperscript{32} Women were recruited to one of the two community health centers and were not aware of the alternative treatment. Recruitment strategies included distribution of print materials, presentations at community sites, and newspaper announcements within communities near the health centers as well as social networking.\textsuperscript{32} Interested women contacted the intervention research office and were screened for eligibility in 3 phases: a telephone contact, health assessment, and an aerobic fitness assessment. During the telephone screening, the Stage of Readiness to Change Exercise Behavior Scale\textsuperscript{33} was used to determine each woman’s stage of behavior change and confirm their sedentary lifestyle. The health assessment included a health history, physical assessment, lipoprotein level, and height and weight measurement with a nurse practitioner. A maximal aerobic fitness assessment was done on a treadmill using a modified Bruce protocol. A total of 661 women expressed interest in the walking intervention. During eligibility screening, 227 women were lost to attrition and 188 were found to be ineligible. The odds for attrition during screening or ineligibility were significantly higher in women who lived in high poverty areas (based on census block groups) and had a history of cardiovascular disease.\textsuperscript{32}

Ultimately a total of 281 women from 77 zip codes in the City of Chicago and the surrounding suburbs
enrolled in the study. A total of 156 women were recruited to the ET community health center and 125 were recruited to the MT community health center. Due to lack of comparable objective crime data outside Chicago (ie, state of Indiana and Chicago suburbs), this analysis excluded 115 women who lived outside of Chicago or whose neighborhood (defined as 1-mile radial buffer around home address) had less than 75% of its geographic area falling within the Chicago city limits. Of the remaining 166 Chicago residents, 18 women did not return any walking data. Thus, the final sample for this study was 148 Chicago residents, with 55 in the MT and 93 in the ET groups.

**Intervention.** The intervention is described in detail elsewhere. Briefly, both treatment groups (MT and ET) received an orientation to walking and stretching techniques and a tailored walking prescription, which was to walk 2 times per week for the first 4 weeks with progression to walk 3 to 4 times per week (frequency) for 20 to 30 minutes (duration) within a moderate intensity target heart-rate range. The major emphasis was planned leisure-time walking. Based on findings indicating that if frequency falls below 3 days a week people are less likely to adhere to regular exercise, the expectation if frequency falls below 3 days a week people are less likely to adhere to regular exercise, the expectation for walking frequency was set at 3 days a week with an overall expectation of 68 walks over 24 weeks. Target moderate intensity heart rate was determined by the screening maximal aerobic fitness test.

Using strategies guided by Social Cognitive Theory and the Transtheoretical Model the ET group received 4 weekly motivational workshops followed by tailored supportive staff telephone calls (weekly for 3 week and every other week for 14 weeks) during the adoption phase. One of the motivational workshops focused on issues related to neighborhood crime and safety. The intervention and study protocols were reviewed and approved by the Institutional Review Board at the University of Illinois at Chicago.

### Measures

#### Walking Adherence

Walking adherence was measured as frequency of walking during the adoption phase of the intervention, specifically the percentage of the prescribed minimum 68 walks completed. We focused exclusively on adherence to walking frequency rather than walking duration or intensity because we were interested in whether crime was a deterrent to initiating walks, or the decision to walk. For both the ET and MT groups, walking data were collected using heart rate monitors, walking log books, and an automated telephone response system. Women were instructed to wear a Polar Accurex Plus Heart Rate Monitor (HRM USA, Warrington, PA) each time they walked; record the day, time, and duration of each walk in a walking log book; and report walking data recorded in log books weekly through an automated telephone response system. Intervention staff made reminder telephone calls to women when no walks were reported in the telephone system for 3 weeks. At 8 weeks and 24 weeks (end of the adoption phase), women were asked to return to the community health center so intervention staff could download heart rate monitor data and collect log books. The correlations for walking frequency among the 3 sources of walking data were between 0.73 and 0.83. Walking data were triangulated among these sources by date and duplicate data were eliminated. To be conservative, if no data were recorded in any particular week, women were assumed not to be walking. Outcomes of the walking intervention have been previously reported.

#### Neighborhood Crime and Safety

Using both perceived and objective measures, we assessed 3 types of neighborhood crime: violent crime, disorder crime, and gun violence. In addition, we measured perceived neighborhood crime-related safety. Table 1 provides an overview of conceptual and operational definitions for each measure.

<table>
<thead>
<tr>
<th>Measures of Neighborhood Crime and Safety</th>
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<tbody>
<tr>
<td><strong>Conceptual definition</strong></td>
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<tr>
<td>Violent crimes</td>
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<tr>
<td>Disorder crimes</td>
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<tr>
<td>Gun violence</td>
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<tr>
<td>Crime-related safety</td>
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</table>

* Public streets, sidewalks, parks and forests, school grounds, alleys, and vacant property.
Perceived Crime

Based on the neighborhood problems scale, administered at baseline, we derived measures of perceived neighborhood violent crime, disorder crime, and gun violence. Women rated items on a Likert scale: 0, “not a problem”; 1, “somewhat of a problem”; and 2, “a big problem.” Perceived violent crime was measured as the mean of 2 items: neighborhood problems with “rape” and “robbery and aggravated assault” (α = 0.77). Perceived disorder crime was measured as the mean of 3 items: neighborhood problems with “destroying property,” “drug activity,” and “prostitution” (α = 0.78). These disorder crimes parallel items in Ross and Mirowsky’s (1999) neighborhood disorder scale. Perceived gun violence was measured with the single item: neighborhood problems with “guns and violence.” Because it was a single item within only 3 response categories, we created a 3-level variable for analysis with “a big problem” as the reference. Twelve women had missing data for crime items on the neighborhood problems scale.

Objective Crime

Counts of annual police-reported crime incidents in the neighborhood measured objective violent crime, disorder crime, and gun violence. Objective violent crime was measured as the sum of incidents of homicide, robbery, aggravated assault, and forcible rape. Objective disorder crime was measured as the sum of incidents of vandalism, prostitution, and drug activity. Objective gun violence was measured as a count of citizens’ telephone reports to police of gun shots fired.

Crime incident data were derived from police files for the years 2001 to 2005. Incidents were limited to those occurring outdoors (eg, streets, sidewalks, parks and forests, school grounds, alleys, vacant property). To assign exact crime counts to each participant’s neighborhood, home addresses were address-matched using ArcGIS 9.1 StreetMap. Based on the assumption of a 30-minute walk at a moderate pace (4 mph), we defined participants’ neighborhoods as 1-mile radial buffers around their home address and used ArcGIS 9.1 to create this measure. We then counted the annual crime incidents occurring within these neighborhood boundaries and assigned the counts to each participant according to the year corresponding to the majority of her adoption phase. One exception to this approach was gun violence; data for gun violence were only available for 2004 and these data were used for all participants. Assuming participants would be most aware of and influenced by crime incidents in their neighborhood (rather than their risk per capita), crime counts versus crime rates were used.4,26,39

Neighborhood Crime-Related Safety

Perceived crime-related safety in the neighborhood was measured at baseline with a single item: “How safe from crime is it where you live?” Women responded on a 4-point scale: 0, “extremely safe”; 1, “somewhat safe”; 2, “slightly safe”; and 3, “not safe at all,” which we treated as a continuous variable.

Covariates

Several covariates were used in analyses: treatment group, age, education, and income. ET or MT (reference) group was a dichotomous variable. Age was measured in years and centered on the sample mean. Educational attainment was categorized as high school diploma, General Education Diploma (GED), or less; technical school or some college; and college degree (reference). Treated as a continuous variable in analysis, annual household income was an 11-category ordinal-level variable measured in $10,000 increments, ranging from less than $10,000 (0) to greater than $100,000 (10). Fourteen women were missing data on annual household income and 1 was also missing education data.

Data Analysis

Data were analyzed using SPSS 15.0. Mean data imputation was used to impute missing data for perceived crime measures, annual household income, and education.4 To address objective 1, for each crime type, walking adherence was regressed on both perceived and objective neighborhood crime measures, controlling for covariates, using ordinary least squares regression. Multilevel modeling was not used because neighborhoods were fixed effects and defined individually based on each participant’s home address.42 The distribution of walking adherence was skewed to the right, so a logarithmic transformation was used. Regression assumptions, including those for multicollinearity, were examined and met. Addressing objective 2, for each aforementioned model, multiplicative interaction terms were added between treatment group and crime measures. For objective 3, Spearman’s rank correlation was used to test bivariate relationships among objective and perceived measures of neighborhood crime and adherence.

Results

Descriptive Statistics

Table 2 reports descriptive statistics for participant demographics, neighborhood crime and safety, and walking adherence overall and by treatment group. The mean age was 48.2 years old. Regarding education attainment, 14.9% had a high school degree, GED, or less; 51.4% had completed technical school or some college; and 33.7% had a college degree. The mean income category was 4.0 (SD = 2.4), corresponding to an annual income of $40,000—$49,000. Annual household incomes ranged from less than $20,000 (16.9%) to more than $100,000 (4.1%), with half of the women (50.7%) having an annual household income between $30,000 and $50,000. ET and MT group only differed on educational attainment: women in the ET group were more likely to have completed technical school or some college (P = 0.014).
With possible scores ranging from 0 to 2, the mean for perceived violent crime was 0.45 (SD = 0.53) which most closely corresponds with 0, “not a problem,” and the mean for disorder crime was 0.66 (SD = 0.56) which most closely corresponds with 1, “somewhat of a problem.” The majority (55.1%) of participants reported gun violence was “somewhat of a problem” or “a big problem” in their neighborhood. With a possible range of 0 to 3, the mean score for perceived neighborhood safety was 1.43 (SD = 0.82), closely corresponding with 1 “somewhat safe.” The mean number of neighborhood violent crimes, disorder crimes, and gun violence incidents were 66.0 (SD = 30.4), 242.0 (SD = 173.3), and 281.2 (SD = 128.6), respectfully. There were no significant differences between ET and MT groups on neighborhood crime measures.

On average, participants completed 36.9% (SD = 33.5) of prescribed walks including 43.3% (SD = 34.0) for the ET group and 26.2% (SD = 28.1) for the MT group. The ET group completed significantly more walks than the MT group (P < .001). Thirty-five percent of women in the ET group were adherent to >50% of prescribed walks compared with 0.2% of women in the MT group.

### Crime and Walking Adherence

Table 3 reports multivariate regression results examining associations between perceived and objective crime and walking adherence, controlling for covariates. Model 1 shows results for adherence regressed on individual demographics and treatment group. As reported elsewhere, ET was associated with greater walking adherence (P < .001). Results indicate women in the ET versus the MT group had a 124% increase in adherence. In models 2 to 5, walking adherence was regressed on substantively equivalent (in terms of content) perceived and objective measures for each neighborhood crime type (violent, disorder, gun violence) and perceived crime-related safety, respectfully. None of these measures are significantly associated with adherence to frequency of walking. Participation in the
ET remains the sole significant predictor in all models. Interactions between treatment group and perceived and objective neighborhood crime were not statistically significant (results not shown).

Additional regression analyses were conducted, but results are not shown as they are similar to those reported in Table 3. First, we tested each perceived and objective measure of crime separately, controlling for covariates. Second, models were examined controlling for median family income using data from the 2000 US Census Summary File 3. Third, effects of perceived crime and safety measures were examined for the full sample, including women living in suburban neighborhoods (n = 252). Fourth, we tested models using crime counts for 0.25 mile radial buffers around participants’ homes; results were consistent to those reported here.

### Table 4

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
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<tr>
<td>Coef() s.e.</td>
<td>Coef s.e.</td>
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<td>0.03 0.02</td>
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<td>Education(a)</td>
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<td>Gun violence(e)</td>
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<td>Gun violence</td>
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</table>

\(a\) P < .05.
\(**\) P < .01.
\(a\) The natural log of walking adherence was used, thus, continuous independent variables may be interpreted as the percentage of change in walking adherence for a 1-unit change in the independent variable. For dummy variables, the percentage of impact of the dummy variable relative to the reference category may be derived as 100\(exp(coefficient—Var(coefficient)/2)—1\).
\(b\) Coef = regression coefficient; s.e. = standard error.
\(c\) Ref: college degree.
\(d\) Ref: MT group.
\(e\) Ref: not a problem.
\(f\) Ref: extremely safe.
\(g\) Comparison with Model 1.

### Perceived and Objective Crime and Safety

Table 4 reports bivariate associations among perceived crime, objective crime, and perceived crime-related safety. Perceived crime measures were strongly
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Correlated with one another (r = 0.73 to 0.79, P < 0.01) as were objective crime measures (r = 0.89 to 0.95, P < 0.01). Perceived crime-related safety was significantly correlated with perceived measures of crime (r = 0.54 to 0.58, P < 0.01), but not with objective crime measures (r = 0.07 to 0.40). For substantively equivalent crime measures, neither perceived nor objective violent crime (r = .04) nor perceived and objective gun violence (r = 0.07) were related. Nonetheless, the association between perceived and objective disorder crime was statistically significant (r = .25, P < 0.01). For nonequivalent crime measures, perceived disorder crime was significantly correlated with objective violent crime and objective gun violence measures (r = 0.22 to 0.25, P < 0.01).

Discussion

Crime and Walking Adherence

To our knowledge, this exploratory study is among the first to examine both perceived and objective measures of crime among a sample of urban African American women in the context of a physical activity intervention. Building on our prior work on intervention outcomes and extending our prior analysis on neighborhood effects on walking adherence, we found neither the objective crime measures nor any of the perceived crime or safety measures were associated with walking adherence. Only participation in the ET group was associated with walking adherence. Moreover, the effect of ET did not differ by levels of objective or perceived neighborhood crime or safety.

Our findings differ from 2 prior studies including physical activity interventions. In one intervention study, King et al found those perceiving the neighborhood as generally safe reported more minutes of moderate-intensity or vigorous intensity physical activity compared with those reporting their neighborhood as less safe. Similarly, in a geographically diverse sample, Sallis et al found moderate to vigorous physical activity was reduced by one hour per week for women reporting high (versus low) neighborhood crime. However, in contrast to our study, the King et al sample was composed of predominantly middle income White women and both King et al and Sallis et al used self-reported measures for moderate-intensity or vigorous intensity physical activity whereas we used an objective measure of walking frequency. In our study, compared with metropolitan Chicago overall, women lived in neighborhoods with higher homicide rates. The 2004 homicide crime rate per 100,000 persons was 15.54, in metropolitan Chicago and 34.35 in study neighborhoods, on average. However, we did have a wide range of homicide rates in the study neighborhoods (range: 0.00 to 94.33).

There are at least 2 potential explanations for the lack of significant associations between walking adherence and neighborhood crime and safety. First, follow-up focus groups indicated women who perceived their neighborhood as unsafe sought out alternative locations for walking (eg, malls), walked indoors (eg, home treadmills), or took extra precautions to walk in their neighborhoods during daylight hours (morning or afternoon). Such precautions could have allowed women—even in higher crime neighborhoods—to initiate walking more frequently than we hypothesized. Second, there may be other neighborhood characteristics modifying the effect of crime on walking adherence. For example, among women who lived in neighborhoods with strong social capital (social trust) or collective efficacy (group willingness to act on other’s behalf), crime may not have altered behaviors because they believe neighbors would intervene on behalf of their safety. These data were not available, but could be considered in future studies.
Perceived and Objective Crime and Safety

We found high correlations among perceived crime measures and especially among the 3 objective crime measures (violent, disorder, gun). In essence, neighborhoods with high violent crime incidents had similarly high incidents of crimes of disorder and gun violence. Further, women who perceived their neighborhoods to have problems with violent crime had similar perceptions of other neighborhood crime problems and neighborhood safety. If this pattern persists in other studies, the additional expense of including multiple crime measures in research studies may not be warranted. The weak relationships found between perceived and objective crime measures parallel 2 extant studies which report weak agreement between objectively measured crime and crime-related safety among women in a European sample ($r = 0.069, P < 0.01$) and nonurban adults $\kappa = 0.12$ (0.04 to 0.20).

Substantive and methodological factors could contribute to observed weak associations between perceived and objective crime measures. First, previous studies have found that women’s perceptions of crime are influenced by numerous factors besides crime incidents including residential tenure and built environmental characteristics. Second, this finding may suggest women were unaware of crime incidents in their neighborhood. Third, a lack of association between perceived and objective measures of violent crime and gun violence may be due to limitations in measurement, specifically comparability of content, further discussed in our limitations.

Our measure of perceived crime-related safety was correlated with perceived crime measures but not with objective measures. Other positive neighborhood social dynamics (eg, sense of community and community assets such as neighborhood crime watch groups) could influence perceptions of safety from crime. However, more information would be necessary to further explore these possibilities.

Limitations and Strengths

This study has several limitations. First, it was an exploratory study examining a nonpopulation based sample of women participating in a clinical trial, limiting generalizability of study findings. Second, the neighborhood problems scale did not include an item on homicide. As a result, the perceived violent crime measure could have underestimated violent crime. Third, because gun violence data were only available for the year 2004, we were unable to assign gun violence data according to the year woman participated in the intervention. This measure was the only one for which an exact match by year corresponding to the majority of the women’s adoption phase was not available. Nonetheless, violent and disorder crime incidents between years 2001 to 2005 were highly correlated, indicating crime incidents for neighborhoods were generally consistent over this short period of time. Fourth, reported incidents of gun shots fired could be biased by residents’ willingness to report neighborhood shots fired to the police and more than 1 call could have been made for the same incident. Sixth, the heart rate monitor may have only captured predominately planned walking, but not necessarily walking for transport as women were not required to wear the monitor all day. However, the walking log and automated telephone response system offered a backup to capture additional walking.

There are several important strengths of this study. First, we were able to triangulate our adherence measure from 3 data sources, both objective and self-report. Second, our study takes advantage of a unique crime incident database, geocoded to where crimes were reported to have occurred in the City of Chicago and we were able to test our findings at 2 spatial scales: 1-mile and 0.25-mile radial buffers around home addresses. Third, to our knowledge, this study is among the first to include diverse types of crimes beyond violent crime and crimes specifically occurring in outdoor neighborhood locations. Finally, this study also included both perceived and objective crime measures beyond a 1-item measure of overall sense of neighborhood safety, typical of prior studies.

Implications

Contrary to expectations, we did not find a relationship between walking adherence and perceived and objective neighborhood crime and safety. If future studies with African American women find that neighborhood crime reduces adherence, multilevel intervention approaches addressing individual-level factors (eg, self-efficacy, knowledge, motivation) and promotion of safer neighborhood environments are warranted. At the neighborhood level, strategies may include supporting community policing and violence reduction programs, promoting sense of community through block clubs and neighborhood associations, and altering community design to increase visibility and “eyes on the street.” In follow-up focus group discussions with study participants, some reported adjusting their behavior to walk in safer areas or times. Thus, facilitating access to safe indoor or outdoor locations (eg, shopping mall) may assist African American women in becoming more active. At the individual level, problem-solving around strategies to avoid crime victimization and identification of safe places to walk may help reduce crime and safety barriers to walking. From this study of intervention adherence, we were unable to determine if either perceived or objective crime measures had greater explanatory power. Based on the weak correlations found between these variables, it is likely they are measuring different aspects of the crime environment and unique effects of each should be further explored. Further research such as this study among other populations and settings is needed to understand if diverse crime types make unique contributions to physical activity behaviors and if outdoor crime incidents where physical activity behaviors occur have greater explanatory power than broader crime incidents without specification for location.
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