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Relationship Between Neighborhood Context, Family Management Practices and Alcohol Use Among Urban, Multi-ethnic, Young Adolescents

Amy L. Tobler, MPH, PhD*, **Kelli A. Komro, MPH, PhD**, and **Mildred M. Maldonado-Molina, PhD**
University of Florida, College of Medicine, Department of Epidemiology and Health Policy Research, Institute for Child Health Policy

Abstract

We examined relationships between alcohol-related neighborhood context, protective home and family management practices, and alcohol use among urban, racial/ethnic minority, adolescents. The sample comprised 5,655 youth who were primarily low SES (72%), African American (43%) and Hispanic (29%). Participants completed surveys in 2002–2005 (ages 11–14 years). Items assessed alcohol use, accessibility of alcohol at home and parental family management practices. Neighborhood context measures included: (1) alcohol outlet density; (2) commercial alcohol accessibility; (3) alcohol advertisement exposure; and (4) perceived neighborhood strength, reported by parents and community leaders. Structural equation modeling was used to assess direct and indirect relationships between alcohol-related neighborhood context at baseline, home alcohol access and family management practices in 7th grade, and alcohol use in 8th grade. Neighborhood strength was negatively associated with alcohol use ($\beta=-0.078$, $p\leq.05$) and exposure to alcohol advertisements was positively associated with alcohol use ($\beta=0.043$, $p\leq.05$). Neighborhood strength and commercial alcohol access were associated with home alcohol access ($\beta=0.050$, $p\leq.05$ and $\beta=-0.150$, $p\leq.001$, respectively) and family management practices ($\beta=-0.061$, $p\leq.01$ and $\beta=0.083$, $p\leq.001$, respectively). Home alcohol access showed a positive association with alcohol use ($\beta=0.401$, $p\leq.001$). Tests for indirect effects suggest that home alcohol access may partially mediate the relationship between neighborhood strength and alcohol use ($\beta=0.025$, $p<.062$). Results suggest inner-city parents respond to environmental risk, such that as neighborhood risk increases, so also do protective home and family management practices. Parent engagement in restricting alcohol access and improving family management practices may be key to preventive efforts to reduce alcohol use.

Keywords

Adolescents; Communities; Family; Context; Alcohol

INTRODUCTION

Alcohol remains the drug of choice among youth in the United States. Among 8th-grade adolescents in particular, 39% have used alcohol in their lifetime, 32% have used alcohol in the past year, and 16% have used in the past month (Johnston, O'Malley, Bachman, & Schulenberg, 2008). Heavy, problematic use is also prevalent; 18% of 8th -grade students have been drunk in their lifetime, 13% have been drunk in the past year, and 6% have been drunk

***Corresponding Author:** University of Florida, College of Medicine, Department of Epidemiology and Health Policy Research, 1329 SW 16th Street, Rm 5130, P.O. Box 100177, Gainesville, FL 32610-0177; Tel.: (352) 265-0111 ext. 86268; Fax: (352) 265-8047; E-mail: alt@ichp.ufl.edu.

in the past month (Johnston et al., 2008). Further, 10% report heavy episodic use—having had five or more drinks in a row in the previous two weeks (Johnston et al., 2008). Such alcohol use has been associated with a number of deleterious health and social problems, including alcohol abuse and dependence, alcohol-related violence and injuries, drinking and driving, truancy, traffic crashes, risky sexual behavior, and other drug use throughout adolescence and into adulthood (Gruber, DiClemente, Anderson, & Lodico, 1996; Hingson, Heeren, Levenson, Jamanka, & Voas, 2002; Hingson, Heeren, Winter, & Wechsler, 2003). Additionally, exposure to alcohol in adolescence can have detrimental effects on cognitive growth and functioning and increases the likelihood for later addiction (Brown, Tapert, Granholm, & Delis, 2000).

Given the prevalence and consequences of alcohol use among youth, a substantial body of literature describing the etiology of this problematic behavior has amassed. However, to date, most of these studies have focused on individual-, peer- and family-level influences (Britt, Carlin, Toomey, & Wagenaar, 2005; Toumbourou et al., 2007) and few longitudinal studies have examined the etiology of alcohol use among racial/ethnic minority youth residing in urban communities. This is a critical gap in the literature, as census data indicate that the United States is quickly moving toward a “majority-minority” society (U.S. Census Bureau, 2003) and African American and Hispanic youth disproportionately reside in urban cities (U.S. Census Bureau, 2000). These youth are at increased risk for a number of maladaptive social and behavioral outcomes, including alcohol use, related to their unique environments (Arkes, 2007; Duncan, Duncan, & Strycker, 2002; Hill & Angel, 2005). Further, African American youth drink alcohol in lower quantities and less frequently than most other racial/ethnic groups (Substance Abuse and Mental Health Services Administration, 2006); yet, they suffer disproportionately from the physical and social consequences of use (NIAAA, 2000). This may be associated with more prevalent use of other licit and illicit substances (Johnston et al., 2008) or reflective of other socioeconomic or contextual risk factors to which African American youth are differentially exposed (Wallace, 1999).

These demographic and social trends and chasms in the scientific literature elucidate the importance of understanding the etiology of alcohol use among such growing, at-risk segments of the United States population. Further, they suggest that alcohol use among racial/ethnic minority youth residing in urban communities may be the result of not only proximal, individual characteristics, but also the interaction of their unique, community and family environments (Godette, Headen, & Ford, 2006). For example, several neighborhood characteristics have been associated with alcohol use among youth, including alcohol outlet density (Scribner et al., 2007; Treno, Alaniz, & Gruenewald, 2000), exposure to alcohol advertisements (Collins, Ellickson, McCaffrey, & Hambarsoomians, 2007; Pasch, Komro, Perry, Hearst, & Farbakhsh, 2007), commercial alcohol accessibility (Forster et al., 1994; Paschall, Grube, Black, & Ringwalt, 2007), and neighborhood strength and deprivation (Boardman & Saint-Onge, 2005; Scheier, Botvin, & Miller, 2000). The distribution of these characteristics has been shown to be disproportionate across urban, suburban and rural communities (Pollack, Cubbin, Ahn, & Winkleby, 2005; Treno et al., 2000). A variety of home and family management factors have also been found to influence adolescent alcohol use, including accessibility of alcohol in the home (Jackson, Henriksen, & Dickinson, 1999; Komro, Maldonado-Molina, Tobler, Bonds, & Muller, 2007), parental monitoring (Alvarez, Martin, Vergeles, & Martin, 2003; Cleveland, Gibbons, Gerrard, Pmery, & Brody, 2005), parent/child communication (Kelly, Comello, & Hunn, 2002; Wills, Gibbons, Gerrard, Murry, & Brody, 2003), relationship satisfaction (Nelson, Patience, & MacDonald, 1999; Wills et al., 2003), and supervision (Aizer, 2004; Coley, Morris, & Hernandez, 2004). However, what remains unclear is how these neighborhood and family characteristics in urban settings relate to each other and to alcohol use. Some studies suggest that parents respond to risk in their environments, exhibiting higher levels of protective family management practices and mediating the effects of risky neighborhood environments on alcohol use (Beyers, Bates, Pettit, & Dodge, 2003; Chuang,

Ennett, Bauman, & Foshee, 2005). However, other studies suggest that neighborhood risk is compounded by lower levels of protective home and family management practices, leading to higher levels of use and other maladaptive behaviors (Ingoldsby & Shaw, 2002; Rankin & Quane, 2002).

The present study extends the scientific knowledge about the etiology of alcohol use among racial/ethnic minority, young adolescents residing in urban communities by examining longitudinally the direct and indirect relations between alcohol-related neighborhood context, home and family management practices, and alcohol use. The hypothesized structural model was founded upon substantive theory (Flay & Petraitis, 1994; Wagenaar & Perry, 1994) and previous research (Figure 1). We hypothesized that each of the alcohol-related neighborhood contextual constructs would show direct, positive associations with alcohol use while neighborhood strength would have a direct, negative association (Boardman & Saint-Onge, 2005; Pasch et al., 2007; Paschall et al., 2007; Scribner et al., 2007). Additionally, correlations among each of these constructs were expected. Home alcohol access and protective family management practices were hypothesized to have direct effects on alcohol use (positive and negative, respectively), as well as correlate with each other (Aizer, 2004; Cleveland et al., 2005; Jackson et al., 1999; Komro et al., 2007; Swahn & Hammig, 2000). We hypothesized that there would be more complicated associations between neighborhood strengths and risks, in that parents may respond to high risk environments by increasing protective factors within the home (Hawkins, Catalano, & Miller, 1992; Ingoldsby & Shaw, 2002; Rankin & Quane, 2002).

METHODS

Design

Data were part of a longitudinal, group-randomized controlled trial of an alcohol preventive intervention for multi-ethnic urban youth [Project Northland Chicago (PNC); see Komro et al., 2008 for a complete description of the project's research design, participant recruitment, intervention components, and outcomes], which included 42 of 77 city-defined Chicago community areas as part of the study. The sample included a cohort of 5,655 youth residing in the 42 study communities who completed at least one study survey when they were in the 6^{th}, 7^{th}, or 8^{th} grade. The students were predominantly African American or Hispanic (43% and 29%, respectively), had an equal gender distribution (50% boys), spoke English in their homes (74%), and were low income (72% receiving free, or reduced price lunch). In terms of demographic characteristics, participating students were similar to students enrolled throughout the Chicago Public School (CPS) system, where 50% and 38% of youth were African American or Hispanic, respectively, and 85% were low income. Data from both the control and intervention conditions were used for the present study.

Data Collection

Students—Student surveys were administered in study schools during the fall of 2002, spring of 2003, spring of 2004 and spring of 2005, when the students were in the 6^{th}, 7^{th} and 8^{th} grades. Students in the cohort were assigned a participant identification number and tracked over time. Data from the 2002, 2004, and 2005 surveys were used for the present study. All students enrolled in the appropriate grade each year were eligible to participate. Surveys were administered by trained university-based research teams using standardized protocols. Prior to survey administration, parents and students were given the opportunity to refuse participation. Response rates were between 91% and 96% each year (students who completed a survey/student enrolled in the relevant grade in the study schools each year). Data collection protocols were approved by the University of Minnesota Institutional Review Board, with secondary data analyses approved by the University of Florida Institutional Review Board.

Parents—Parents of the students were surveyed in fall, 2002 (n = 3,250; 70% response rate). Hard-copy surveys were given to students, and they were asked to deliver the packet to their primary caregiver (Komro et al., 2008). Parents were given $25 after the completed survey was returned. Students were given a $5 gift certificate for delivering the packet to their parents. Parents completing the surveys (n = 3,250) were predominantly married (54%), had one to three children living in their home (70%) and had, at the least, graduated from high school (78%). Parents responded to seven items that assessed perceived neighborhood problems. Students whose parents did not complete the parent survey were not excluded from the study.

Community leaders—A telephone survey of community leaders in each community was conducted in 2002 (n = 344, 70% response rate). Community leaders included school council members, religious leaders, managers of recreation centers, neighborhood beat officers, neighborhood beat facilitators, and managers/leaders of neighborhood organizations. The survey instrument was based on others administered in similar research projects (Komro et al., 1999; Wagenaar & Streff, 1990) and contained fourteen items assessing neighborhood strength and neighborhood and police preventive action.

Neighborhood characteristics—Data describing alcohol-related neighborhood characteristics included: (1) mean number of off-sale alcohol outlets per community area, obtained from the Chicago Licensing Department in 2002; (2) commercial alcohol accessibility, tested directly in 2002 by pseudo-underage youth (Komro et al., 2008); and (3) average number of alcohol advertisements within 1500 feet of each school per community, assessed in spring, 2003 (Pasch, Komro, Perry, Hearst, & Farbakhsh, In Press; Pasch et al., 2007). Census 2000 data for each community were also retrieved.

Measures

Alcohol-related neighborhood context

Neighborhood strength: Five community leader survey items were used in a scale of neighborhood strength: “How would you rate the…” “…neighborhood in terms of having a strong community identity?”; “…level of community resources?”; “…participation level of residents in local activities?”; “…level of influence local residents or community groups have on decisions about local policies?”; and “…efforts of residents in addressing the prevention of alcohol use among teenagers?” (Cronbach’s alpha: 0.70; Range: 5–25). Response options were 1 = “low,” 3 = “medium,” and 5 = “high,” with a higher score on this scale indicating greater neighborhood strength.

Neighborhood and police preventive action: Nine community leader survey items were used in a scale of neighborhood and police preventive action: “How would you rate police involvement in prevention of alcohol use among teenagers in the neighborhood?”; “How would you characterize relationships between local beat officers and neighborhood residents surrounding schools?”; “If teenagers were hanging out on the block, how likely is it that residents in the neighborhood would do something about it?”; “If a store was selling alcohol to teenagers, how likely is it that residents in the neighborhood would call the police?”; “If police were called on a loud party involving young people, how likely is it that they would check to see if there was underage drinking?”; “How likely is it that a group from the neighborhood would work to reduce the amount of alcohol advertisements?”; “How likely is it that if a business served or sold alcohol to minors, the business would be cited by an enforcement agency?”; “How likely is it that if an adult provided alcohol to minors, the adult would be cited or ticketed by police?”; and “How likely is it that a minor who was in possession of alcohol would be cited or ticketed by police?” (Cronbach’s alpha: 0.89, Range 9–45). Response options were in the form of a 5-option Likert scale ranging from “very little

involvement/not at all good/not at all likely" to "a great deal of involvement/very good/very likely." A higher score on this scale indicated more neighborhood and police preventive action.

Perceived neighborhood problems: A perceived neighborhood problems scale was created using seven items from the parent survey: "Below is a list of urban problems. Please check how much of a problem each of the following is on the block where you live: …drug dealing?"; "…unsupervised youth?"; "…people drinking alcohol on the street?"; "…too many stores that sell alcohol?"; "…lack of supervised activities for youth?"; "…too many alcohol advertisements?"; and "…poor police response?" (Cronbach's alpha: 0.93, Range 7–35). Response options were 1 = "not a problem," 3 = "a minor problem," and 5 = "a serious problem." A higher score on this scale indicated greater perceived neighborhood problems.

Exposure to alcohol advertisements: The number of alcohol advertisements within 1500 feet of each study school was obtained in 2003 (Pasch et al., In Press; Pasch et al., 2007). The location of each ad was documented using a Global Positioning System. Street maps with a 1,500 foot radius around each school were created using ArcView GIS. The average number of alcohol advertisements around schools within each community area was obtained by dividing the total number of alcohol advertisements surrounding schools within each community area by the total number of schools in each community area.

Off-sale alcohol outlet density: The mean number of off-sale alcohol outlets per 1,000 population per community area was obtained by dividing the mean number of off-sale alcohol outlets per community area by the total population for each community area.

Commercial accessibility of alcohol: Commercial accessibility of alcohol to underage youth was assessed using a standardized protocol (Komro et al., 2008). Women who were judged by a panel to be younger appearing (i.e. 20 years old or younger) attempted to purchase alcoholic beverages without age identification. Two purchase attempts were conducted at each randomly selected off-sale alcohol outlet (n = 326 outlets, n = 652 attempts). The purchase attempt success rate was obtained by dividing the number of successful purchase attempts by the total number of attempts for each community area.

Area deprivation: An area deprivation index was created following procedures described by Singh (2003). Seventeen Census 2000 indicators were used: educational distribution (percentage of population with less than 9 years and 12 or more years of education), unemployment rate, occupational composition, median family income, income disparity, median home value, median gross rent, median monthly mortgage, home ownership rate, family poverty rate, population below 150% of poverty threshold, single-parent household rate, percentage of households without a motor vehicle, telephone, and/or complete plumbing, and household crowding. Factor score coefficients from Singh (2003) were used to weight the indicators. The scale was standardized, setting the mean and standard deviation to 100 and 20, respectively (Cronbach's alpha: 0.87; a higher score on this scale indicated greater area deprivation).

Home and family management practices

Home alcohol access: Three items from the student survey assessed the accessibility of alcohol from their homes and parents. Two items measured the ease with which students could obtain alcohol from their parents and homes: "How hard would it be for you to obtain alcohol from your parent or guardian?" and "How hard would it be for you to take it from your home?". Response options included "hard," "in-between," and "easy." One item required students to identify the sources of their last alcoholic beverage: "If you have ever had an alcoholic drink, think back to the last time you drank. How did you obtain the alcohol?". "Your parent or

guardian gave it to you" and "You took it from home" were the two response options included in this study.

Parental monitoring/communication: Students responded to five items assessing their parental monitoring and communication: "How often do/does you/your parent or guardian…" "…ask you about what you are doing in school?"; "…praise you when you do a good job?"; "…eat dinner with a parent or guardian?"; "…ask you where you are going or who you will be with?"; and "have a conversation with you that lasts 10 minutes or more?". Response options included: "never," "hardly ever," "sometimes," "a lot," and "all the time."

Alcohol-specific communication: Four items from the student survey assessed alcohol-specific communication: "How often does your parent or guardian talk with you about…" "…problems drinking alcohol can cause young people?"; "…family rules against young people drinking alcohol?"; "…what would happen if you were caught drinking alcohol?"; and "Does your parent or guardian talk to you about how ads and commercials are used to get you to buy things?". Response options included: "never," "hardly ever," "sometimes," "a lot," and "all the time."

Alcohol use—Students responded to five items that assessed alcohol use: "During the last 12 months, on how many occasions, or times, have you had alcoholic beverages to drink?"; "During the last 30 days, on how many occasions, or times, have you had alcoholic beverages to drink?"; "During the last 7 days, on how many occasions, or times, have you had alcoholic beverages to drink?"; "Think back over the last 2 weeks, on how many times have you had five or more alcoholic drinks in a row?"; and "Have you ever become really drunk from drinking alcoholic beverages so you fell down or became sick?". Response options for the past year, past month and past week items included: "0 occasions," "1–2 occasions," "3–5 occasions," "6–9 occasions," "10–19 occasions," "20–39 occasions," and "40 or more occasions." Response options for the heavy episodic use and having ever been drunk items included: "never," "once," "twice," "three to five times," "six to nine times," and "ten or more times."

Analytical Strategy—Structural equation modeling (SEM) in Mplus (version 5.2; Muthén & Muthén, 2007) was used to assess the direct and indirect relations between alcohol-related neighborhood context at baseline (6^{th} grade), home alcohol access and family management practices in 7^{th} grade, and alcohol use in 8^{th} grade. Analyses proceeded through two phases. First, measurement models were evaluated to determine the relationships between the observed variables and underlying latent constructs. Multilevel exploratory factor analyses (EFA) were conducted to determine the appropriate factor structure for the home and family management and alcohol-related neighborhood context items. EFA, rather than confirmatory factor analysis (CFA), was used for these items because we did not have *a priori* hypotheses about the underlying factor structure for these data. A CFA was conducted for the alcohol use items, as we hypothesized all would load on a single, "Alcohol Use," factor. Three measurement models were fit, determining the factor structure for the alcohol-related neighborhood context, home and family management practices, and alcohol use items separately. Community membership was specified as a nested random effect to account for the dependency of observations among students within each community for each measurement model. All available data from each appropriate time point (6^{th}, 7^{th} or 8^{th} grade) were used, with sample sizes ranging from 3801–4170, with 2.1%, 0.0% and 0.03% missing data, respectively. Minimum variance weighted least squares (WLSMV) was used for parameter estimation and an oblique, geomin factor rotation was specified.

Fit of the measurement models was assessed with four goodness-of-fit indices: comparative fit index (CFI), Tucker-Lewis fit index (TLI), root mean square error of approximation

(RMSEA) and standardized root mean square residual (SRMSR). The CFI and TLI describe the improvement in fit of the tested model compared with that of a null model assuming zero covariance among the variables (Kline, 2005). A value greater than 0.90 indicates reasonably good model fit (Hu & Bentler, 1999). The RMSEA is a parsimony-adjusted index, where a value ≤ 0.05 indicates close approximate fit, values between 0.05 and 0.08 suggest reasonable fit, and values ≥ 0.10 suggest poor model fit (Kline, 2005). The last index, the SRMSR, is a measure of the mean residual correlation, where values < 0.10 are considered adequate (Kline, 2005).

The second analysis phase tested structural models specifying hypothesized causal relations among the identified constructs. The structural model was built in stages, where the relations were modeled between: (1) home and family management and alcohol use; (2) alcohol-related neighborhood context and home and family management; (3) alcohol-related neighborhood context and alcohol use; and (4) alcohol-related neighborhood context, home and family management, and alcohol use. Paths that were not statistically significant and/or whose inclusion did not improve the fit of the model were excluded in each stage. Model fit was assessed with the CFI, TLI, and RMSEA. Multilevel analyses were conducted for the first three model building stages; however, the final model was estimated at the individual-level, given insufficient statistical power to estimate the most complex model at the community-level. The final model retained only statistically significant paths identified from the first three multilevel models. All regression paths were estimated while controlling for treatment group assignment. Direct effects on alcohol use in 8^{th} grade were estimated while controlling for baseline levels of use. Indirect effects were calculated as the product of the regression coefficients describing the effect of the independent variable on the hypothesized mediator and the hypothesized mediator on the outcome. Sobel's method (Sobel, 1982) was used for calculation of the standard errors of the indirect effects (Muthén & Muthén, 2004).

Missing Data—WLSMV estimation with categorical and/or ordinal variables in Mplus uses pairwise deletion to handle missing data (Muthén & Muthén, 2004). Estimates are based on the polychoric correlations for all pairwise present data, where only missing values on the two variables under consideration are ignored, not the entire case. While maximum likelihood (ML) estimation is optimal for handling missing data (Schafer & Graham, 2002), it is not computationally feasible when estimating more complex models with several latent variables (Muthén & Muthén, 2004), as was the case here. Seventy-two percent of the cohort students completed three or four surveys, while 28% completed one or two. Students who completed three to four surveys were more likely to be White (χ^2 (5) = 107.417, $p < 0.001$) and live with both parents (χ^2 (1) = 37.887, $p < 0.001$), compared to those who only completed one or two surveys. There were no significant differences in alcohol use between those who completed three or four surveys and those completing one or two. Students whose parents completed surveys reported greater alcohol use in the past year (t (1874) = 2.60, $p = 0.009$), past month (t (1663) = 3.24, $p = 0.001$), and past week (t (1630) = 3.00, $p = 0.003$), as well as having ever been drunk (t (1588) = 3.44, $p = 0.001$) and heavy episodic alcohol use (t (1645) = 3.36, $p = 0.001$) than those whose parents did not.

RESULTS

Measurement Models

Three measurement models were fit to determine the factor structure for the alcohol-related neighborhood context, home and family management practices, and alcohol use items. Table 1 shows the standardized, geomin-rotated loadings and the fit statistics for each model. The identified factor structures were consistent across all study time-points.

Alcohol-related neighborhood context

One factor, "Neighborhood Strength," best described the covariation among the items reported by community leaders and parents when the students were in 6th grade (Perceived Neighborhood Strength, Neighborhood and Police Preventive Action, and Perceived Neighborhood Problems; CFI = 1.000, TLI = 1.000, RMSEA < 0.01, SRMSR < 0.01). The other four alcohol-related neighborhood contextual items (exposure to alcohol advertisements, off-sale alcohol outlet density, commercial alcohol accessibility, and area deprivation) did not load sufficiently with the "Neighborhood Strength" factor or with each other. Therefore, each of these items were included as separate, manifest variables in the structural model.

Home and family management practices

A two-factor solution best fit the home and family management practice data in 7th grade (CFI = 0.976, TLI = 0.965, RMSEA = 0.059, SRMSR = 0.063). The first factor, "Home Alcohol Access," was defined by four items describing the perceived difficulty in getting alcohol from their homes and parents and receiving/taking alcohol from their parents and homes during their last drinking occasion. While the loadings were low for the items describing receiving/taking alcohol from parents and homes (0.049 and 0.097, respectively), they were included in the model to provide a more comprehensive construct and the model fit when including these items was comparable to that when they were excluded (CFI = 0.974, TLI = 0.958, RMSEA = 0.077, SRMR = 0.042). The second, "Family Management," factor was defined by nine items describing parental monitoring, general parent/child communication, and alcohol-specific communication.

Alcohol use

Once factor comprising all of the alcohol use items adequately fit the data (CFI = 0.995, TLI = 0.989, RMSEA = 0.10). "Alcohol Use" was defined by the five items assessing alcohol use in the past year, past month, past week, heavy episodic use, and having ever been drunk.

Structural Model

The final structural model is shown in Figure 2. All paths were estimated while controlling for treatment group membership. Fit indices indicated good representation of the data (CFI = 0.974, TLI = 0.978, RMSEA = 0.031). When considering the other neighborhood constructs, area deprivation did not have any significant direct or indirect effects on alcohol use. Additionally, modeling its correlations with the other alcohol-related neighborhood constructs did not improve model fit (CFI = 0.904, TLI = 0.926, RMSEA = 0.061). Therefore, it was excluded from the final model.

Significant correlations among the latent and manifest factors were observed. At baseline (6th grade): neighborhood strength showed an inverse association with alcohol outlet density ($r = -0.436$, $p \leq 0.001$) and commercial alcohol access ($r = -0.040$, $p \leq 0.01$); alcohol outlet density was positively associated with commercial alcohol access ($r = 0.214$, $p \leq 0.001$) and exposure to alcohol advertisements ($r = 0.036$, $p \leq 0.05$); and commercial alcohol access was negatively associated with exposure to alcohol advertisements ($r = -0.080$, $p \leq 0.001$). In 7th grade, home alcohol access and protective family management practices were inversely associated ($r = -0.462$, $p \leq .001$).

Baseline neighborhood strength was negatively, and exposure to alcohol advertisements positively, associated with alcohol use in 8th grade ($\beta = -0.078$, $p \leq 0.05$ and $\beta = 0.043$, $p \leq 0.05$, respectively), after controlling for baseline alcohol use. Alcohol outlet density and commercial alcohol access did not have statistically significant direct effects on alcohol use in 8th grade.

Neighborhood strength and commercial alcohol access were associated with home alcohol access ($\beta = 0.050$, $p \leq 0.05$ and $\beta = -0.150$, $p \leq 0.001$, respectively) and family management practices ($\beta = -0.061$, $p \leq 0.01$ and $\beta = 0.083$, $p \leq 0.001$, respectively) in 7th grade. Alcohol outlet density and exposure to alcohol advertisements did not have a statistically significant effect on home alcohol access or protective family management practices.

Home alcohol access showed a positive association with alcohol use ($\beta = 0.401$, $p \leq 0.001$) in 8th grade, while the association between protective family management practices and alcohol use was not significant when home alcohol access was considered. Tests for indirect effects suggest that home alcohol access may partially mediate the relations between neighborhood strength and alcohol use, although this indirect effect was only marginally significant ($\beta = 0.025$, $p = 0.062$).

DISCUSSION

This study used SEM to examine the direct and indirect relations between alcohol-related neighborhood context, home and family management practices, and alcohol use among a large sample of inner-city, racial/ethnic minority, young adolescents. Significant correlations were observed among the alcohol-related neighborhood contextual factors (i.e., neighborhood strength, alcohol outlet density, commercial alcohol access, and exposure to alcohol advertisements) and among the home and family management factors (i.e., home alcohol access and protective family management practices). Of particular interest were the large correlations between neighborhood strength and alcohol outlet density, alcohol outlet density and commercial alcohol access, and home alcohol access and protective family management practices. These findings suggest that efforts to minimize alcohol-related risk and enhance protective factors (i.e., neighborhood strength, protective family management practices) should be multifaceted, addressing both community- and family-level exposure and access to alcohol.

Two alcohol-related neighborhood constructs had significant, direct relations with alcohol use: increased neighborhood strength was associated with decreased alcohol use and increased exposure to alcohol advertisements was associated with increased alcohol use. Neighborhood strength was positively associated with home alcohol access and negatively associated with protective family management practices. Commercial alcohol access was negatively associated with home alcohol access and positively associated with protective family management practices. Increases in home alcohol access were associated with increased alcohol use, while increased protective family management practices was associated with decreased alcohol use, albeit not statistically significant. Tests for indirect effects suggested that the protective effect of neighborhood strength on alcohol use may be partially reduced if children are exposed to increased alcohol access in the home.

The direction of effects for neighborhood strength on protective family management practices and home alcohol access, and commercial alcohol accessibility on home alcohol access were opposite to those hypothesized (see Figure 1 for hypothesized effects). The positive relation between commercial alcohol access and protective family management was hypothesized based on previous studies (Beyers et al., 2003;Chuang et al., 2005;Rankin & Quane, 2002;Tobler, Komro, & Maldonado-Molina, 2007). Together these findings support the hypothesis that inner-city parents respond to environmental risk, such that as neighborhood risk increases (i.e., less neighborhood strength, greater commercial alcohol access), protective family management practices increase, in addition to decreases in home alcohol access. These findings are consistent with other literature suggesting that parents may “buffer” the effects of risky environments (Beyers et al., 2003;Chuang et al., 2005;Rankin & Quane, 2002), especially during the early adolescent years. Future research should examine whether this “buffering”

capacity holds as youth progress through adolescence, becoming increasingly more a part of, and exposed to, their neighborhood environment (Ingoldsby & Shaw, 2002).

Given that alcohol use initiation peaks in early adolescence (National Center for Chronic Disease Prevention and Health Promotion, 2008) and the considerable consequences associated with use during this critical developmental period (Gruber et al., 1996; Hingson et al., 2002; Hingson et al., 2003), preventive efforts targeting young adolescents are important. These findings highlight parent engagement in restricting alcohol access and improving family management practices as key components to preventive efforts to reduce alcohol use among inner-city, adolescents. Here, the effects of home alcohol access on alcohol use were approximately four times the others considered, consistent with scientific theory regarding more proximal influences on behavior (Flay & Petraitis, 1994) and with other literature describing substantial increases in risk when alcohol is available or provided at home (Jackson et al., 1999; Swahn & Hammig, 2000). Thus, efforts to engage and improve parental home and family management practices may be fruitful.

Neighborhood strength and exposure to alcohol advertisements in 6^{th} grade were directly and significantly associated with alcohol use in 8^{th} grade, even after controlling for baseline levels of use and considering two prominent, proximal predictors of alcohol use. As expected the magnitude of these effects was considerably smaller for these distal influences; however, they suggest that community characteristics are influential in shaping alcohol use behaviors among youth. These findings are consistent with other studies that have observed significant direct effects on alcohol use (Duncan et al., 2002; Pasch et al., 2007; Scheier et al., 2000) and suggest that incorporating community-level intervention components that build neighborhood strength and limit exposure to alcohol advertisements may enhance intervention effects and/or reduce alcohol use among youth alone. This may be true for efforts targeting alcohol advertising in particular, as several studies have shown that exposure to alcohol advertisements is associated with a 25–50% increase in risk of drinking among early adolescents (Collins et al., 2007; Stacy et al., 2004). These findings are consistent with extant scientific theory (e.g., Flay & Petraitis, 1994; Szapocznik & Coatsworth, 1999; Wagenaar & Perry, 1994) acknowledging multiple dimensions that influence adolescent behavior.

This study had several limitations. First, the sample for this study comprised only young adolescents, aged 11 to 14 years. The saliency of context in shaping alcohol use among youth may vary throughout adolescence (Szapocznik & Coatsworth, 1999). Accordingly, future research should examine associations between alcohol-related context and drinking behaviors of youth as they evolve and develop across time. Our data precluded such an examination. Second, the sample for this study was low-income, racial/ethnic minority, young adolescents residing in Chicago, Illinois. More studies are needed to examine the consistency of the relations presented here among youth residing in other metropolitan cities as well as rural and suburban areas. Third, given the complexity of the model and sample size, we did not split the sample and conduct independent exploratory and confirmatory analyses. However, observed effects are similar to other studies among racial/ethnic minority youth examining components of the model identified here, and may be generalizable to other racial/ethnic minority youth living in other metropolitan or rural areas (Cleveland et al., 2005; Kegler et al., 2005; Rankin & Quane, 2002; Sellstrom & Bremberg, 2006). Fourth, use of other licit and illicit substances was not measured directly in this study, but could be an important contributing factor to consider in alcohol use among these populations. Lastly, measures of alcohol-related neighborhood context used do not represent the universe of neighborhood characteristics which may also influence home and family management and alcohol use among youth. Future research should examine the influence of more broadly defined neighborhood contexts, including additional community measures, such as crime rates, political activism, public policies and measures of social structure.

Limitations notwithstanding, this study contributes to a sparse literature describing the etiology of alcohol use among urban, racial/ethnic minority youth, particularly the effects of alcohol-related neighborhood context on home and family management practices and alcohol use. Moreover, multiple dimensions of alcohol-related neighborhood context were considered in the analyses, including direct environmental assessments, Census 2000 data, and self-report measures from parents and community leaders. This is a notable strength, as much of the literature describing the influence of neighborhood context on drug use and other deleterious health and social outcomes has relied solely on census data (Allison et al., 1999; Chuang et al., 2005) or self-report measures (Hill & Angel, 2005). Further, the study design allowed for establishment of clear temporal precedence, a great advantage over cross-sectional modeling. The results showed significant direct and indirect associations between neighborhood context and alcohol use, and suggest that inner-city parents respond to environmental risk and represent a key target for intervention to reduce alcohol use among inner-city adolescents, whether it be through restricting alcohol access in their homes or improving monitoring and communication with their children.

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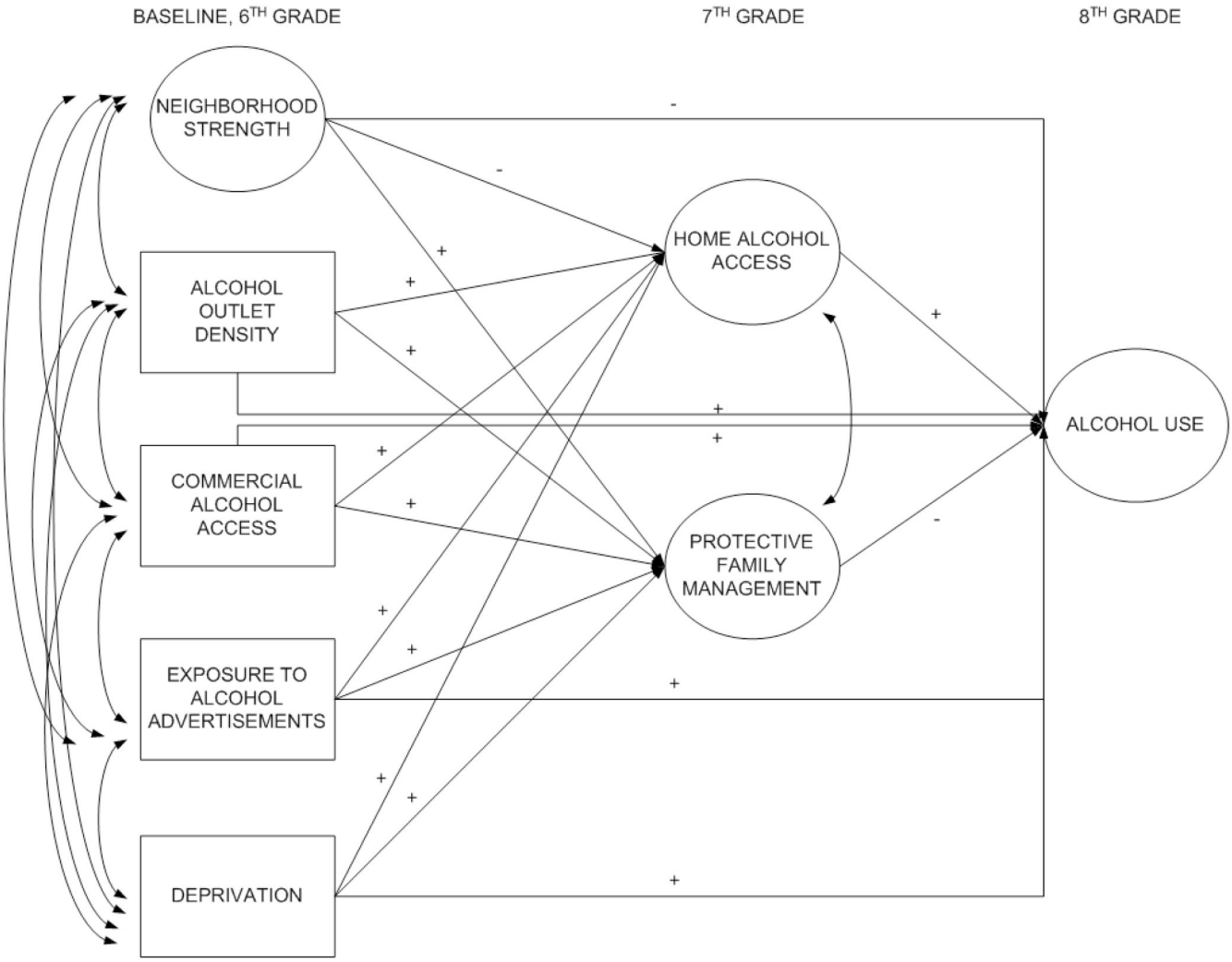

Figure 1.
Hypothesized structural model.

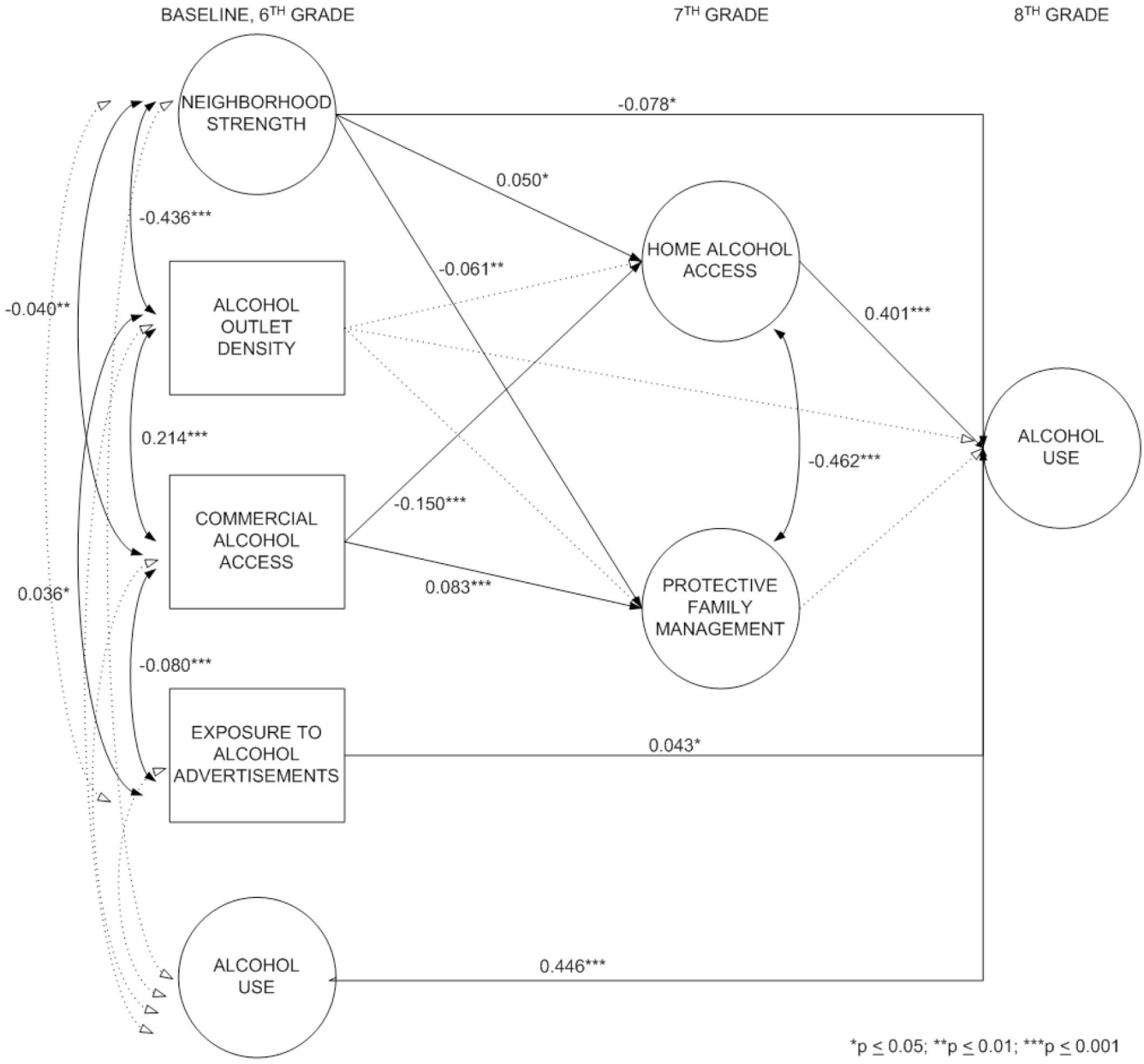

Figure 2.
Structural model depicting standardized paths among alcohol-related neighborhood context, home and family management practices, and early adolescent alcohol use. (Nonsignificant paths are indicated with dashed line.)

Table 1

Standardized, geomin-rotated factor loadings and fit statistics for measurement models.

Item	Model 1Model 2 (n = 4170)(n = 3778) Neighborhood Strength	Home Alcohol Access	Protective Family Management	Model 3 (n = 3801) Alcohol Use
Alcohol-related Neighborhood Context				
Perceived neighborhood strength	0.737			
Neighborhood and police preventive action	0.866			
Perceived neighborhood problems	−0.373			
Home and Family Management				
Last time drank, received alcohol from parent		0.049	−0.010	
Last time drank, took alcohol from home		0.097	0.072	
Easy to get alcohol from parent		0.793	0.320	
Easy to get alcohol from home		0.783	0.381	
Parent ask about school		0.206	0.699	
Parent praise when do a good job		0.189	0.658	
Eat dinner with parent		0.202	0.485	
Parent ask who with		0.249	0.571	
Parent/child conversations		0.198	0.671	
Parent talk about problems alcohol can cause		0.430	0.790	
Parent talk about family rules against drinking		0.443	0.542	
Parent talk about consequences of drinking		0.455	0.735	
Parent talk about influence of ads and commercials		0.362	0.611	
Alcohol Use and Intentions				
Past year alcohol use				0.885
Past month alcohol use				0.972
Past week alcohol use				0.888
Heavy episodic alcohol use				0.857
Ever been drunk				0.777
Fit Indices				
CFI	1.000		0.976	0.984
TLI	1.000		0.965	0.989
RMSEA	< 0.001		0.059	0.102
SRMSR	< 0.001		0.063	-