Racial/Ethnic Differences in the Etiology of Alcohol Use Among Urban Adolescents*

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ABSTRACT. Objective: We examined relations between neighborhood context, home and family management practices, deviant peer affiliations, beliefs favorable to use, and alcohol use among urban African American and Hispanic adolescents. **Method:** The sample comprised 4,027 African American and Hispanic adolescents who were 50% boys and 75% low income. Participants completed surveys in 2002–2005 and 2008–2009. Structural equation modeling assessed direct and indirect relations between neighborhood context in 6th grade, home and family management practices in 7th grade, deviant peer affiliations and beliefs favorable to use in 8th grade, and alcohol use in 12th grade. **Results:** There was significant variation in structural models across race/ethnicity but not gender. Differences included the influence of neighborhood and school strength and, where similarities existed, differences in effect magnitude. Similarities included significant correlations among measurement components; the indirect influence of alcohol advertisement exposure, gender, area deprivation, and home alcohol access on alcohol use; direct influence of deviant peer affiliations and beliefs favorable to use on alcohol use; and indirect effects highlighting the importance of preventing home alcohol access, deviant peer affiliations, and beliefs favorable to use and promoting protective family management practices. **Conclusions:** Neighborhood and school strength may be particularly important in preventing alcohol use among African Americans, whereas preventing early onset of alcohol use among Hispanics remains important. Preventive efforts may wish to focus on neighborhood deprivation, exposure to alcohol advertisements, and home risks and protective factors because they have direct and indirect effects on intrapersonal factors and alcohol use. (*J. Stud. Alcohol Drugs, 72,* 799–810, 2011)

ALCOHOL REMAINS THE MOST FREQUENTLY used drug among adolescents in the United States. In 2010, 71% of 12th graders had used alcohol in their lifetime, 65% had used in the past year, 41% in the past month, and 23% reported heavy episodic alcohol use (Johnston et al., 2011). For many, initiation of use occurred before age 13 (National Center for Chronic Disease Prevention and Health Promotion, 2010). Such use remains a great cause for concern because deleterious health and social consequences of alcohol use during adolescence have been well documented (Brown et al., 2000; Gruber et al., 1996; Hingson et al., 2002, 2003).

Differences in use across race/ethnicity exist, with consistently fewer African American youth reporting alcohol use than Hispanics and Whites. For example, in 2009, 31% of African Americans in 12th grade reported alcohol use in the past month compared with 40% of Hispanic and 47% of White 12th graders (Johnston et al., 2010). However, although African Americans drink in lower quantities and less frequently than others, they suffer disproportionately from physical and social consequences of use (National Institute on Alcohol Abuse and Alcoholism, 2000). This may be related to the use of other substances (Johnston et al., 2010) or other socioeconomic or contextual risk factors (Wallace, 1999).

Few studies have examined similarities and differences in a comprehensive set of risk and protective factors contributing to alcohol use. Among those available, studies generally suggest important differences in etiology (Bossarte and Swahn, 2008; Chartier et al., 2009; Gottfredson and Koper, 1996; Griffin et al., 2000; Parker et al., 2000; Vega et al., 1993). For example, Vega et al. (1993) examined differential effects of family pride and substance use, psychosocial well-being, peer substance use, and deviant behavior among a sample of 6,760 boys. They found relatively weak associations between these risk factors and substance use among African American boys but not White or Hispanic boys. Likewise, Griffin et al. (2000) examined commonalities and divergences in effects of psychosocial vulnerability and alcohol use among 1,950 African American, Hispanic, and White early adolescents. Two important conclusions were drawn: (a) although individual-level risk and protective factors were important for all, the largest proportion of variance in use among African Americans may be explained by other macro-level factors, such as neighborhood and environmental contexts; and (b) buffering effects of protective factors appeared strongest for African American youth. These and other studies have provided important contributions to understanding of common and unique contributors

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to alcohol use. However, the large majority of these studies have examined effects of individual-level risk and protective factors alone, many are limited by cross-sectional data, and few use samples from urban areas.

The present study extends scientific knowledge about similarities and differences in etiology of alcohol use across race/ethnicity by examining, longitudinally, direct and indirect relations between neighborhood context, home and family management practices, deviant peer affiliations, intrapersonal beliefs favorable to use, and alcohol use among inner-city, low-income, African American and Hispanic youth. We considered the influence of risk and protective factors at multiple levels of influence, including environmental, social, and intrapersonal. The hypothesized structural model (Figure 1) was founded on substantive theory (Flay and Petraitis, 1994; Wagenaar and Perry, 1994) and previous research (Tobler et al., 2009b). We hypothesized that each neighborhood contextual construct at baseline (6th grade) would show direct, positive associations with alcohol use at 12th grade, whereas neighborhood and school strength would have a direct, negative association (Boardman and Saint-Onge, 2005; Pasch et al., 2007; Paschall et al., 2007; Scribner et al., 2007). Additionally, correlations among each were expected. Home alcohol access and protective family management practices in 7th grade were expected to have direct effects on deviant peer affiliations and beliefs favorable to use in 8th grade (positive and negative, respectively) and alcohol use in 12th grade, as well as to correlate with each other (Aizer, 2004; Cleveland et al., 2005; Jackson et al., 1999; Komro et al., 2007; Swahn and Hammig, 2000). Deviant peer affiliations and beliefs favorable to use in 8th grade were hypothesized to have direct, positive associations with alcohol use in 12th grade, as well as to correlate with each other (Dielman et al., 1993). 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 (Tobler et al., 2009b). We expected that there would not be significant differences in measurement or structural models across genders (Griffin et al., 2000; National Center for Chronic Disease Prevention and Health Promotion, 2010); however, we hypothesized significant variations in structural model and size of effects between African Americans and Hispanics, such that macro-level constructs would be more prominent contributors to alcohol use among African Americans (Griffin et al., 2000).

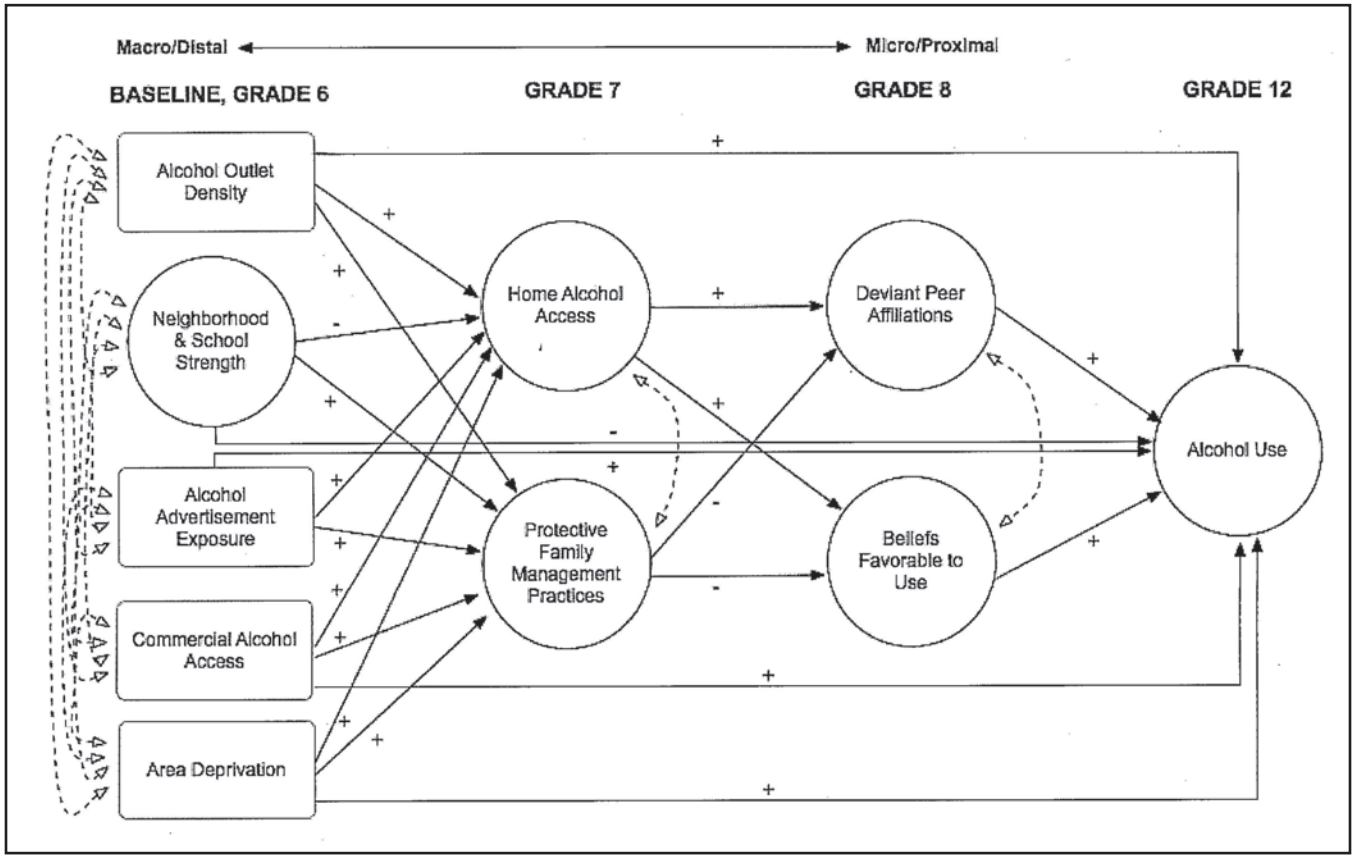

FIGURE 1. Theoretical model. Note: Direct effects from baseline (Grade 6) to Grade 8 and Grade 7 to Grade 12 are not depicted because of the complexity of the diagram. All were expected to have direct effects on behavior, as well as the mediated effects shown. Dashed lines represent hypothesized residual correlations.

Method

Study design and sample

Data were part of a group-randomized controlled trial of an alcohol preventive intervention (Komro et al., 2004b, 2008). Youth in 61 public schools in Chicago participated. Schools and their surrounding community areas were matched on ethnicity, poverty, mobility, and test scores and randomized into intervention (n = 29 schools) or control (n = 32 schools) conditions. The intervention included 3 years of classroom, home, and community interventions. The control condition was "prevention as usual," with no additional intervention or attention materials provided. The present sample included a cohort of 4,027 (n = 2,226 treatment [55%], n = 1,801 control [45%]) African Americans (59%) and Hispanics (41%) who completed at least one survey while in 6th, 7th, 8th, or 12th grade. This sample was 50% boys, spoke English at home (71%), and was low income (75%). Other races/ethnicities were excluded because of insufficient sample sizes. Data collection and analyses were approved by institutional review boards at the University of Minnesota and University of Florida.

Data collection

Students. Repeated, cross-sectional, self-report surveys were conducted in each school at four time points when students were in 6th, 7th, and 8th grades. Students completed surveys during the autumn of 2002 (91% response rate) and spring of 2003 (94% response rate), 2004 (93% response rate), and 2005 (95% response rate). All students enrolled in the appropriate grade each year were eligible to participate. The cohort follow-up rate from baseline to 8th grade (spring 2005) was 61%. Additionally, students completed mail-, web-, or school-based surveys during the 2008–2009 school year, when they were 17–18 years old (53% response rate; Tobler and Komro, 2011). Any student who completed a survey when in 6th, 7th, or 8th grade was eligible for follow-up. All school-based surveys were administered by trained, university-based research teams using standardized protocols. Before all survey administrations, parents and students were given the opportunity to refuse participation.

Parents. Parents of students were surveyed in the autumn of 2002 (n = 3,250; 70% response rate). Surveys were given to students at school and they were asked to deliver the packet to their parent/guardian (Komro et al., 2008). Parents received $25 for completing the survey. Students were given a $5 gift certificate for delivering the survey packet. Parents completing the surveys were predominantly married (54%), had one to three children living at home (70%), and had, at the least, graduated from high school (78%).

Community leaders. A telephone survey of 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 and facilitators, and managers/leaders of neighborhood organizations.

Neighborhood and school characteristics. Data describing alcohol-related neighborhood characteristics included the following: (a) mean number of off-sale alcohol outlets per community area, obtained from the Chicago Licensing Department in 2002; (b) commercial alcohol accessibility, tested directly in 2002 (Komro et al., 2008); and (c) average number of alcohol advertisements within 1,500 feet of each school per community, assessed in the spring of 2003 (Pasch et al., 2007, 2009). Census 2000 data for each community were retrieved, as were indicators of school-level academic achievement, attendance, and pupil composition.

Measures

Neighborhood context

Neighborhood strength: Five items from the community leader survey comprised 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 α = .70; range: 5–25). Response options were 1 = *low,* 3 = *medium,* and 5 = *high,* with higher scores indicating greater neighborhood strength (Komro et al., 1999, 2008).

Neighborhood and police preventive action: Nine items from the community leader survey comprised a scale of neighborhood and police preventive action: "How would you rate police involvement in the 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?" ". . . if a business served or sold alcohol to minors, the business would be cited by an enforcement agency?" ". . . if an adult provided alcohol to minors, the adult would be cited or ticketed by police?" and ". . . a minor who was in possession of alcohol would be cited or ticketed by police?" (Cronbach's α = .89; range: 9–45). Response options were in the form of a five-option scale ranging from

very little involvement/not at all good/not at all likely to *a great deal of involvement/very good/very likely.* Higher scores indicated more neighborhood and police preventive action (Komro et al., 1999, 2008).

Perceived neighborhood problems: Seven items from the parent survey comprised a scale of perceived neighborhood problems: "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 $\alpha = .93$; range: 7–35). Response options were 1 = *not a problem,* 3 = *a minor problem,* and 5 = *a serious problem.* Higher scores indicated greater perceived neighborhood problems (Centers for Disease Control and Prevention, 1998).

School strength: School strength was described by a measure of "value-added" education (Aveyard et al., 2004; Markham et al., 2008). This was derived from standardized residuals of regression equations predicting school-level academic achievement and attendance from students' sociodemographic profiles (Tobler et al., 2011). Seven study schools (n = 335 students) were "value-added" because their school-level attendance/achievement was better than expected given the student composition, 5 study schools (n = 266 students) were "value-attenuated" because the school-level attendance/achievement was worse than expected given the student composition, and 49 schools (n = 3,426 students) were "normative."

Exposure to alcohol advertisements: A count of alcohol advertisements within 1,500 feet of study schools was obtained in 2003 (Pasch et al., 2007, 2009). The location of each ad was documented with a global positioning system. Street maps with a 1,500-foot radius around each school were created using ArcView GIS. The average number of advertisements around schools within each community area was obtained by dividing the total number of advertisements in each community by the total number of schools within each community.

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 by the total population for each community.

Commercial accessibility of alcohol: Commercial accessibility of alcohol was tested directly using a standardized protocol (Komro et al., 2008). Two purchase attempts were conducted at each randomly selected off-sale alcohol outlet (n = 326 outlets, n = 652 attempts). The purchase success rate was obtained by dividing the number of successful attempts by the total number of attempts for each community.

Area deprivation: An area deprivation index was created using 17 Census 2000 indicators: 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. Creation of this scale was based on procedures described by Singh (2003) and is detailed elsewhere (Tobler et al., 2009a, 2009b). This scale displayed good internal consistency (Cronbach's $\alpha = .87$), with higher scores indicating greater deprivation.

Home and family management practices

Home alcohol access: Three items from the student survey assessed the accessibility of alcohol from homes/parents (Donovan et al., 1985; Johnston et al., 1989; Klepp et al., 1987; Minnesota Department of Education, 1989; Williams et al., 1995): "How hard would it be for you to . . ." ". . . obtain alcohol from your parent?" and ". . . take it from your home?" Response options included *hard, in-between,* and *easy.* One item asked students to provide the source for 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* was the response option included.

Parental monitoring/communication: Five items from the student survey assessed 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 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* (Komro et al., 2004a, 2008).

Alcohol-specific communication: This variable was assessed with four items from the student survey: "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* (Perry et al., 1993, 2000).

Intrapersonal beliefs and peer alcohol use

Alcohol use norms: Six items from the student survey comprised a scale assessing alcohol use norms: "How many of your friends drink alcohol?" "How many people your

age will drink alcohol by the time they are seniors in high school?" "How many adults in your neighborhood drink alcohol?" "Kids who drink alcohol are more grown-up. Do you . . ." "Kids who drink alcohol have more friends. Do you . . ." and "Drinking alcohol lets you have more fun. Do you. . . ." Response options ranged from *none/strongly disagree* to *almost all/strongly agree* (Cronbach's $\alpha = .72$; range: 6–30). Higher scores indicated greater norms favorable to use (Donovan et al., 1985; Johnston et al., 1989; Oetting et al., 1984; Williams et al., 1995).

Alcohol use expectancies: Expectancies were assessed with an 11-item scale from the student survey. Five items assessed outcome expectations: "If you were to drink alcohol, do you think you would . . ." ". . . get sick or hurt?" ". . . get in trouble at school?" ". . . get in trouble with the police?" ". . . lose a friendship?" ". . . get in trouble with your parent or guardian?" Response options were *yes*, *maybe yes*, *not sure*, *maybe no*, and *no*. Six items assessed reasons not to use alcohol: "Your parent or guardian has rules against alcohol use by people your age"; "If you use alcohol, it would hurt your reputation or make you look bad"; "You would be breaking school rules"; "You want to be able to make your own decisions and not give in to peer pressure"; "Your friends don't use alcohol"; and "You don't want to be influenced by what you see on TV or in movies." Response options were *this is an important reason for you not to use alcohol*, *this is not an important reason for you*, and *you're not sure* (Cronbach's $\alpha = .78$; range: 11–43). Higher scores indicated expectancies favorable to use (Komro et al., 2004a).

Alcohol use resistance self-efficacy: Five items from the student survey comprised a scale assessing resistance self-efficacy: "How sure are you that you could say 'no' if you were offered alcohol . . ." ". . . by a friend?" ". . . by a boyfriend or girlfriend?" ". . . at a party or dance?" ". . . by older kids?" ". . . by an adult?" Response options were *could say "no," not sure*, and *could not say "no"* (Cronbach's $\alpha = .85$; range: 5–15). Higher scores indicated lower resistance self-efficacy (Klepp et al., 1987; Williams et al., 1995).

Deviant peer associations: This variable was assessed with two items from the student survey: "During the last month, how many times have your friends asked you to drink alcohol?" and "During the last month, how many times have your friends asked you to get drunk?" Response options included *never, 1–3 times,* and *4 or more times* (Perry and Grant, 1988; Williams et al., 1995).

Alcohol use. Student alcohol use was assessed with five items: "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 alcohol beverages to drink?" "Think back over the last 2 weeks, 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 got 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 heavy episodic use and ever been drunk items included *never, once, twice, three to five times, six to nine times,* and *ten or more times* (Johnston et al., 2011).

Analytical strategy

Structural equation modeling in Mplus (Muthén and Muthén, 2010) was used to assess direct and indirect relations of neighborhood context during 6th grade, home alcohol access and protective family management in 7th grade, deviant peer affiliations and beliefs favorable to alcohol use in 8th grade, and alcohol use in 12th grade. Analyses were done in two phases. First, measurement models determined relationships between observed variables and underlying latent constructs. Confirmatory factor analysis for complex survey data was used on the combined sample of African Americans and Hispanics because measurement models were invariant across race/ethnicity (Δ comparative fit index [CFI] = .01, Δ Tucker–Lewis index [TLI] = .01; Cheung and Rensvold, 2002), and the composition of the factors had been investigated previously (Komro et al., 2008; Tobler et al., 2009b). Tests for measurement invariance were conducted using the multigroup functionality in Mplus. Four measurement models were fit, one per time point. All available data were used, with analysis samples ranging from 1,989 to 4,027.

The second analysis phase tested structural models specifying hypothesized causal relationships. Models were built separately for African Americans and Hispanics because there was significant structural variance across race/ethnicity (ΔCFI = .06, ΔTLI = .06; Cheung and Rensvold, 2002) but not gender (ΔCFI = .01, ΔTLI = .01; Cheung and Rensvold, 2002). Structural models were built in stages, separately for African Americans and Hispanics, which followed temporal ordering of hypothesized relationships, where relations were modeled between (a) baseline characteristics and home and family management practices in 7th grade; (b) baseline characteristics, home and family management practices in 7th grade, and deviant peer affiliations and beliefs favorable to use in 8th grade; and (c) baseline characteristics, home and family management practices in 7th grade, deviant peer affiliations and beliefs favorable to use in 8th grade, and alcohol use in 12th grade. Variables were allowed to correlate within each time. Pathways and correlations that were not significant (i.e., $p > .10$), or whose inclusion did not improve model fit, were trimmed at each stage. All estimates found significant at any prior stage were retained, regardless of the change in significance in subsequent stages. Paths were estimated while controlling for treatment group assignment,

TABLE 1. Standardized factor loadings and fit indices for measurement models

Item	Model 1 (n = 4,027)		Model 2 (n = 2,562)		Model 3 (n = 2,609)		Model 4 (n = 1,989)
	Neighborhood and school strength	Alcohol use	Home alcohol access	Protective family management	Deviant peer affiliations	Beliefs favorable to use	Alcohol use
Neighborhood context							
Perceived neighborhood strength	.750						
Neighborhood and police preventive action	.761						
Perceived neighborhood problems	.309						
School strength	.254						
Home and family management							
Last time drank, received alcohol from parent			.187				
Easy to get alcohol from parent			.641				
Easy to get alcohol from home			.750				
Parent ask about school				.591			
Parent praise when do a good job				.549			
Eat dinner with parent				.455			
Parent ask who with				.453			
Parent/child conversations				.577			
Parent talk about problems alcohol can cause				.805			
Parent talk about family rules against drinking				.728			
Parent talk about consequences of drinking				.739			
Parent talk about influence of ads/commercials				.603			
Deviant peer affiliations							
Past month, how often friends asked to drink					.902		
Past month, how often friends asked to get drunk					.839		
Beliefs favorable to use							
Normative estimates and expectations						.807	
Outcome expectancies						.593	
Self efficacy						.535	
Alcohol use							
Past-year alcohol use		.765					.858
Past-month alcohol use		.833					.987
Past-week alcohol use		.681					.824
Heavy episodic use		.697					.709
Ever drunk		.527					.536
Fit indices							
CFI	.945		.925		.995		.954
TLI	.924		.906		.986		.908
RMSEA	.019		.064		.037		.101
SRMR	.021		.039		.015		.034

Notes: Other neighborhood contextual items (exposure to alcohol advertisements, off-sale alcohol outlet density, commercial alcohol accessibility, and area deprivation) did not load sufficiently with the two identified factors or with each other in Model 1; therefore, each was included separately in structural models. CFI = comparative fit index; TLI = Tucker–Lewis index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual.

although treatment was not significantly related to alcohol use outcomes or other hypothesized mediators (Komro et al., 2008). Indirect effects were calculated as a product of 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 standard errors of indirect effects.

The fit of measurement and structural models was assessed with four goodness-of-fit indices: CFI, TLI, root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR). CFI and TLI values greater than .90 indicate reasonably good model fit (Hu and Bentler, 1999); RMSEA values less than or equal to .05 indicate close approximate fit, values between .05 and .08 suggest reasonable fit, and values greater than or equal to .10 suggest poor model fit; and SRMR values less than .10 are considered adequate (Kline, 2005).

Missing data

African American and Hispanic youth who completed at least one survey while in 6th, 7th, 8th, or 12th grade were eligible for inclusion (n = 4,027; cohort follow-up rate 53%). Maximum likelihood estimation was used to estimate all parameters, which is one of two recommended approaches for analyses with missing data (Schafer and Graham, 2002). Data were assumed missing at random. Maximum likelihood estimation in Mplus models missingness as a function of both observed covariates and outcomes (Muthén and Muthén, 2010). Under this assumption, parameter estimates are unbiased. Students lost to follow-up were more likely to report heavy episodic alcohol use, $t(2920) = 2.09$, $p = .037$, and having ever been drunk, $t(2918) = 2.16$, $p = .031$, at baseline than those with data in 12th grade. There were no significant differences between those lost to follow-up and

those with data in 12th grade across past-week alcohol use, past-month alcohol use, past-year alcohol use, socioeconomic status, race/ethnicity, or family composition. Students whose parents completed surveys at baseline reported less heavy episodic alcohol use in 12th grade than those whose parents did not complete a survey, $t(1794) = 2.51$, $p = .012$. There were no statistically significant differences between those with and without parental data across other alcohol use items, socioeconomic status, or family composition.

Results

Measurement models

Four measurement models were fit to verify the factor structure at each time (Table 1). At baseline, two factors, "neighborhood and school strength" and "alcohol use," adequately fit the data (CFI = .945; TLI = .924; RMSEA = .019; SRMR =.021). At 7th grade, two factors, "home alcohol access" and "protective family management practices," adequately fit the data (CFI = .925; TLI = .906; RMSEA = .064; SRMR = .039). At 8th grade, two factors, "deviant peer affiliations" and "beliefs favorable to use," adequately fit the data (CFI = .995; TLI = .986; RMSEA = .037; SRMR = .015). At 12th grade, one factor, "alcohol use," adequately fit the data (CFI = .954; TLI = .908; RMSEA = .101; SRMR = .034; see Table 1 for items comprising these factors).

Structural models

Final structural models are shown in Figures 2 and 3. Fit indices indicated good representation of the data for African

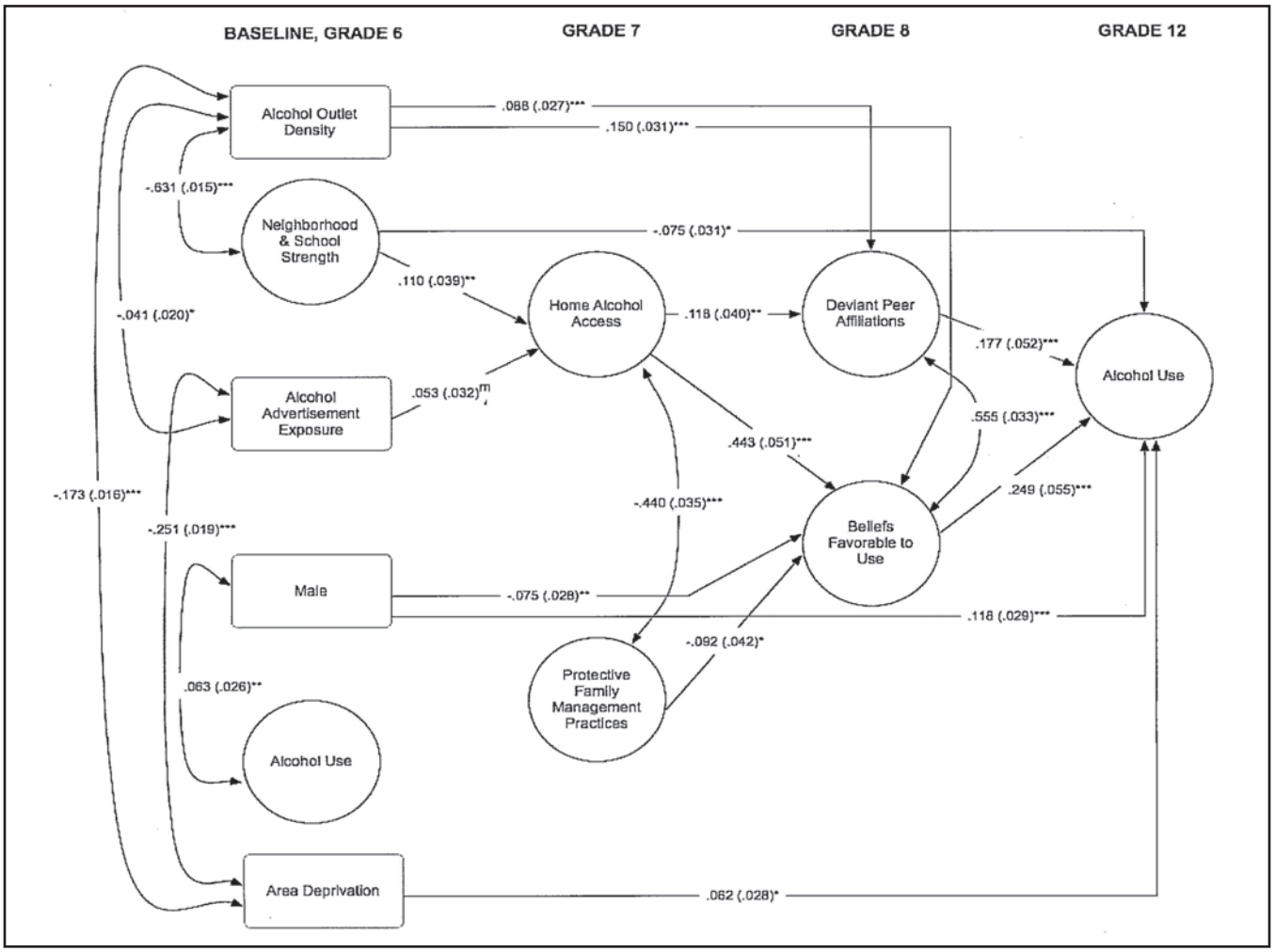

FIGURE 2. African American structural model depicting standardized paths among neighborhood context, home and family management practices, deviant peer affiliations and intrapersonal beliefs, and alcohol use in young adulthood (nonsignificant paths have been removed for simplicity). Estimates are standardized and controlled for treatment-group assignment. Standard errors are in parentheses. Curved lines represent residual correlations (r) and straight lines represent regression paths (β). Comparative fit index = .937; Tucker–Lewis index = .930; root mean square error of approximation = .028; standardized root mean square residual = .038.

[m].05 ≤ p ≤ .10; *p < .05; **p ≤ .01; ***p ≤ .001.

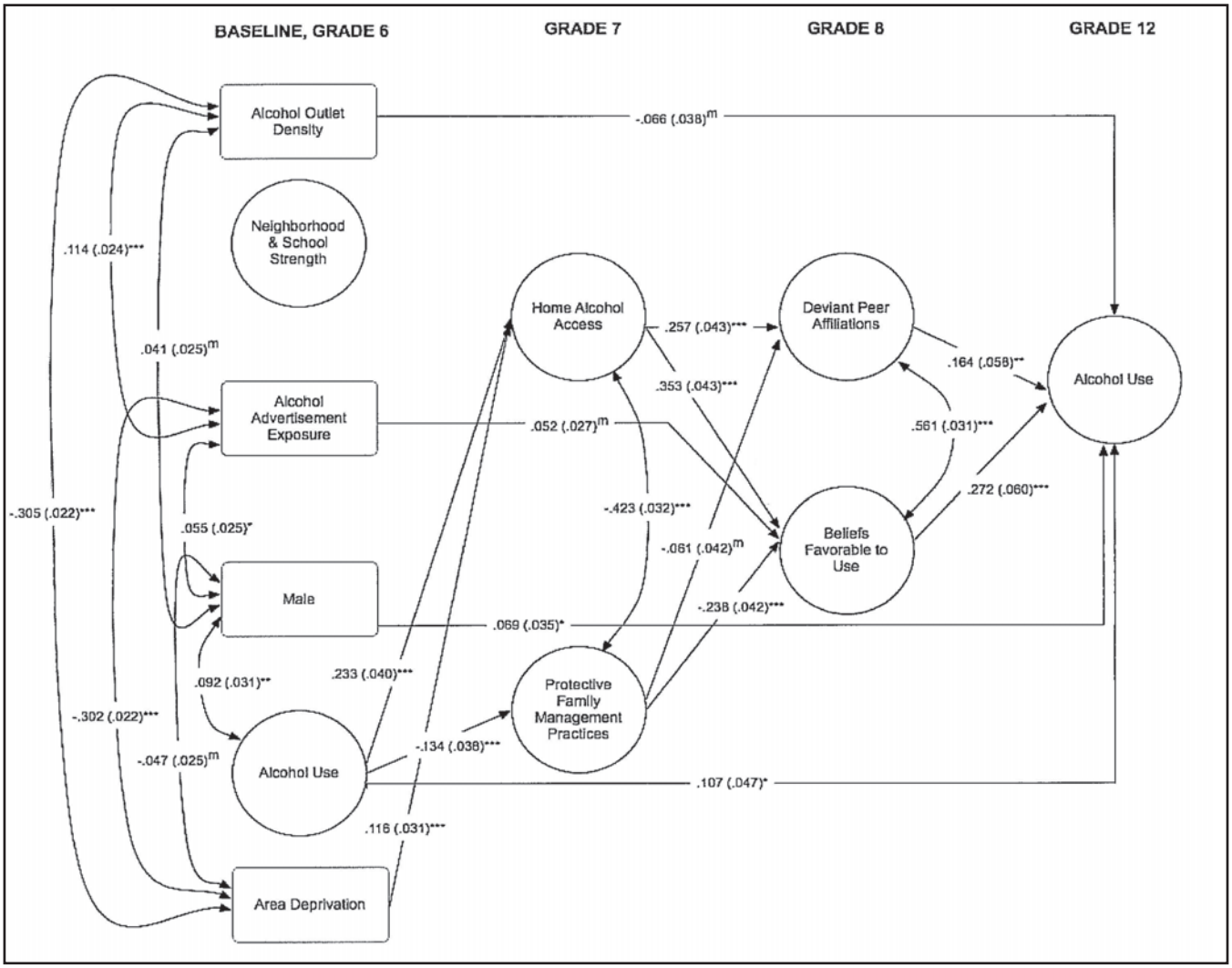

FIGURE 3. Hispanic structural model depicting standardized paths among neighborhood context, home and family management practices, deviant peer affiliations and intrapersonal beliefs, and alcohol use in young adulthood (nonsignificant paths have been removed for simplicity). Estimates are standardized and controlled for treatment-group assignment. Standard errors are in parentheses. Curved lines represent residual correlations (r) and straight lines represent regression paths (β). Comparative fit index = .918; Tucker–Lewis index = .908; root mean square error of approximation = .036; standardized root mean square residual = .048.
m.05 ≤ p ≤ .10; *p < .05; **p ≤ .01; ***p ≤ .001.

Americans (CFI = .937; TLI = .930; RMSEA = .028; SRMR = .038) and Hispanics (CFI = .918; TLI = .908; RMSEA = .036; SRMR = .048). When considering other neighborhood constructs, commercial alcohol access did not have any significant correlations or direct/indirect effects on any constructs in either model. Therefore, it was subsequently excluded.

African Americans. Significant correlations among latent and manifest variables were observed. At baseline, alcohol outlet density was negatively associated with neighborhood and school strength (r = -.631, p < .001), alcohol advertisement exposure (r = -.041, p < .05), and area deprivation (r = -.173, p < .001); alcohol advertisement exposure was negatively associated with area deprivation (r = -.251, p < .001); and alcohol use was positively associated with being male (r = .063, p < .01). At 7th grade, home alcohol access was negatively associated with protective family management practices (r = -.440, p < .001), and deviant peer affiliations and beliefs favorable to use were positively correlated in 8th grade (r = .555, p < .001).

Neighborhood and school strength at baseline was positively associated with home alcohol access in 7th grade (β = .110, p < .01). Alcohol outlet density was positively associated with both deviant peer affiliations and beliefs favorable to use in 8th grade (β = .088, p < .001, and β = .150, p < .001, respectively). Area deprivation and being male were positively associated with alcohol use in 12th grade (β = .062, p < .05, and β = .118, p < .001, respectively), whereas

neighborhood and school strength showed a negative association (β = -.075, $p < .05$).

Home alcohol access in 7th grade was positively associated with deviant peer affiliations and beliefs favorable to use in 8th grade (β = .118, $p < .01$, and β = .443, $p < .001$, respectively), whereas protective family management was negatively associated with beliefs favorable to use (β = -.092, $p < .05$). Both deviant peer affiliations and beliefs favorable to use in 8th grade were positively associated with alcohol use in 12th grade (β = .177, $p < .001$, and β = .249, $p < .001$, respectively).

Tests for indirect effects suggested that home alcohol access, deviant peer affiliations (β = .002, $p = .079$), and beliefs favorable to use (β = .012, $p = .020$) partially mediated the association between neighborhood and school strength at baseline and alcohol use in 12th grade (indirect effect = .014, $p = .013$; total effect = -0.061, $p = .055$). Effects of gender on alcohol use in 12th grade were partially mediated by beliefs favorable to use in 8th grade (indirect effect = -.019, $p = .018$; total effect = 0.101, $p < .001$). Effects of alcohol outlet density at baseline on alcohol use in 12th grade were mediated entirely by beliefs favorable to use (β = .037, $p = .001$) and deviant peer affiliations (β = .016, $p = .017$). Likewise, effects of protective family management in 7th grade on alcohol use in 12th grade were mediated entirely by beliefs favorable to use in 8th grade (β = -.023, $p = .05$) and effects of home alcohol access in 7th grade on alcohol use in 12th grade were mediated entirely by deviant peer affiliations (β = .021, $p = .026$) and beliefs favorable to use (β = .110, $p < .001$).

Hispanics. Significant correlations among latent and manifest variables were observed among Hispanics. At baseline, alcohol outlet density was negatively associated with area deprivation ($r = -.305$, $p < .001$) and positively associated with alcohol advertisement exposure ($r = .114$, $p < .001$); alcohol advertisement exposure was negatively associated with area deprivation ($r = -.302$, $p < .001$) and positively associated with being male ($r = .055$, $p < .05$); and being male was positively associated with baseline alcohol use ($r = .092$, $p < .01$). In 7th grade, home alcohol access was negatively associated with protective family management ($r = -.423$, $p < .001$). In 8th grade, deviant peer affiliations were positively associated with beliefs favorable to use ($r = .561$, $p < .001$).

Alcohol use at baseline was positively associated with home alcohol access (β = .233, $p < .001$) and negatively associated with protective family management practices (β = -.134, $p < .001$) in 7th grade. Area deprivation at baseline was positively associated with home alcohol access in 7th grade (β = .116, $p < .001$). Alcohol use at baseline and being male were positively associated with 12th-grade alcohol use (β = .107, $p < .05$, and β = .069, $p < .05$, respectively).

Home alcohol access in 7th grade was positively associated with deviant peer affiliations and beliefs favorable to use in 8th grade (β = .257, $p < .001$, and β = .353, $p < .001$, respectively). Likewise, protective family management practices were negatively associated with beliefs favorable to use (β = -.238, $p < .001$) in 8th grade. Both deviant peer affiliations and beliefs favorable to use in 8th grade were positively associated with alcohol use in 12th grade (β = .164, $p < .01$, and β = .272, $p < .001$, respectively).

Tests for indirect effects suggested that the effect of baseline alcohol use on use in 12th grade was enhanced by home alcohol access, deviant peer affiliations, and beliefs favorable to use (indirect effect = .042, $p < .001$; total effect = .150, $p = .001$). Effects of alcohol advertisement exposure on alcohol use in 12th grade were entirely mediated through beliefs favorable to use in 8th grade (β = .014, $p = .076$). Effects of area deprivation at baseline were entirely mediated by home alcohol access, deviant peer affiliations (β = .005, $p = .034$), and beliefs favorable to use (β = .011, $p = .006$) in 8th grade. Likewise, effects of home alcohol access in 7th grade on alcohol use in 12th grade were entirely mediated by deviant peer affiliations (β = .042, $p = .011$) and beliefs favorable to use (β = .096, $p < .001$) in 8th grade. Effects of protective family management practices in 7th grade on alcohol use in 12th grade were entirely mediated by beliefs favorable to use in 8th grade (β = -.065, $p < .001$).

Discussion

This study examined similarities and differences in direct and indirect relations between neighborhood context, home and family management practices, deviant peer affiliations, beliefs favorable to use, and alcohol use among inner-city, low-income, African American and Hispanic youth. Although measurement components did not differ across race/ethnicity or gender, structural relationships varied across race/ethnicity (but not gender). In structural models, which controlled for treatment group assignment, two key differences emerged. First, influences of neighborhood and individual characteristics at baseline differed. Among African Americans, neighborhood and school strength emerged as an important protective factor, having both direct and indirect effects on alcohol use in 12th grade, whereas it had no significant effects among Hispanics. Also, among African Americans, alcohol outlet density was a significant risk factor for deviant peer affiliations and beliefs favorable to use in 8th grade (and, indirectly, alcohol use in 12th grade), whereas it showed a marginally significant protective effect for alcohol use in 12th grade among Hispanics. Further, among Hispanics, alcohol use at baseline was an important predictor of alcohol use in 12th grade, having both direct and indirect effects, whereas no significant effects were observed among African Americans. This may be reflective of earlier initiation and higher rates of alcohol use among Hispanic adolescents (Johnston et al., 2010). Second, where similarities existed, there were differences in magnitudes of effect. Notably, effects of home alcohol access on deviant

peer affiliations were twice as large for Hispanics as for African Americans, whereas effects on beliefs favorable to use were larger for African Americans. Also, beneficial effects of protective family management practices were twice as large for Hispanics as for African Americans. These differences may reflect differences in cultural contexts. Hispanic adolescents may experience lower levels of parental monitoring/communication as a result of acculturation gaps, which may lead to higher rates of deviant peer affiliations and alcohol use (Coatsworth et al., 2002; Gil et al., 2000; Szapocznik et al., 2002). Although parental engagement in preventing alcohol use is important for all, it appears particularly so for Hispanic adolescents.

There were also important similarities. First, in both groups, we found significant, and sizeable, correlations among the neighborhood contextual, home and family management, and peer and intrapersonal factors, suggesting that to maximize benefit, preventive efforts should be multifaceted and address several community, family, and intrapersonal factors that contribute to use. Next, although there were divergences in paths, alcohol advertisement exposure, gender, and area deprivation at baseline and home alcohol access in 7th grade all indirectly increased risk for alcohol use in 12th grade. Likewise, for both races/ethnicities, deviant peer affiliations and beliefs favorable to use in 8th grade increased the risk for alcohol use in 12th grade. Results from tests for indirect effects highlight commonalities in the importance of preventing home alcohol access, deviant peer affiliations, and beliefs favorable to use as well as the importance of promoting protective family management practices to minimize effects of early exposure to contextual risk factors on alcohol use in emerging adulthood.

Two estimates were opposite to that hypothesized: (a) among African Americans, increases in neighborhood and school strength were associated with increases in home alcohol access; and (b) among Hispanics, increases in alcohol outlet density were marginally associated with lower alcohol use in 12th grade. Socioeconomic status could be one plausible explanation for the first—higher-income communities may have greater neighborhood and school strength, and higher-income homes may be more likely to have alcohol at home (Cerdá et al., 2010; Substance Abuse and Mental Health Services Administration, 2010). For the second, literature on effects of off-sale alcohol outlet density generally suggests that greater alcohol outlet density is associated with increased alcohol consumption and related harms (Campbell et al., 2009). The marginally significant association in the opposite direction reported here may be because of inadequate statistical power and should be interpreted with caution.

This study had limitations. First, the sample was low-income African American and Hispanic youth residing in Chicago, Illinois. More studies are needed to examine these relations across other racial/ethnic groups and contexts. Second, given the complexity of models and sample sizes, we did not conduct independent exploratory and confirmatory analyses. Third, although the sample was quite large, we did not have sufficient power to test for invariance by race and gender simultaneously. Such a test may indicate gender differences that were not detectable here. Lastly, measures of neighborhood context, home, and intrapersonal factors used do not represent the universe of characteristics that may influence alcohol use. Although constructs considered represent multiple domains of influence (Flay and Petraitis, 1994; Wagenaar and Perry, 1994) and are more comprehensive than those typically examined, future studies may consider influences of additional community, home, and intrapersonal measures.

Limitations notwithstanding, this study contributes to the limited literature examining the similarities and differences in multidimensional etiology of alcohol use among urban, racial/ethnic–minority youth. Further, it does so using longitudinal data collected from multiple sources. Findings suggest that efforts to improve neighborhood and school strength may be particularly important in preventing alcohol use among African Americans, and preventing early onset of alcohol use among Hispanics may be critical to preventing subsequent use. Both races/ethnicities would benefit particularly from reductions in access to alcohol at home and improvements in parental monitoring and communication, as well as reductions in deviant peer affiliations and beliefs favorable to use. Preventive efforts may wish to focus on neighborhood deprivation, exposure to alcohol advertisements, and home risks and protective factors because they have direct and indirect effects on intrapersonal factors and alcohol use.

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