NEIGHBORHOOD CONTEXT AND ALCOHOL USE AMONG URBAN, LOW-INCOME, MULTI-ETHNIC, YOUNG ADOLESCENTS

By

AMY L. TOBLER

A DISSERTATION PRESENTED TO THE GRADUATE SCHOOL OF THE UNIVERSITY OF FLORIDA IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

UNIVERSITY OF FLORIDA

2009
ACKNOWLEDGEMENTS

This study was funded by grants from the National Institute on Alcohol Abuse and Alcoholism and National Center on Minority Health and Health Disparities (R01 AA013458; R01 AA016549), awarded to Dr. Kelli A. Komro. I thank Karen Alfano, MBA, for survey design and management of data collection, Kian Farbakhsh, M.S., for database design and management, and Cheryl Perry, Ph.D., for her overall contributions to the PNC study. I also gratefully acknowledge the participation of students, parents and community leaders in the Project Northland Chicago trial.

I express many thanks to my doctoral committee, Drs. Robert Weiler, Kelli Komro, Mildred Maldonado-Molina, Steven Pokorny and Dennis Thombs, for their guidance and support throughout my course of study and completion of this work. It has been a pleasure to work with, and learn from, them. I appreciate their dedication to making me a better scientist and providing me the freedom and encouragement to tackle new projects and statistical methods. I am better personally and professionally for having worked with them.

I am grateful to Drs. Kelli Komro and Alexander Wagenaar for hiring and embedding me in an environment rich with ideas and determination to use the best science to make a difference in the lives of individuals and communities at-large. They both inspired me to pursue this course and I am deeply thankful for their support and encouragement. It has been a tremendous opportunity to learn from the best, in such a healthy, productive environment. They are outstanding people and I am thankful to know them. I look forward to many years of continued work and collaboration!

I am thankful to my parents, who instilled in me a desire for excellence in every pursuit and an understanding of the importance of higher education. Their support and encouragement have helped me get this far, and will continue to sustain me as I move forward. I am grateful for
the foundation they provided and hope that I have, and will continue to make them proud. I am thankful for my “little” brother and sister, Braden and Greer, who have inspired me to do what I can to make life a little easier for adolescent youth. I admire them both for who they are and the trials they have overcome in their lives. I thank my twin sister, Ashley; I am grateful each day that from the beginning we have been able to make our journey through life together. She has pushed me to do and be better and is always a great source of support. I treasure her friendship and will always be thankful that she did not go to FSU.

I must acknowledge the great blessings I have received from my Heavenly Father, who is helping me do more with my life than I could have ever done alone. I have been blessed with many opportunities to learn and grow and I am thankful for each. My hope is that I can use what I have been given to make a difference in the world around me.

Lastly, I must acknowledge my best friend, and husband, Jeff. He has been my greatest source of love, support and encouragement. He was always willing to listen to me talk about my triumphs and troubles, even when he did not understand them. He knew I was having trouble with my statistical models and that was enough. I appreciate his sense of humor and love for a good time, always keeping me grounded and focused on what is really important. I am thankful that he loves me for (or in spite of) my ambition and does not expect anything less from me. I share this accomplishment with him and look forward to all that we will accomplish together in the years to come.
TABLE OF CONTENTS

ACKNOWLEDGEMENTS .................................................................................................................. 3

LIST OF TABLES .......................................................................................................................... 9

LIST OF FIGURES ....................................................................................................................... 10

ABSTRACT .................................................................................................................................. 11

CHAPTER

1 BACKGROUND AND SIGNIFICANCE ....................................................................................... 13

   Prevalence of Alcohol Use Among Youth in the United States .................................................. 13
      Prevalence of Alcohol Use among Racial/Ethnic and Gender Subgroups ................................. 14
      Prevalence of Alcohol Use among Ethnic Minority Youth in Chicago, Illinois ..................... 15
      Prevalence of Alcohol Use among the Project Northland Chicago Sample ............................ 15

   Consequences of Adolescent Alcohol Use ................................................................................ 16
      Immediate Consequences ....................................................................................................... 16
      Distant Consequences ........................................................................................................... 19

   Etiology of Adolescent Alcohol Use .......................................................................................... 21
      Proximal, Distal and Ultimate Risk and Protective Factors ...................................................... 22
      Limitations of Current Knowledge ....................................................................................... 26

   Theoretical Foundation .............................................................................................................. 29
      Theory of Triadic Influence .................................................................................................... 30
      Wagenaar and Perry’s Model of Drinking Behavior .................................................................. 31
      Summary of Theoretical Framework ....................................................................................... 31

Innovation of the Study .................................................................................................................. 32

Study Goal, Aims and Research Questions .................................................................................... 33

   Multi-ethnic, Urban Youth’s Exposure to Patterns of Alcohol-related
      Neighborhood Characteristics .................................................................................................. 33

   Effects of Alcohol-related Neighborhood Context on the Trajectories of Alcohol
      Use and Intentions among Young Adolescents ........................................................................ 34

   Relationships between Neighborhood Context, Family Management Practices and
      Alcohol Use among Urban, Multi-ethnic, Young Adolescents ............................................... 35

   Summary ..................................................................................................................................... 35

2 METHODS ................................................................................................................................. 41

   Overview and Research Questions ............................................................................................ 41

   Project Northland Chicago ......................................................................................................... 41
      Study Design .......................................................................................................................... 41
      Intervention ............................................................................................................................ 42
      Data Collection ....................................................................................................................... 42
      Students ..................................................................................................................................... 43
## 5 RELATIONSHIPS BETWEEN NEIGHBORHOOD CONTEXT, FAMILY MANAGEMENT PRACTICES AND ALCOHOL USE AMONG URBAN, MULTI-ETHNIC, YOUNG ADOLESCENTS

### Abstract

Background..................................................................................................................99
Methods .......................................................................................................................99
Results .........................................................................................................................99
Conclusions ................................................................................................................100
Key Words ..................................................................................................................100

### Introduction

Methods .......................................................................................................................104
Design .........................................................................................................................104
Data Collection ..........................................................................................................105
Students .......................................................................................................................105
Parents ........................................................................................................................105
Community leaders ....................................................................................................106
Neighborhood characteristics ....................................................................................106
Measures .....................................................................................................................106
Alcohol-related neighborhood context .......................................................................106
Home and family management practices ..................................................................109
Alcohol use ................................................................................................................110
Analytical Strategy ....................................................................................................110
Missing Data ..............................................................................................................110
Results .........................................................................................................................113
Measurement Models ................................................................................................113
Alcohol-related neighborhood context .......................................................................113
Home and family management practices ..................................................................114
Alcohol use ................................................................................................................114
Structural Model .......................................................................................................114
Discussion ..................................................................................................................116

### 6 DISCUSSION

Measurement Models ................................................................................................113
Alcohol-related neighborhood context .......................................................................113
Home and family management practices ..................................................................114
Alcohol use ................................................................................................................114
Structural Model .......................................................................................................114
Discussion ..................................................................................................................116
APPENDIX

A  2002 STUDENT SURVEY ........................................................................................................132

B  2002 PARENT SURVEY .........................................................................................................148

C  2002 COMMUNITY LEADER SURVEY ..............................................................................156

D  ALCOHOL PURCHASE ATTEMPT PROTOCOL ...............................................................165

E  ALCOHOL ADVERTISEMENT ASSESSMENT DATA COLLECTION AND CODING PROTOCOL ..............................................................................................................176

LIST OF REFERENCES .........................................................................................................192

BIOGRAPHICAL SKETCH ....................................................................................................214
<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1</td>
<td>Prevalence of alcohol use among 8th, 10th and 12th grade youth in the United States, 2007</td>
<td>37</td>
</tr>
<tr>
<td>1-2</td>
<td>Prevalence of alcohol use among 9th to 12th grade youth in Chicago, Illinois, 2007</td>
<td>38</td>
</tr>
<tr>
<td>1-3</td>
<td>Prevalence of alcohol use among youth participating in Project Northland Chicago, 2002-2005</td>
<td>39</td>
</tr>
<tr>
<td>2-1</td>
<td>Summary of research questions, study design and analytic approaches</td>
<td>66</td>
</tr>
<tr>
<td>2-2</td>
<td>Comparison of 66 study schools with average for Chicago Public Schools</td>
<td>67</td>
</tr>
<tr>
<td>2-3</td>
<td>Data used from Project Northland Chicago</td>
<td>68</td>
</tr>
<tr>
<td>2-4</td>
<td>Characteristics of students who completed 1 or more PNC surveys</td>
<td>69</td>
</tr>
<tr>
<td>2-5</td>
<td>Racial/Ethnic distribution (%) among PNC study communities from Census 2000</td>
<td>70</td>
</tr>
<tr>
<td>2-6</td>
<td>Descriptive statistics for measures of deprivation from Census 2000</td>
<td>71</td>
</tr>
<tr>
<td>2-7</td>
<td>Descriptive statistics for neighborhood context measures, 2002</td>
<td>72</td>
</tr>
<tr>
<td>2-8</td>
<td>Frequencies of alcohol use and intentions items T1 – T4 (2002-2005)</td>
<td>73</td>
</tr>
<tr>
<td>2-9</td>
<td>Frequencies of home and family management items T3 (2004)</td>
<td>75</td>
</tr>
<tr>
<td>4-1</td>
<td>Descriptive statistics for variables included in each model</td>
<td>96</td>
</tr>
<tr>
<td>4-2</td>
<td>Time-invariant predictors at age 12 of trajectories of alcohol use and alcohol use intentions from age 12 to 14</td>
<td>97</td>
</tr>
<tr>
<td>4-3</td>
<td>Results from bivariate analyses of individual neighborhood risk/protective items at age 12 as predictors of the trajectories of alcohol use and alcohol use intentions from age 12 to 14 while controlling for baseline levels of intentions/use</td>
<td>98</td>
</tr>
<tr>
<td>5-1</td>
<td>Standardized, geomin-rotated factor loadings and fit statistics for measurement models</td>
<td>121</td>
</tr>
<tr>
<td>Figure</td>
<td>Description</td>
<td>Page</td>
</tr>
<tr>
<td>--------</td>
<td>------------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>1-1</td>
<td>Theoretical framework of direct and indirect relationships between neighborhood context, family management practices and early adolescent alcohol use and intentions.</td>
<td>40</td>
</tr>
<tr>
<td>5-1</td>
<td>Hypothesized structural model.</td>
<td>122</td>
</tr>
<tr>
<td>5-2</td>
<td>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.)</td>
<td>123</td>
</tr>
</tbody>
</table>
This study defined the alcohol-related neighborhood context of a large sample of urban, racial/ethnic minority, young adolescents and examined how this context related to alcohol use. Data were part of a longitudinal, group-randomized controlled trial of an alcohol preventive intervention, which included 42 Chicago community areas. Neighborhood measures included (1) number of alcohol outlets per capita per community area; (2) alcohol purchase attempt rate by pseudo-underage youth; (3) average number of alcohol advertisements per school per community; and (4) a Census 2000-based area deprivation index. Students, parents, and community leaders were also surveyed and provided data on alcohol behaviors, perceived neighborhood problems and support of alcohol policies, and neighborhood strength and preventive action, respectively. Multilevel latent class analysis, mixed effects regression, and multilevel structural equation modeling were used to (1) identify the number and characteristics of heterogeneous latent alcohol-related neighborhood risk classes, (2) determine how membership in these risk classes influenced trajectories of alcohol use, and (3) explore how alcohol-related neighborhood context directly influenced alcohol use and was mediated by protective home and family management practices. Five heterogeneous classes of alcohol-related
neighborhood risk were identified. Among this sample of low-income urban youth, there were no neighborhoods defined as truly low-risk (i.e., high social capital and low exposure and access to alcohol). None of the neighborhood risk classes were significantly associated with the trajectories of alcohol use/intentions relative to the other classes. When considering each neighborhood construct separately, neighborhood strength was negatively, and exposure to alcohol advertisements positively, associated with alcohol use. Neighborhood strength and commercial alcohol access were associated with home alcohol access and protective family management practices. Home alcohol access had a positive association with alcohol use. Home alcohol access may partially mediate the relation between neighborhood strength and alcohol use. Findings 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 among inner-city, adolescent youth.
Alcohol use among youth contributes to a number of deleterious health and social outcomes, including traffic crashes, increased risk for disease, risky sexual behavior, homicides, suicides, crime, unintentional injury (Borowsky, Ireland, & Resnick, 2001; Dunn, Bartee, & Perko, 2003; Greenfeld, 1998; Gyimah-Brempong, 2001; National Highway Traffic Safety Administration, 2005; National Institute on Alcohol Abuse and Alcoholism, 2000; Smith, Branas, & Miller, 1999; Sorenson & Berk, 2001), and is the third leading actual cause of death (i.e., nongenetic, modifiable factor contributing to death; McGinnis & Foege, 1993) in the United States (Mokdad, Marks, Stroup, & Gerberding, 2004). Recent research has shown that exposure to alcohol during adolescence can have detrimental effects on brain development, intellectual capabilities, and increases the likelihood for later addiction (Brown, Tapert, Granholm, & Delis, 2000; Monti et al., 2005). Further, a number of studies provide evidence for increased risk for these problems and earlier age at alcohol initiation (DeWit, Adlaf, Offord, & Ogborne, 2000; Ellickson, Tucker, & Klein, 2003; Guo et al., 2002; McGue, Iacono, Legrand, Malone, & Elkins, 2001; Stueve & O'Donnell, 2005; Warner & White, 2003). Notwithstanding risks, alcohol remains one of the most widely used substances during early- and late-adolescence (Johnston, O'Malley, Bachman, & Schulenberg, 2008).

**Prevalence of Alcohol Use among Youth in the United States**

Despite slight declines in recent years, alcohol clearly remains the most frequently used drug among youth in the United States (Johnston et al., 2008; Table 1-1). In 2007, 39% of 8th-graders used alcohol in their lifetime, 32% used alcohol in the past year and 16% used in the past month (Johnston et al., 2008; Johnston et al., 2008). Heavy, problematic use is also prevalent during early adolescence; 18% of 8th-graders have been drunk in their lifetime, 13% have been
drunk in the past year, and 6% have been drunk in the past month (Johnston et al., 2008). Further, 10% of 8th-graders reported heavy episodic use—having had five or more drinks in a row in the previous two weeks (Johnston et al., 2008). These numbers increase dramatically as youth progress through adolescence, with 72% of youth in 12th grade reporting lifetime alcohol use, 44% reporting current use, 46% having been drunk in the past year, 29% having been drunk in the past month, and 26% reporting heavy episodic use (Johnston et al., 2008).

Prevalence of Alcohol Use among Racial/Ethnic and Gender Subgroups

Important variations in alcohol use exist among racial/ethnic and gender subgroups (Table 1-1; Johnston et al., 2008). For example, Hispanic youth in 8th grade present the highest prevalence of lifetime, annual and past month alcohol use and having been drunk relative to White and African American youth. This pattern persists until the end of high school, when White youth present the highest prevalence in all use categories. The prevalence for African American youth across all categories is consistently the lowest among the racial/ethnic subgroups.

While historically early onset and the prevalence of alcohol use has been higher among boys than girls, recent research has shown that the gender gap has decreased and may, in fact, be non-existent, or in some cases reversed. As shown in Table 1-1, the prevalence of lifetime, annual and past month use and having ever been drunk is consistently higher among adolescent girls than boys (Johnston et al., 2008), with few exceptions, until their senior year of high school. For 12th-grade youth, more frequent, problematic alcohol use (e.g., past month alcohol use and having been drunk) is consistently higher among boys than girls. In 2007, 47% of 12th-grade boys had used alcohol in the past month, compared to 41% of girls. Additionally, by the end of high school, boys have a higher prevalence of having been drunk than girls, such that 47% of
12th-grade boys had been drunk in the past year, compared to 45% of girls; and 32% of boys had been drunk in the past month, compared to 26% of girls (Johnston et al., 2008).

**Prevalence of Alcohol Use among Ethnic Minority Youth in Chicago, Illinois**

Alcohol use among ethnic minority youth in Chicago, Illinois is similar to that among youth nationwide (Table 1-2). Data from the 2007 Youth Risk Behavior Surveillance Survey (YRBSS; Centers for Disease Control and Prevention, 2008) indicate that 71% of 9th through 12th grade youth in Chicago have used alcohol in their lifetime (72% of girls and 71% of boys), 39% have used alcohol in the past month (40% of girls, 37% of boys), and 20% report heavy episodic alcohol use (21% of girls and 19% of boys). Sixty six percent of African American and 80% of Hispanic youth in Chicago have used alcohol in their lifetime, 30% and 47% of African American and Hispanic youth have used alcohol in the past month, respectively, and 12% of African American and 27% of Hispanic youth report heavy episodic alcohol use. The YRBSS reported prevalence for White youth was not available in 2007.

**Prevalence of Alcohol Use among the Project Northland Chicago Sample**

The present study used data from Project Northland Chicago (PNC), a randomized controlled trial of a comprehensive alcohol-preventive intervention for multi-ethnic urban youth (Komro et al., 2004; Komro et al., 2008). A cohort of young adolescents participated in the study, which began when they were in the 6th grade and concluded at the end of their 8th grade year. (See Chapter 2 for further details.) Table 1-3 presents the prevalence of alcohol use among youth who participated in the study. For this cohort of youth, alcohol use is higher among boys in 6th grade for nearly all categories of alcohol use (past month use at the end of 6th grade provides the exception). However, by the time these youth have reached 7th grade, alcohol use among girls meets or exceeds that of boys for all categories of alcohol use. These patterns are similar to those found among youth nationwide (Johnston et al., 2008), as are the patterns across
the racial/ethnic subgroups in the study. Hispanic youth present the highest prevalence across all use categories and all grade years. White youth have the lowest prevalence across all use categories until 8\textsuperscript{th} grade, when they exceed African American youth in all use categories.

**Consequences of Adolescent Alcohol Use**

The extant literature substantiates many immediate consequences of alcohol use among underage youth that include, but are not limited to, increased risk for: criminal activity, alcohol-related traffic crashes, fatalities, and risky driving behavior, unintentional injury, risky sexual behavior, delinquency, and depression. Additionally, alcohol use during adolescence has also been shown to contribute to a number of more distant consequences, such as: diminished neurocognitive functioning, various cancers, cardiovascular disease, increased risk for alcohol abuse and dependence, other illicit drug use, and alcohol-related traffic crashes.

**Immediate Consequences**

A number of studies from the fields of sociology and criminology have found a positive correlation between alcohol and crime (Blount, Silverman, Sellers, & Seese, 1994; Bromley & Nelson, 2002; Greenfeld, 1998; Gyimah-Brempong, 2001; National Institute on Alcohol Abuse and Alcoholism, 2000; Parker, 1993; Parker, 1995; Parker & Cartmill, 1998; Roizon, 1997; Scribner, Cohen, Kaplan, & Allen, 1999; Stitt & Giacopassi, 1992; Valdez, Kaplan, Curtis, & Yin, 1995; Vanoers & Garretsen, 1993; Zhang, Welte, Wieczorek, & Messner, 2000). In an analysis of national, longitudinal data on the prevalence of alcohol involvement in crime, Greenfeld (1998) found that approximately 3 million violent crimes occur each year in which the victim perceived the offender to have been drinking at the time of the offense. Additionally, two-thirds of victims who suffered violence from an intimate partner reported that alcohol had been a factor. Further, among violent offenders, 41\% of probationers, 41\% of those in local jails, 38\% of those in state prisons, and 20\% of those in federal prisons were estimated to have been
drinking when the crime was committed. More recently, Miller and colleagues (2006) estimated that 57% of violent crimes (e.g. rape, robbery, assault, murder), 67% of crimes against children (e.g. physical and sexual abuse), and 58% of property crimes (e.g. larceny, burglary, motor vehicle theft) were attributable to alcohol and other drug use. Moreover, the authors estimate that alcohol-attributable crimes have an economic cost of $84 billion, more than double the estimated $38 billion in costs due to other drug-attributable crimes (Miller, Levy, Cohen, & Cox, 2006).

Alcohol-related traffic crashes, fatalities and risky driving behavior are other serious immediate consequences of alcohol use by youth (National Highway Traffic Safety Administration, 2006; Zakrajsk & Shope, 2006). Car crashes are the leading cause of death for teenagers, and nearly one-quarter of youth in fatal traffic crashes have been drinking (National Highway Traffic Safety Administration, 2006). Further, 30-day prevalence data from the YRBSS indicated nearly 30% of youth in 9th through 12th grade nationwide had ridden in a car driven by someone who had been drinking, and 10% had driven a car after they had been drinking alcohol (Eaton et al., 2005). These intoxicated drivers are not only a danger to themselves, but a considerable danger to others, as nearly half of the people who die in crashes involving an underage drinking driver are people other than the driver (National Highway Traffic Safety Administration, 2005).

Additionally, alcohol is a leading contributor to injury-related deaths. Suicide, homicide, assault, drowning, and recreational injury involve alcohol in one quarter to three quarters of cases (Smith et al., 1999). In a meta-analysis of 331 medical examiner studies published between 1975 and 1995 reporting non-traffic injury fatalities, Smith, Branas and Miller (1999) found that alcohol was involved in 27% of poisonings, 90% of deaths due to hypothermia, 21% of gunshot
fatalities, 42% of deaths due to burns or fire, 63% of fatal falls, and approximately 50% of drowning fatalities, homicides, and suicides. Victims of burns and hypothermia had the highest intoxication levels, followed by drowning, falls, motor vehicle accidents, homicides, and suicides. The authors noted that fewer than 25% of articles reviewed reported gender and age-specific rates; however, their findings clearly illustrate that alcohol is an important factor in many fatal injuries, age notwithstanding.

Alcohol has also been found to influence risky sexual behavior among youth (Cook & Clark, 2005; Dunn et al., 2003; Eaton et al., 2005; Guo et al., 2002; Halpern-Felsher, Millstein, & Ellen, 1996; Poulin & Graham, 2001; Santelli, Brener, Lowry, Bhatt, & Zabin, 1998; Santelli, Robin, Brener, & Lowry, 2001; Shrier, Emans, Woods, & DuRant, 1997; Stueve & O'Donnell, 2005). Data from the 2007 YRBSS show that among the 35% of sexually active youth nationwide, nearly one-quarter drank alcohol before their last sexual intercourse (Centers for Disease Control and Prevention, 2008). Such behavior increases the odds of having unprotected sex (i.e. failure to use a condom), multiple partners, pregnancy and contracting sexually transmitted diseases (Cook & Clark, 2005; Dunn et al., 2003; Guo et al., 2002; Stueve & O'Donnell, 2005). Further, nearly three quarters of “date rape” situations involve individuals who have been drinking (Mohler-Kuo, Dowdall, Koss, & Wechsler, 2004).

Additionally, alcohol use has been found to be significantly associated with delinquency. Findings from the 2003 National Survey on Drug Use and Health (NSDUH) indicate that as the level of alcohol use in the past year among youth aged 12 to 17 increased, so also did the percentage of youth who had (1) gotten into a fight at work or school; (2) participated in a group-against-group fight; (3) attacked someone with the intention to seriously hurt them; (4) stole, or tried to steal, something worth more than $50; (5) sold illegal drugs; and (6) carried a handgun
Similarly, in a study of 2,078 youth aged 14 to 16 years, Best and colleagues (Best, Manning, Gossop, Gross, & Strang, 2006) found that excessive drinking was positively associated with frequent truancy and involvement in delinquent behavior.

Moreover, youth who use alcohol are more likely to be depressed (Best et al., 2006; Windle & Davies, 1999; Zullig, Valois, Huebner, Oeltmann, & Drane, 2001), have reduced life satisfaction (Zullig et al., 2001), and experience academic failure (Grunbaum et al., 2004; Renna, 2007). In a longitudinal study of 975 high school sophomores and juniors, Windle and Davies (1999) found that approximately one-quarter of youth identified as heavy drinking also met the criterion for depression. Further, in a cross-sectional survey of 5,032 high school students, Zullig and colleagues (2001) found that age of alcohol initiation (i.e., younger than 13 years), regular alcohol use and binge drinking among youth were associated with significant reductions in life satisfaction. Lastly, in an analysis of data from the National Longitudinal Survey of Youth (NLSY), Renna (2007) estimated that heavy episodic alcohol use may reduce the probability of graduating high school on-time by as much as 5.2% for girls and 14.5% for boys.

**Distant Consequences**

In addition to immediate consequences, alcohol use during adolescence has been associated with a number of more distant health and social consequences. First, underage alcohol use represents a considerable expense to American society. One estimate of the societal cost of underage alcohol use in the United States is $53 billion annually, attributed to loss of young lives, lost productivity, and health care costs (Pacific Institute of Research and Evaluation, 1999). Moreover, in an estimate of alcohol and other drug-related crime alone, Miller and colleagues (Miller et al., 2006) report that the bill for alcohol and other drug crimes exceeded $205 billion in 1999, attributed to tangible medical, mental health, property loss, future earnings,
public services, adjudication, and sanctioning costs, as well as the value of pain, suffering and lost quality of life.

Second, in recent years, alcohol has been shown to have effects on adolescents’ neurocognitive development and functioning. Using a sample containing 33 alcohol-dependent adolescents matched with 24 adolescents with no history of alcohol or drug problems, Brown and colleagues (2000) found that alcohol-dependent adolescents showed significantly poorer performance on verbal and nonverbal retention, visuospatial functioning, and retrieval of verbal and nonverbal information. Additionally, Monti and colleagues (2005) reported that drinking during adolescence produces: permanent changes in brain physiology; reduced neuronal plasticity; neurocognitive disadvantages; and may make the brain more susceptible for later alcohol dependence.

Third, alcohol use can increase the risk for several cancers, including cancers of the mouth, esophagus, stomach, pancreas, colon and breast (Bagnardi, Biangiardo, La Vecchia, & Corrao, 2001; Corrao, Bagnardi, Zambon, & La Vecchia, 2004; Kune & Vitetta, 1992; La Vecchia & Negri, 1989; Seitz & Poschl, 1997). Additionally, alcohol may increase the risk for cardiovascular disease (Bryant, Schulenberg, O'Malley, Bachman, & Johnston, 2003; Corrao et al., 2004; Corrao, Rubbiati, Bagnardi, Zambon, & Poikolainen, 2000; Rehm, Gmel, Sempos, & Trevisan, 2003) and stroke (Corrao et al., 2004; English et al., 1995).

Lastly, alcohol use during early adolescence has been associated with increased risk for alcohol and other drug abuse and dependence in late adolescence and into adulthood. According to the Gateway Hypothesis (Kandel & Jessor, 2002), alcohol serves as a “gateway” to use of marijuana and other illicit drugs (Jackson, Sher, Cooper, & Wood, 2002; Kandel & Jessor, 2002; Kandel, Yamaguchi, & Chen, 1992; Willner, 2001; Wilson, Battistich, Syme, & Boyce, 2002).
Youth who use alcohol have been found to be at increased risk to initiate smoking (Best et al., 2006; Jackson et al., 2002) and use marijuana and other illicit drugs (Best et al., 2006; Kandel et al., 1992; Willner, 2001; Wilson et al., 2002) relative to those who have not used alcohol during adolescence. Additionally, several studies have shown that adolescents who initiate alcohol use early during adolescence are at increased risk for subsequent use, abuse and dependence into adulthood (Grant et al., 2006; Guo, Collins, Hill, & Hawkins, 2000; Hawkins, Catalano, & Miller, 1992; Hingson, Heeren, & Winter, 2006). One cross-sectional study of 43,093 adults found that relative to respondents who began drinking at age 21 years or older, those who began drinking before age 14 were almost twice as likely to experience alcohol dependence within 10 years of alcohol initiation (Hingson et al., 2006). Those who drink earlier in life are also more likely to report driving after drinking (Hingson, Heeren, Levenson, Jamanka, & Voas, 2002; Hingson, Heeren, Winter, & Wechsler, 2003), being in an alcohol-related traffic crash in adulthood (Hingson et al., 2002; Hingson, Heeren, Winter et al., 2003), and are 3 to 4 times more likely to have been in a fight after drinking (Hingson, Heeren, & Zakocs, 2001).

Etiology of Adolescent Alcohol Use

Given the high rates and considerable consequences associated with alcohol use among adolescents, a substantial body of scientific literature has been devoted to understanding factors associated with initiation of alcohol use among adolescents. The primary theoretical foundation for the present study, the Theory of Triadic Influence (TTI), was used to organize the findings. The TTI (Flay & Petraitis, 1994) is a relatively new meta-theory that incorporates individual- and environmental-level constructs from other social-behavioral theories [e.g. Health Belief Model (Becker, 1974; Janz & Bekcer, 1984), Protection Motivation Theory (Rogers, 1983), Theory of Reasoned Action (Fishbein & Ajzen, 1975), and Theory of Planned Behavior (Ajzen, 1985, 1988)] into a comprehensive model for understanding health behaviors (Flay & Petraitis,
The model organizes proximal, distal, and ultimate factors by three streams of influence: intrapersonal, social and attitudinal.

**Proximal, Distal and Ultimate Risk and Protective Factors**

Proximal factors postulated to influence alcohol use among youth include experiences (i.e. alcohol use expectancies, social reinforcements), intentions, and cognitions (i.e. beliefs about subjective norms, attitudes and self-efficacy regarding alcohol use, perceived accessibility). There is a large, fairly consistent, body of literature substantiating the effects of these proximal factors on alcohol use among adolescent youth. For example, attitudes favorable to alcohol use (Barnow, Schultz, Lucht, Ulrich, & Freyberger, 2004; Bot, Engles, & Knibbe, 2005; Darkes, Greenbaum, & Goldman, 2004; Hawkins et al., 1992; Hipwell et al., 2005; Scheier & Botvin, 1997), poor resistance self-efficacy (Hawkins et al., 1992; Scheier, Botvin, Diaz, & Griffin, 1999; U.S. Department of Health and Human Services, 2000), and beliefs that alcohol use is normative and positive (Aas & Klepp, 1992; Hawkins et al., 1992; U.S. Department of Health and Human Services, 2000) have all been found to be positively associated with alcohol use among adolescents. It is important to note, that most research that has included minority youth has been cross-sectional and has focused on these more proximal influences on behavior.

According to the TTI, distal factors are theorized to cause the proximal factors, having an indirect effect on adolescent alcohol use, as well as affecting the behavior directly. A variety of family and peer factors have been found to influence adolescent alcohol use, both directly and indirectly through the proximal factors noted previously. Alcohol use among family members (Ary, Tildesley, Hops, & Andrews, 1993; Dielman, Butchart, & Shope, 1993; Jackson, Henriksen, & Dickinson, 1999; Yu, 2003), accessibility of alcohol in the home (Jackson et al., 1999; Komro, Maldonado-Molina, Tobler, Bonds, & Muller, 2007), peer use (Callas, Flynn, &
Worden, 2004; Curran, Stice, & Chassin, 1997; D'Amico & McCarthy, 2006; Geckova & van Dijk, 2001; Henry, Slater, & Oetting, 2005; Loveland-Cherry, Leech, Laetz, & Dielman, 1996; Marsden et al., 2005), and family functioning, namely parental monitoring (Alvarez, Martin, Vergeles, & Martin, 2003; Borawski, Ievers-Landis, Lovegreen, & Trapl, 2003; Clark, Thatcher, & Maisto, 2005; Cleveland, Gibbons, Gerrard, Pmery, & Brody, 2005; McArdle et al., 2002; van der Vorst, Engels, Meeus, Dekovic, & Van Leeuwe, 2005), parent/child communication (Kelly, Comello, & Hunn, 2002; Wills, Gibbons, Gerrard, Murry, & Brody, 2003), relationship satisfaction (Ledoux, Miller, Choquet, & Plant, 2002; Nelson, Patience, & MacDonald, 1999; Wills et al., 2003), and supervision (Aizer, 2004; Coley, Morris, & Hernandez, 2004; Richardson, Radziszewska, Dent, & Flay, 1993), have all been shown to be significantly associated with alcohol use among youth, such that alcohol use among family members, increased accessibility of alcohol in the home and increased peer use are associated with increased levels of adolescent alcohol use. Protective family functioning characteristics, such as increased parental monitoring, parent/child communication and relationship satisfaction, typically show an inverse relationship with alcohol use among youth.

According to the TTI, ultimate factors also have direct and indirect effects on behavior, with indirect effects occurring through the distal factors; however, the direct effects for the ultimate, macro-level factors are postulated to be smaller than effects observed for factors more proximal to the adolescent. They represent the broad environment in which youth are embedded and are encompassed by a number of factors that include, but are not limited to, exposure and access to alcohol in the community, extant social capital and the broader cultural norms for alcohol use among youth. Such ultimate factors were the focus of the present study.
Both the number of alcohol outlets in a community, or alcohol outlet density, and the number of alcohol advertisements within communities provide measures of exposure to alcohol outside the home. Such exposure has been found to be disproportionately located in urban, low-income, minority communities (Hackbarth et al., 2001; Pollack, Cubbin, Ahn, & Winkleby, 2005; Treno, Alaniz, & Gruenewald, 2000). For example, a study of 82 neighborhoods in four northern/central California cities found that the most economically disadvantaged neighborhoods had three times the alcohol outlet density than that of the least deprived neighborhoods (Pollack et al., 2005). Further, a study of outdoor alcohol and tobacco advertising in Chicago communities found that low-income and minority communities had significantly more alcohol and tobacco advertisements than communities with White or no-racial-majority communities—at an approximately 3:1 ratio (Hackbarth et al., 2001). Such apparent “targeting” of low-income, ethnic minority populations is not without its consequences. Numerous studies have found significant relations between alcohol outlet densities and outdoor alcohol advertisements and a number of deleterious health and social outcomes, such as increased alcohol consumption and intentions to drink (Collins, Ellickson, McCaffrey, & Hambarsoomians, 2007; Ellickson, Collins, Hambarsoomians, & McCaffrey, 2005; Fleming, Thorson, & Atkin, 2004; Pasch, Komro, Perry, Hearst, & Farbakhsh, 2007; Scribner, Cohen, & Fisher, 2000; Scribner et al., 2007; Snyder, Milici, Slater, Sun, & Strizhakova, 2006; Stacy, Zogg, Unger, & Dent, 2004), violence (Gorman, Labouvie, Speer, & Subaiya, 1998; Gorman, Speer, Labouvie, & Subaiya, 1998; Scribner et al., 1999; Speer, Gorman, Labouvie, & Ontkush, 1998), and traffic crashes (Scribner, Mackinnon, & Dwyer, 1994). Mäkelä and colleagues (Mäkelä, Osterberg, & Sulkunen, 1981; Mäkelä, 2002; Scribner et al., 1994) provide a compelling example, where a 46% increase in liquor-licensed restaurants and a 22% increase in retail monopoly stores in Finland were associated with a 46%
increase in the volume of alcohol consumed, a 63% increase in the frequency of alcohol consumption and a 20% increase in heavy alcohol consumption among individuals aged 15 to 69.

Further, despite existing laws that make it illegal for youth under the age of 21 to purchase alcohol in the United States, underage youth can, and do, purchase it. Studies indicate that underage buyers are able to purchase alcohol without showing age identification in 47-97% of attempts (Forster et al., 1994; Grube, 1997; Paschall, Grube, Black, Flewelling et al., 2007; Preusser & Williams, 1992). Such commercial access to alcohol may contribute to the number of underage youth who use and abuse alcohol (Johnston, O'Malley, Bachman, & Schulenberg, 2007) and represents a considerable risk to healthy adolescent development.

Another ultimate-level construct hypothesized to influence alcohol use and alcohol use intentions among adolescents is extant social capital. Coleman (1994, 2007) describes social capital as a confluence of entities having two common characteristics (1) they consist of a social structure and (2) they facilitate individual and/or collective action within the structure. Further defined, it describes engagement, social trust, and reciprocity and help among neighbors and community organizations which contributes to available tangible and intangible resources (Putnam, 1993; Weitzman & Chen, 2005). Commonly used measures of social capital include neighborhood problems (real and perceived), community activism and strength, and available social (e.g., peer networks, efforts/programs offered by not-for-profit organizations) and economic resources (Szreter & Woolcock, 2004). Research has shown an association between such measures of social capital and a number of health-related outcomes, including self-rated health and health behaviors (Poortinga, 2006), smoking (Siahpush et al., 2006), and mortality (Kawachi, Kenneday, Lochner, & Prothrow-Stith, 1997). Weitzman and Chen (Weitzman &
Chen, 2005) offer hypotheses as to how social capital influences alcohol use and intentions among youth, suggesting that social capital promotes healthy attachment to the community and norms favorable to abstaining from drinking.

Lastly, alcohol enjoys a social sanction unlike any other drug (National Research Council & Institute of Medicine, 2004). Youth are bombarded with media messages depicting alcohol use as normative and positive (Christensen, Henriksen, & Roberts, 2000). Such messages are often reinforced in the communities in which youth reside, and unfortunately, in their homes as well. Alcohol is readily accessible both commercially and socially (Jones-Webb et al., 1997; Wagenaar et al., 1993; Wagenaar et al., 1996) and enforcement of the minimum legal drinking age is modest at best (Wagenaar & Wolfson, 1994). Moreover, 13% to 35% of adolescent youth receive alcohol directly from their parent(s) and 11% to 31% take alcohol from their home for their drinking occasions (Ary et al., 1993; Foley, Altman, Durant, & Wolfson, 2004; Harrison, Fulkerson, & Park, 2000; Jackson et al., 1999; Maisey & Davies, 2003; Marsden et al., 2005; Rossow, Pape, & Storvoll, 2005; Smart, Adlf, & Walsh, 1996; Williams & Mulhall, 2005).

Clearly, youth are receiving detrimental messages about alcohol (i.e. that it is normative and positive) from society as a whole, and from their families as well, when the message that should be sent is, “No for children and teens, moderation for adults, and excessive drinking is taboo for all” (Califano, 2007).

**Limitations of Current Knowledge**

While the literature on the proximal and distal domains that influence adolescent alcohol use is prolific, the ultimate, neighborhood-level influences on alcohol use among adolescents have more often been assumed than empirically examined (Britt, Carlin, Toomey, & Wagenaar, 2005; Duncan, Duncan, & Strycker, 2002; Gibbons et al., 2004; National Institute on Alcohol Abuse and Alcoholism, 2004; Roski et al., 1997; Toumbourou et al., 2007; Wagenaar, Toomey, 2006).
While this gap in the literature is unfortunate, it is certainly understandable, as the relations between such ultimate-level factors and individual behavior are complex, interrelated and require a substantial body of multilevel data whose collection is often restricted by funding and other temporal considerations. However, empirically examining these relations remains important as neighborhood context may be a key predictor of substance use for adolescents. Understanding the unique context in which youth are embedded may lead to the development of more efficacious preventive interventions and policy initiatives to reduce alcohol use among underage youth.

Additionally, relatively few longitudinal studies have been conducted among racial/ethnic minority youth. This is a critical gap in the literature, as census data show that the population in the United States is quickly moving toward a “majority-minority” society. At the time of Census 2000 (U.S. Census Bureau, 2000), three states already had more than 50% “minority” populations (Hobbs & Stoops, 2002; U.S. Census Bureau, 2003). In 2005, the U.S. Census Bureau estimated that nearly half of children under age 5 in the United States were racial/ethnic minorities (U.S. Census Bureau, 2007). Further, African American youth drink alcohol in lower quantities and less frequently than most other racial groups (Substance Abuse and Mental Health Services Administration, 2006); yet, they suffer disproportionately from the physical and social consequences of alcohol use (National Institute on Alcohol Abuse and Alcoholism, 2000). At present, they are the only racial/ethnic group experiencing this paradox (Caetano, Clark, & Tam, 1998; National Institute on Alcohol Abuse and Alcoholism, 2001). The explanations for this paradox are limited; however, Wallace (1999) suggests that the disproportionate distribution of alcohol-related problems are related to the racialized nature of American society which lends to racial/ethnic differences in indicators of socioeconomic status and exposure to contextual,
ultimate-level risk factors. These demographic and social trends, and limited explanation of disproportionate alcohol-related problems, clearly elucidate the importance of understanding the etiology of alcohol use among such growing, at-risk, segments of the United States population, and suggests that alcohol use among these youth may be the result of not only individual characteristics, but also the interaction of environment and cultural contexts (Godette, Headen, & Ford, 2006).

Further, of studies examining alcohol use among ethnic minority youth, most are cross-sectional and have focused on more proximal influences on behavior. One important longitudinal study by Griffin and colleagues (2000) found that their set of proximal risk and protective factors was less predictive of alcohol use among African American and Hispanic youth compared to White youth. They concluded that ultimate-level factors, such as environment and cultural context, may be more important among minority youth, as many minority youth face a myriad of challenges related to their urban environments compared to their rural and suburban counterparts (Griffin et al., 2000). Clearly, more research is needed to determine which proximal, distal and ultimate factors play an important role in drinking behaviors among minority youth, as they may differ from those among White youth (the referent group for much of extant scientific theory).

Moreover, there is a paucity of literature examining African American and Hispanic youth residing in an urban context. African Americans and Hispanics are disproportionately residents of metropolitan cities (U.S. Census Bureau, 2000) and ecological research has shown that many social problems (e.g., crime, delinquency, drug use, public disorder, and school dropout) are significantly clustered in neighborhoods of concentrated poverty, racial heterogeneity and family instability (Coulton, Korbin, Su, & Chow, 1995; Duncan et al., 2002;
Sampson, 1992). As such, urban minority youth are disproportionately at risk for alcohol and other drug use, which has been attributed to a number of factors, such as neighborhood disorder, a sense of hopelessness, psychological distress, increased opportunity for drug use, weaker economic conditions and fewer neighborhood resources (Arkes, 2007; Crum, Lillie-Blanton, & Anthony, 1996; Duncan et al., 2002; Elliott et al., 1996; Hill & Angel, 2005; Karvonen & Rimpela, 1997; Wilson, Syme, Boyce, Battistich, & Selvin, 2005). Thus, examination of the impact of the unique urban environment in which many minority youth reside is warranted.

Lastly, much of the extant literature describing the neighborhood contexts, and subsequent maladaptive behaviors among youth, has relied on either census data (Allison et al., 1999; Chuang, Ennett, Bauman, & Foshee, 2005; Elliott et al., 1996; Galea, Ahern, Tracy, & Vlahov, 2007) or self-report measures (Crum et al., 1996; Gibbons et al., 2004; Hill & Angel, 2005). While informative, such studies fail to capture the multiple dimensions inherent in available social capital, focusing on socioeconomic indicators or neighborhood disorder or dysfunction alone. A more multifaceted approach to describing available social capital among inner-city communities may lend to improved understanding of the context in which many minority youth reside, as well as disparities in health and well-being among urban, minority populations (Fiscella & Williams, 2004).

**Theoretical Foundation**

The present study was guided primarily by the Theory of Triadic Influence (Flay & Petrakis, 1994) and supplemented with Wagenaar and Perry’s Model of Drinking Behavior (Wagenaar & Perry, 1994). These two theories recognize that adolescents are embedded within an environment that influences, and is influenced by, individual behavior. Additionally, these theories assert that a variety of factors at multiple levels of influence (i.e. proximal to ultimate) directly and indirectly influence behavior. Further, both theories were developed in the context
of adolescent substance use and provided the theoretical foundation for the PNC intervention and evaluation. As such, these theories represent a useful framework for examining how more distal, neighborhood-level factors affect adolescent drinking behavior, and if parenting practices may mediate these effects.

**Theory of Triadic Influence**

The Theory of Triadic Influence (Flay & Petraitis, 1994) is a relatively new meta-theory that postulates that health-related behaviors are affected by three streams of influence—environmental (i.e. the macro-environment, or the broad social and cultural environment), social (i.e. the micro-environment, or one’s more immediate social context), and intrapersonal (i.e. one’s biology or personality). Within each of these streams are five “tiers of influence,” ultimate, distal and proximal. The top tier represents ultimate causes of behavior—factors in the environment believed to be the root causes of behavior. The second tier, the social-personal nexus, is where ultimate causes interact to provide personally relevant, but still general, social relationships, knowledge and values, and sense of self- and social competence. In the third tier, termed expectancy-value, the social-personal nexus becomes more specific to a particular behavior. All streams flow into the cognitive (fourth) tier—social normative beliefs, attitudes and self-efficacy. Lastly, the social cognitions on the fourth tier determine the decision/intention to act in a certain way in a particular situation. While the streams of influence are conceptualized as flowing vertically down the tiers of influence, this theory recognizes potential “interstream pathways.” This theory is intended to account for factors that have both direct and indirect effects on behavior and provides a comprehensive approach to understanding the etiology of health-related behaviors.
Wagenaar and Perry’s Model of Drinking Behavior

A model of drinking behavior developed by Wagenaar and Perry (1994) comprehensively considers the antecedents of alcohol use. The authors consider a number of factors at the ultimate, distal and proximal levels. Specifically, broader socio-environmental conditions (i.e. public policy, social/institutional structures, market mechanisms, availability, and social controls) are hypothesized to directly influence drinking behavior, in addition to indirectly influencing behavior via effects on social interactions (e.g. informal social controls, significant others, parents, peers, coworkers) and alcohol cognitions and perceptions. This model highlights the centrality of social interaction and the importance of broader socio-environmental conditions.

Summary of Theoretical Framework

Figure 1-1 presents the theoretical framework for the present study, based on the TTI and Wagenaar and Perry’s model of drinking behavior. Neighborhood risk was characterized by exposure and access to alcohol and extant social capital, defined by perceived neighborhood problems, community preventive efforts, neighborhood strength and deprivation. Also, home and family management was characterized by home alcohol access, alcohol-specific communication, parent/child communication, and parental monitoring. It was hypothesized that the ultimate-level, environmental context (i.e., neighborhood risk) would have both direct and indirect effects on alcohol use, but that the direct effect would be partially mediated by more proximal levels of influence (e.g., home and family management).

Neighborhood risk was conceptualized as having a direct effect on alcohol use, such that higher levels of neighborhood risk would be associated with more alcohol use. Moreover, it was hypothesized that the effect of neighborhood risk on alcohol would be partially mediated through effects on home and family management practices, such that higher levels of neighborhood risk
would be associated with increased protective home and family management practices, which, in turn, would be associated with reduced alcohol use.

While the literature describing the relations between neighborhood risk and home and family management practices is scant and inconclusive, several studies have suggested that protective home and family management practices increase in neighborhoods of greater risk and social disadvantage (Beyers, Bates, Pettit, & Dodge, 2003; Brook, Nomura, & Cohen, 1989; Rankin & Quane, 2002; Tobler, Komro, & Maldonado-Molina, 2007). For example, Rankin and Quane (2002) found that concentrated disadvantage, residential stability and neighborhood collective efficacy were positively associated with parental monitoring, parental involvement and family rules, with the effects of collective efficacy on parental monitoring reaching statistical significance. Further, qualitative research has also suggested such relationships—increased neighborhood protection and parental monitoring strategies in low-income neighborhoods have diluted the deleterious effects of neighborhood risk on child development (Jarrett, 1997).

**Innovation of the Study**

The present study sought to address current limitations in the scientific literature by examining ultimate, neighborhood-level contextual factors that influence adolescent alcohol use, particularly for racial/ethnic minority youth, using multilevel data that had been collected as part of a large, randomized preventive intervention conducted among urban, low-income, multi-ethnic adolescents. Specifically, this study described the contexts of urban, low-income, minority youth and identified both the direct effects of such contexts on alcohol use and alcohol use intentions and indirect effects, mediated by distal-level home and family management practices. This study included (1) longitudinal data from a large sample of urban, poor, minority youth (n=5,812); (2) risk and protective factors measured at different levels (neighborhood, family, peer and individual) and from different sources (observations, leaders, archival, parents,
youth); and (3) use of advanced, state-of-the-science statistical methods to examine the effects of ultimate-level neighborhood factors on alcohol use among adolescents. Specific neighborhood contextual factors under study included: alcohol promotion and accessibility; perceived neighborhood problems; neighborhood strength; preventive action by communities, law enforcement and community organizations; and indicators of poverty and deprivation from Census 2000 (U.S. Census Bureau, 2000). These neighborhood measures were conceptualized as representing exposure and access to alcohol and extant social capital.

**Study Goal, Aims and Research Questions**

The overall goal of the present study was to understand how ultimate-level, neighborhood context influences young adolescent drinking behaviors and intentions directly and indirectly through distal-level, home and family management practices. This goal was accomplished by conducting three distinct investigations through secondary analysis procedures using data from Project Northland Chicago, with the respective findings presented in three papers. Each investigation built upon the one previous and lent to completion of the overall goal.

**Multi-ethnic, Urban Youth’s Exposure to Patterns of Alcohol-related Neighborhood Characteristics**

Much of the extant literature describing the neighborhood contexts of youth, and often subsequent maladaptive behaviors, has relied on either census data (Allison et al., 1999; Chuang et al., 2005; Elliott et al., 1996; Galea et al., 2007) or self-report measures (Crum et al., 1996; Gibbons et al., 2004; Hill & Angel, 2005). This investigation extended the scientific knowledge by providing a unique description of urban communities using several measures of social capital, as well as direct assessments of exposure and access to alcohol, all of which have been substantiated in the scientific literature as risk factors for licit and illicit drug use and other maladaptive behavioral outcomes among youth (Collins et al., 2007; Ellickson et al., 2005;
Specifically, the research questions addressed were (1) How many latent classes are necessary to describe the heterogeneity in neighborhood risk among multi-ethnic young adolescent residents of urban communities? and (2) What are the characteristics and proportions of adolescents residing in the heterogeneous latent neighborhood risk classes? The research questions, and statistical approach used to address them, have not been addressed previously in the literature. As such, no a priori hypotheses were made about the number or characteristics of the heterogeneous neighborhood risk classes.

**Effects of Alcohol-related Neighborhood Context on the Trajectories of Alcohol Use and Intentions among Young Adolescents**

Little is known about the etiology of alcohol use among African American and Hispanic youth residing in inner cities. Likewise, our knowledge of how their unique context influences alcohol use and alcohol use intentions is limited. This investigation addressed these gaps in the literature by examining the primary research question: How does neighborhood context directly influence the trajectories of alcohol use and intentions during early adolescence? The heterogeneous classes of neighborhood risk defined in Paper 1 were used to predict alcohol use and alcohol use intentions over time. We hypothesized that neighborhood risk latent class membership would significantly predict the trajectories of alcohol use and intentions during early adolescence, such that residence in more risky communities would be accompanied by more advanced trajectories of alcohol use and intentions compared to those in lower risk communities. This is consistent with literature suggesting that neighborhood risk is significantly associated
with a number of deleterious health and social outcomes, including alcohol use (Arkes, 2007; Coulton et al., 1995; Crum et al., 1996; Duncan et al., 2002; Elliott et al., 1996; Hill & Angel, 2005; Karvonen & Rimpela, 1997; Sampson, 1992; Wilson et al., 2005).

**Relationships between Neighborhood Context, Family Management Practices and Alcohol Use among Urban, Multi-ethnic, Young Adolescents**

Several studies have suggested small or non-significant direct effects of neighborhood contextual factors on adolescent alcohol use (Duncan et al., 2002; Fulkerson, Pasch, Perry, & Komro, In Press; Lambert, Brown, Phillips, & Ialongo, 2004). It may be that home and family management practices fully or partially mediate the influence of risky environments. This investigation extended the analyses in Paper 2 and our knowledge of the mechanisms of observed effects by addressing two research questions (1) How does neighborhood context influence home and family management practices (e.g., home alcohol access and protective family management practices)? and (2) Do family management practices mediate the effects of neighborhood risk on early adolescent alcohol use and intentions? Specific hypotheses were (1) neighborhood risk would be significantly associated with home and family management practices, such that residence in more risky communities would be accompanied by higher levels of protective home and family management practices (Beyers et al., 2003; Brook et al., 1989; Rankin & Quane, 2002; Tobler et al., 2007); and (2) the effects of neighborhood risk on early alcohol use during early adolescence would be partially mediated by protective home and family management practices (Beyers et al., 2003; Jarrett, 1997).

**Summary**

Alcohol use among adolescents continues to be a great concern, given high rates of use and extensive immediate and long-term consequences. While the proximal and distal factors influencing adolescent alcohol use have been widely studied, the role of more ultimate-level
factors, such as neighborhood context, have often been assumed than substantiated scientifically. Additionally, relatively few longitudinal studies have been conducted among ethnic minority youth and, of those, most focused on proximal influences on behavior. This is a critical gap in the literature, as minority youth represent a growing segment of the United States population, they suffer disproportionately from the consequences of alcohol use, and more frequently reside in communities that place them at greater risk for maladaptive behavior. Thus, neighborhood contextual factors may be a key predictor of alcohol use, especially among racial/ethnic minority adolescents. Therefore, understanding the magnitude and processes of neighborhood-level effects is of substantial importance. Completion of the three investigations in this study (1) provided a detailed description of the contexts in which a large sample of urban, young adolescents resided, (2) quantified the direct effects of these neighborhood contexts on alcohol use and alcohol use intentions over time among these high-risk youth, and (3) elucidated the role parents play in “buffering” the effects of these risky contexts on alcohol use. This knowledge may help scientists, practitioners, and policy-makers alike as they study the conditions that may increase the risk for alcohol use, refine scientific theory, prioritize resources and public policies, and develop more successful preventive interventions.
Table 1-1. Prevalence of alcohol use among $8^{\text{th}}$, $10^{\text{th}}$ and $12^{\text{th}}$ grade youth in the United States, 2007.

<table>
<thead>
<tr>
<th>Grade:</th>
<th>Used alcohol</th>
<th></th>
<th></th>
<th>Been drunk</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$8^{\text{th}}$</td>
<td>$10^{\text{th}}$</td>
<td>$12^{\text{th}}$</td>
<td>$8^{\text{th}}$</td>
<td>$10^{\text{th}}$</td>
<td>$12^{\text{th}}$</td>
</tr>
<tr>
<td>Lifetime:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>38.4</td>
<td>59.9</td>
<td>71.8</td>
<td>16.8</td>
<td>40.1</td>
<td>55.0</td>
</tr>
<tr>
<td>Female</td>
<td>39.3</td>
<td>63.8</td>
<td>72.2</td>
<td>18.8</td>
<td>42.4</td>
<td>55.0</td>
</tr>
<tr>
<td>White</td>
<td>37.3</td>
<td>63.0</td>
<td>74.7</td>
<td>17.9</td>
<td>44.6</td>
<td>60.1</td>
</tr>
<tr>
<td>African American</td>
<td>37.7</td>
<td>53.2</td>
<td>62.6</td>
<td>14.0</td>
<td>27.5</td>
<td>37.9</td>
</tr>
<tr>
<td>Hispanic</td>
<td>48.0</td>
<td>64.4</td>
<td>72.7</td>
<td>23.9</td>
<td>39.9</td>
<td>53.5</td>
</tr>
<tr>
<td>Total</td>
<td>38.9</td>
<td>61.7</td>
<td>72.2</td>
<td>17.9</td>
<td>41.2</td>
<td>55.1</td>
</tr>
<tr>
<td>Annual:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>30.9</td>
<td>54.4</td>
<td>66.2</td>
<td>11.7</td>
<td>34.1</td>
<td>46.7</td>
</tr>
<tr>
<td>Female</td>
<td>32.7</td>
<td>58.2</td>
<td>66.1</td>
<td>13.5</td>
<td>34.7</td>
<td>45.1</td>
</tr>
<tr>
<td>White</td>
<td>31.6</td>
<td>58.3</td>
<td>69.6</td>
<td>13.4</td>
<td>38.3</td>
<td>52.5</td>
</tr>
<tr>
<td>African American</td>
<td>27.4</td>
<td>44.0</td>
<td>54.7</td>
<td>8.2</td>
<td>18.5</td>
<td>27.3</td>
</tr>
<tr>
<td>Hispanic</td>
<td>39.8</td>
<td>58.0</td>
<td>64.7</td>
<td>16.6</td>
<td>31.4</td>
<td>40.8</td>
</tr>
<tr>
<td>Total</td>
<td>31.8</td>
<td>56.3</td>
<td>66.4</td>
<td>12.6</td>
<td>34.4</td>
<td>46.1</td>
</tr>
<tr>
<td>30-Day:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>15.6</td>
<td>33.4</td>
<td>47.1</td>
<td>5.3</td>
<td>18.9</td>
<td>31.7</td>
</tr>
<tr>
<td>Female</td>
<td>16.0</td>
<td>33.3</td>
<td>41.4</td>
<td>5.6</td>
<td>17.4</td>
<td>25.7</td>
</tr>
<tr>
<td>White</td>
<td>15.6</td>
<td>35.9</td>
<td>49.3</td>
<td>5.9</td>
<td>21.3</td>
<td>33.7</td>
</tr>
<tr>
<td>African American</td>
<td>12.3</td>
<td>21.7</td>
<td>28.7</td>
<td>3.7</td>
<td>8.3</td>
<td>14.6</td>
</tr>
<tr>
<td>Hispanic</td>
<td>23.0</td>
<td>34.8</td>
<td>41.4</td>
<td>7.4</td>
<td>15.0</td>
<td>24.0</td>
</tr>
<tr>
<td>Total</td>
<td>15.9</td>
<td>33.4</td>
<td>44.4</td>
<td>5.5</td>
<td>18.1</td>
<td>28.7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Ever drank</th>
<th>Past month use</th>
<th>Heavy episodic use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>71.4</td>
<td>38.9</td>
<td>20.0</td>
</tr>
<tr>
<td>Girls</td>
<td>71.7</td>
<td>40.4</td>
<td>20.6</td>
</tr>
<tr>
<td>Boys</td>
<td>71.0</td>
<td>37.3</td>
<td>19.2</td>
</tr>
<tr>
<td>African American</td>
<td>66.0</td>
<td>29.8</td>
<td>11.5</td>
</tr>
<tr>
<td>Hispanics</td>
<td>79.5</td>
<td>47.3</td>
<td>26.7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Past year</th>
<th>Past month</th>
<th>Past week</th>
<th>Heavy episodic</th>
<th>Drunk, lifetime</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Beginning 6th grade</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall</td>
<td>17.2</td>
<td>6.8</td>
<td>2.9</td>
<td>3.9</td>
<td>5.2</td>
</tr>
<tr>
<td>Girls</td>
<td>14.9</td>
<td>6.2</td>
<td>2.3</td>
<td>2.9</td>
<td>3.7</td>
</tr>
<tr>
<td>Boys</td>
<td>19.3</td>
<td>7.3</td>
<td>3.4</td>
<td>4.9</td>
<td>6.7</td>
</tr>
<tr>
<td>Whites</td>
<td>17.2</td>
<td>4.4</td>
<td>2.0</td>
<td>2.2</td>
<td>3.8</td>
</tr>
<tr>
<td>African American</td>
<td>15.8</td>
<td>6.8</td>
<td>3.2</td>
<td>4.9</td>
<td>5.6</td>
</tr>
<tr>
<td>Hispanics</td>
<td>18.6</td>
<td>7.4</td>
<td>2.7</td>
<td>3.3</td>
<td>5.3</td>
</tr>
<tr>
<td><strong>End of 6th grade</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall</td>
<td>22.8</td>
<td>9.6</td>
<td>4.6</td>
<td>4.9</td>
<td>8.0</td>
</tr>
<tr>
<td>Girls</td>
<td>21.6</td>
<td>9.7</td>
<td>4.1</td>
<td>4.6</td>
<td>6.4</td>
</tr>
<tr>
<td>Boys</td>
<td>23.9</td>
<td>9.5</td>
<td>5.1</td>
<td>5.1</td>
<td>9.4</td>
</tr>
<tr>
<td>Whites</td>
<td>18.0</td>
<td>8.3</td>
<td>3.6</td>
<td>2.7</td>
<td>6.8</td>
</tr>
<tr>
<td>African American</td>
<td>22.8</td>
<td>8.7</td>
<td>3.9</td>
<td>4.6</td>
<td>7.5</td>
</tr>
<tr>
<td>Hispanics</td>
<td>26.3</td>
<td>11.4</td>
<td>5.9</td>
<td>6.1</td>
<td>8.6</td>
</tr>
<tr>
<td><strong>End of 7th grade</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall</td>
<td>33.1</td>
<td>15.6</td>
<td>6.9</td>
<td>6.0</td>
<td>10.9</td>
</tr>
<tr>
<td>Girls</td>
<td>34.1</td>
<td>17.0</td>
<td>6.9</td>
<td>5.9</td>
<td>10.8</td>
</tr>
<tr>
<td>Boys</td>
<td>32.1</td>
<td>14.3</td>
<td>6.9</td>
<td>6.1</td>
<td>10.9</td>
</tr>
<tr>
<td>Whites</td>
<td>28.6</td>
<td>11.9</td>
<td>4.6</td>
<td>3.6</td>
<td>10.2</td>
</tr>
<tr>
<td>African American</td>
<td>31.2</td>
<td>14.3</td>
<td>6.2</td>
<td>5.6</td>
<td>9.7</td>
</tr>
<tr>
<td>Hispanics</td>
<td>38.9</td>
<td>19.7</td>
<td>9.0</td>
<td>8.0</td>
<td>12.9</td>
</tr>
<tr>
<td><strong>End of 8th grade</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall</td>
<td>40.4</td>
<td>21.0</td>
<td>10.7</td>
<td>8.6</td>
<td>17.2</td>
</tr>
<tr>
<td>Girls</td>
<td>41.9</td>
<td>21.9</td>
<td>11.1</td>
<td>8.1</td>
<td>17.1</td>
</tr>
<tr>
<td>Boys</td>
<td>39.7</td>
<td>20.2</td>
<td>10.3</td>
<td>9.0</td>
<td>17.3</td>
</tr>
<tr>
<td>Whites</td>
<td>44.0</td>
<td>22.7</td>
<td>13.1</td>
<td>9.6</td>
<td>18.4</td>
</tr>
<tr>
<td>African American</td>
<td>38.2</td>
<td>17.6</td>
<td>8.4</td>
<td>7.1</td>
<td>16.9</td>
</tr>
<tr>
<td>Hispanics</td>
<td>45.9</td>
<td>27.0</td>
<td>14.1</td>
<td>11.8</td>
<td>19.3</td>
</tr>
</tbody>
</table>
Figure 1-1. Theoretical framework of direct and indirect relationships between neighborhood context, family management practices and early adolescent alcohol use and intentions.
Overview and Research Questions

This study sought to understand how neighborhood context influences alcohol use among ethnic minority youth residing in urban communities. This goal was achieved by conducting three distinct investigations designed to answer specific research questions, with each study building on the one previous. An outline of the research questions for each investigation and the primary analytical approach used for each is presented in Table 2-1.

Project Northland Chicago

Study Design

Project Northland Chicago (PNC) was a randomized controlled trial of schools and surrounding community areas in the city of Chicago, Illinois (Komro et al., 2004; Komro et al., 2008). From a list of all public schools in Chicago, schools were selected for recruitment that included grades 5 through 8, had relatively low mobility rates (less than 25%), and were larger schools (30 or more students per grade). Magnet schools were not included, as they were less likely to be neighborhood based and the intervention included a neighborhood component. Sixty-six schools agreed to participate and signed a formal Cooperative Agreement form indicating their commitment to the project for three years.

After the 66 schools were recruited, they were collapsed into study units to achieve an average of 200 students per study unit. Study units were defined by combining geographically close schools within city-defined community areas, corresponding to Chicago’s census tracts. Study units were matched on ethnicity, poverty, mobility, and reading and math test scores. Units were randomized into intervention (n = 10 units and 30 schools) or control (n = 12 units and 36 schools) conditions. Before student baseline surveys were implemented, five schools
dropped out of the study due to time constraints (4 from the control condition and 1 from the intervention condition). PNC focused on a cohort of students who were in the sixth grade in the 2002-2003 school year. Students continued in the intervention and evaluation (e.g. repeated annual surveys of students) activities through the 2004-2005 school year, when the students were completing the 8th grade. Schools that participated in the study were located throughout Chicago and had similar demographic characteristics to students throughout the Chicago school district (Table 2-2).

**Intervention**

The goals of the PNC intervention were to change personal, social and environmental factors that support alcohol use among young adolescents (Komro et al., 2004). The intervention was implemented consecutively from 6th through 8th grades and each year of the intervention involved school, family and community components. PNC included three years of (1) peer-led classroom curricula—6 to 10 sessions per year; (2) parental involvement and education—4 home-based sessions per year, plus other educational, school, and community involvement activities; (3) peer leadership and youth-planned community service projects; and (4) community organizing and environmental neighborhood change (Komro et al., 2004).

At the end of the intervention period, there were no differences in alcohol use, intentions, norms or outcome beliefs between the intervention and control conditions (Komro et al., 2008). Thus, data from both the control and intervention conditions were used for the present study. Analyses controlled for treatment group membership as appropriate.

**Data Collection**

As part of the PNC trial, data were collected at the neighborhood, school, family, peer and individual levels and included (1) surveys of cohort students, their parents, and community leaders; (2) alcohol purchase attempts by pseudo-underage buyers; (3) assessment of outdoor
alcohol advertisements within 1500 feet of each study school; and (4) archival data from city records. Table 2-3 summarizes collected data that was used for the present study by level, data source and time.

Students

Surveys were administered to students at the beginning of 6th grade (2002, T1), the end of 6th grade (2003, T2), the end of 7th grade (2004, T3) and the end of 8th grade (2005, T4; See Appendix A for a copy of the baseline student survey). All students enrolled in the specified grade each year (T1, N = 4,680; T2, N = 4,511; T3, N = 4,062; T4, N = 4,002) were eligible to complete the surveys. Sixty-one schools and 4,259 students (91% response rate) participated in the baseline survey, 59 schools and 4,240 students (94% response rate) participated in the T2 survey, 60 schools and 3,778 students (93% response rate) participated in the T3 survey, and 59 schools and 3,802 students (95% response rate) participated in the T4 survey. The cohort follow-up rate was 89% from T1 to T2, 67% from T1 to T3, and 61% from T1 to T4. Loss to follow-up mostly occurred due to two schools closing and students leaving the study schools. In total, 5,812 students completed at least one of the four surveys; of those, 2,373 (41%) completed all four, 808 (14%) completed three, 1,534 (26%) completed two, and 1,097 (19%) completed one survey. Table 2-4 presents the characteristics of students who completed one or more study surveys.

Survey implementation was conducted at each participating school using a team of three trained survey interviewers. Surveys were read aloud to the class and students followed along and filled out their survey as it was read aloud. A survey team would return to the schools 1-2 times to implement surveys with students who were absent. Parent consent and student assent procedures were approved by the University of Minnesota Institutional Review Board for the Protection of Human Subjects and the Chicago Public Schools Law Department. A Certificate
of Confidentiality was obtained from the U.S. Department of Health and Human Services to further protect the confidentiality of the student responses. Secondary data analyses were approved by the University of Florida Institutional Review Board.

**Parents**

Parents of the student cohort were surveyed using a paper-pencil questionnaire at T₁ (2002; Appendix B). The sample was obtained from parent address and telephone lists provided by the Chicago school district. During implementation of the school-based student survey, the parent questionnaires were distributed to students, and they were asked to deliver the closed packet to their primary caregiver. The parent survey packet included a parent survey in English and Spanish; a cover letter consent form; a return addressed, stamped envelope; and a participant payment form. Parents were given $25 after the completed survey was returned. Students were given a $5 Subway™ gift certificate for delivering the packet to their parents. After two weeks, teachers handed out a second copy of the packet to students whose parents had not yet responded. Teachers were also asked to periodically remind students about the parent survey. A total of 3,250 parents were surveyed at T₁ (N = 4,643 eligible, 70% response rate).

**Community leaders**

A telephone survey of leaders in each of the study schools and neighborhoods was conducted at T₁ (2002; Appendix C). Leaders included local school council chairs and members, religious leaders, managers of park and recreation centers, neighborhood beat officers, neighborhood beat facilitators (citizen volunteers who work with beat officers), and managers/leaders of neighborhood organizations. Numerous school and city directories and phone books were used to identify the neighborhood leaders within close proximity to each study school. The survey was administered by trained research staff using standardized protocols at
the Telephone Survey Center at the University of Minnesota. Three hundred forty-four community leaders were surveyed (N = 491 targeted, 70% response rate).

**Alcohol outlets**

A listing of all alcohol outlets, and their addresses, for the city of Chicago was obtained from the Chicago Licensing Department at T1 (2002). A count of the off-sale alcohol outlets (i.e., retailer where alcohol is sold for consumption off the licensed premises) per study unit was obtained by mapping each outlet address to a detailed street map of PNC study units using ArcView GIS software (ESRI, 2005).

**Alcohol purchase attempts**

Propensity for underage access to alcohol from off-sale, commercial sources was tested directly using a standardized protocol (Appendix D; Perry et al., 1993; Wagenaar, Murray, Wolfson, Forster, & Finnegan, 1994; Wagenaar, Toomey, & Erickson, 2005). At T1 (2002), women who were at least 21 years old and who were judged by a panel to be younger appearing (e.g. 20 years old or younger) attempted to purchase alcoholic beverages at outlets without age identification. Buyers were matched to establishments based on their race/ethnicity and the dominant race/ethnicity of the community area in which an establishment was located to ensure that buyers would be similar in appearance to the typical clientele. Each buyer was accompanied by a driver and scout, a staff person who made observations about the establishment exteriors. Buyers and scouts were trained by project staff to follow a consistent protocol.

The number of alcohol establishments per community ranged from 1 to 59 (mean = 13.38). Among communities with fewer than 20 off-sale establishments, attempts were made at all establishments; among communities with more than 20 establishments, up to 20 were randomly selected for the purchase attempts. Two purchase attempts were conducted at each establishment, with attempts occurring, on average, 3 weeks apart (N = 326 establishments, N =
653 attempts). Buyers entered the establishment alone, with the scout remaining in the car parked out-of-sight of establishment employees. Buyers selected a six- or twelve-pack of Budweiser, Coors, or Miller Lite beer and went to the cash register with the shortest line. If clerks asked how old the buyers were, they answered honestly. If asked for age identification, they indicated that they did not have their age identification with them. If refused alcohol sale, buyers quietly left the establishment without argument. Buyers were instructed not to consume any of the purchased alcohol. Following each purchase attempt, buyers and scouts completed forms describing characteristics of purchase attempts and establishments.

**Alcohol advertisements**

All alcohol advertisements within 1,500 feet of PNC study schools were examined at T2 (2003; Appendix E). All advertisements were documented using digital cameras and the exact location of each print ad, or ad cluster, was documented to the nearest hundred-thousandth of a degree using a Global Positioning Systems Device (e.g. Garmin, eTrex, Venture). Other documented details included the location of the ad (i.e. bus stand/bench, billboard, liquor store, grocery or convenience store, bar, other), number of ads at the location, and a brief description of the ad. The protocol and data collection had been piloted previously using two Chicago public schools as pilot sites.

Detailed street maps with a 1,500 foot radius clearly demarcated around each study school site were created using ArcView GIS software (ESRI, 2005). Data collection staff took a wide angle photo of each GPS location where ads were found, and then a close-up of each individual sign/ad or ad cluster. Close up photographs were used to code the content of each ad. All billboards and bus stops were documented regardless of content. However, storefronts and restaurants/bars were only photographed if the ads posted contained alcohol-related content.
Census 2000

Seventeen Census 2000 (U.S. Census Bureau, 2000) measures were obtained for each PNC community which corresponded to the Chicago census tracts, including: total population, percentage of the population with less than 9 years and with 12 or more years of education, unemployment rate, occupational composition, median family income, income disparity, median home value, median gross rent, poverty threshold, single-parent household rate, percentage of households without a motor vehicle, telephone and/or complete plumbing, and household crowding.

Participants

The sample for the present study included 5,655 of 5,812 youth residing in the 42 PNC study communities who completed at least one study survey, after removing participants who had moved between intervention conditions during the study were excluded from analyses. These 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). Less than half of the students (47%) lived in two-parent households. The communities in which the participants resided showed considerable variability across race/ethnicity and measures of deprivation (Tables 2-5 and 2-6, respectively).

Measures

The present study analyzed baseline (T1, 2002) measures from the parent and community leader surveys, direct assessments of the alcohol-specific neighborhood environment and secondary data from community archives. Data from all four (T1-T4, 2002-2005) PNC student surveys were analyzed as well, providing data on parental home and family management and alcohol use.
**Neighborhood Context**

The 42 study communities were characterized by nine baseline measures of risk and protective factors from the parent and community leader surveys, Census 2000, and direct assessments of the alcohol-specific neighborhood environment. Table 2-7 presents the descriptive statistics for each of the measures.

**Protective factors**

**Neighborhood strength.** Five items from the community leader survey were used to create 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.** A scale assessing neighborhood and police preventive action was created using nine items from the community leader survey: “How would you rate police involvement in the prevention of alcohol use among teenagers in the neighborhood?”; “How would you characterize relationships between your local beat officers and the neighborhood residents surrounding the 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 the 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 policy preventive action.

Organizational preventive efforts. Eight items, with “yes/no” responses (1 = “yes,” 5 = “no”), from the community leader survey were used to create a scale assessing organizational preventive efforts: “Has your organization worked to…” “…promote alcohol-free activities for youth?”; “…increase or promote police enforcement against underage drinking?”; “…reduce public drunkenness?”; “…promote participation in a neighborhood watch or block club?”; “…restrict alcohol advertisements such as on billboards or storefronts?”; “…reduce the number of businesses that sell or serve alcohol to underage youth?”; “…promote participation in an effort to establish a “dry precinct”?”; and “…change a policy in your organization related to alcohol use?” (Cronbach’s alpha: 0.79, range 8-40). A higher score on this scale indicated more organizational preventive efforts.

Community action. A community action scale was created using four items from the parent survey that included 5-option Likert scale responses ranging from “Would not do something about it” to “Definitely would do something about it”: “If teenagers were hanging out on your block drinking alcohol, how likely is it that you or some of your neighbors would do something about it?”; If a store on your block was selling alcohol to teenagers, how likely is it that you or some of your neighbors would call the police?”; If there was a loud party involving
young people going on in a house on your block, how likely is it that you or some of your neighbors would do something about it?”; and “If there was a liquor store that had alcohol advertisements visible from outside the store, how likely is it that you or some of your neighbors would try to reduce the amount of alcohol advertisements (ads)?” (Cronbach’s alpha: 0.76, range 4-20). A higher score on this scale indicated greater parental community action.

Risk factors

**Perceived neighborhood problems.** A scale assessing perceived neighborhood problems 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 (ads)?”; 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.

**Alcohol advertisements.** A count of the number of alcohol advertisements within 1500 feet of each PNC study school was obtained directly in 2003. A measure of the average number of alcohol advertisements around schools within each community area was created by dividing the total number of alcohol advertisements surrounding schools within each community area by the total number of PNC study 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 obtained from the Chicago Licensing Department by the total population for each community area, obtained from Census 2000.
**Alcohol purchase attempt rate.** A measure of the commercial accessibility of alcohol to underage youth was obtained by dividing the number of successful purchase attempts by the total number of attempts for each study community area.

**Area deprivation.** An area deprivation index was created for each study community following procedures described by Singh (2003). Seventeen Census 2000 indicators for each study community were used and included: educational distribution (percentage of the population with less than 9 years and with 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 the 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 17 indicators comprising the index. The scale was then standardized by setting the mean and standard deviation to 100 and 20, respectively (Cronbach’s alpha: 0.87; range 45.6-152.6).

**Ultimate Outcomes**

The main outcomes of interest for the present study were student alcohol use and alcohol use intentions. Items assessing these outcomes were drawn from the Monitoring the Future study (Johnston, O’Malley, Bachman, & Schulenberg, 2005) and have been used extensively in previous intervention studies (Komro et al., 2004; Komro et al., 2001; Perry et al., 2003; Perry et al., 2002; Perry et al., 1996; Wagenaar, Zobeck, Williams, & Hingson, 1995). Table 2-8 presents the descriptive statistics for these measures across all study time-points.

**Alcohol use**

Alcohol use was assessed longitudinally 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 alcoholic beverages to drink?”; “Think back over the last two weeks, how many times have you had five or more alcoholic drinks in a row?”; and “Have you ever gotten 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 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.”

**Alcohol use intentions**

Alcohol use intentions were assessed longitudinally with three items: “Would you drink alcohol if your best friend offered it to you?”; “Do you think you will be drinking alcohol...in the next month?”; and “…when a senior in high school?”. Response options included “yes,” “not sure,” and “no.”

**Tendency to use alcohol**

For Paper #2 (Chapter 4), the alcohol use and intentions items were combined into one, nine-item scale describing the tendency to use alcohol. The scale ranged from 9 to 45, with a higher score on this scale indicating greater alcohol use/intentions (Cronbach’s alpha: 0.85-0.88).

**Hypothesized Mediators**

Home alcohol access, parental monitoring/communication, and alcohol-specific communication were hypothesized mediators of interest. Data from the T3, 2004 student survey were used in order to establish clear temporal precedence for observed relationships. The descriptive statistics for these data are presented in Table 2-9.
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 and 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 “…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.”
Hypothesized Moderator

A baseline measure of family composition was selected for inclusion as a covariate in the analyses for the second investigation (Paper #2, Chapter 4), as it is theoretically related to alcohol use among youth (Bergmark & Andersson, 1999; Bjarnason et al., 2003; Foxcroft & Lowe, 1991; Miller, 1997) and had a disproportionate distribution among the neighborhood risk classes identified in Paper #1 (Chapter 3). Family composition was dichotomized such that “mother and father together” (53%) was compared to “other” (“mother and father equally, at separate homes,” “mother mostly,” “father mostly,” “grandparent,” “other relative,” “foster parents,” “other”).

Analytical Approaches

Fitzmaurice, Laird and Ware (2004) describe “multilevel data” as that for which there is a hierarchical or clustered structure. Namely, units of observation are nested within larger units of assignment or organization or within individuals over time. Such observations are correlated, a violation of assumptions for standard statistical methods. A naïve analysis that fails to consider such dependence of observations introduces a downward bias into the standard errors of the estimates, inflating the Type I error rate beyond the nominal level (Twisk, 2006). First developed in the context of educational research (Goldstein, 1987; Goldstein & Cuttance, 1988; Nuttall, Goldstein, Prosser, & Rasbash, 1989), multilevel analysis addresses this shortcoming by considering the dependency of observations, thus improving the precision of estimates (Twisk, 2006).

As a group-randomized trial, data from PNC is multilevel in nature. The unit of assignment to a treatment condition was a group instead of an individual; however, the unit of observation was individuals within the groups. Thus, the nesting of the unit of observation in the unit of randomization resulted in a multilevel data structure (Murray, 1998). In the present study,
community served as the grouping unit. Such a specification more appropriately reflects the relationships examined here, as the primary interest is the effect of community-level, contextual variables on individual behavior. Therefore, all analyses considered the dependency of observations among students within their respective neighborhood, or community.

Three primary statistical methods were used to address the proposed research questions (1) multilevel latent class analysis, (2) general linear mixed effects regression, and (3) multilevel structural equation modeling. The analyses utilized person- and variable-centered approaches, where the variable-centered approach assumes the data come from a homogeneous population and describes the average behavior of the sample and a person-centered approach allows identification of heterogeneous subgroups within the sample and examination of effects by these subgroups (Muthén & Muthén, 2000). The general latent variable framework in Mplus (Muthén & Muthén, 2004) was used for Papers 1 and 3 (Chapter 3 and 5, respectively), which allows for models containing continuous and/or categorical latent variables. Additionally, this framework has the capacity for multilevel modeling, where individual-level (within) and cluster-level (between) variation can be estimated (Muthén & Muthén, 2004). Analyses for Paper 2 (Chapter 4) were conducted using the general linear regression framework in SAS version 9.1 (SAS Institute, 2004).

**Multilevel Latent Class Analysis**

Multilevel latent class analysis was used in Paper 1 (Chapter 3) to identify the heterogeneity in social capital and exposure and access to alcohol among the communities in which the sample resided. Latent class analysis (LCA) is a person-centered analysis strategy that determines the smallest number of latent classes describing the association among a set of observed categorical variables (Muthén & Muthén, 2000). This was an optimal approach for describing the different contexts in which these youth were embedded, as it acknowledges that
there may be disproportionate risk across neighborhoods within urban areas and uses item response probabilities among individuals in the sample to identify underlying heterogeneity, rather than covariation among variables.

**Measurement model**

The estimated proportion of unique response patterns is expressed as a function of two parameters: (1) latent class probabilities \( \gamma \), which describe the proportion of individuals expected in each latent class and (2) conditional item-response probabilities \( \rho \), which describe the probability of a particular response to an observed, manifest variable, conditional on latent class membership. The probability of a particular response pattern is given by:

\[
P(u_1, u_2, ..., u_n) = \sum_{c=1}^{C} \gamma_c \rho_{c,i} \rho_{c,j} \rho_{c,k} ..., \rho_{c,n},
\]

where \( \gamma_c \) represents the probability of being in latent class \( c \) and \( \rho_{c,i}, \rho_{c,j}, \rho_{c,k} \), and \( \rho_{c,n} \) are the probabilities of responses \( i, j, k \), and \( n \) to items 1 through \( n \), respectively, conditional on membership in latent class \( c \) (Lanza, Flaherty, & Collins, 2003).

Maximum likelihood estimates of these parameters are usually estimated using the EM algorithm (Dempster & Rubin, 1977; Goodman, 1974), which iteratively converges on the maximum of the likelihood function through alternating between the E-step, or expectation step, and the M-step, or maximization step (Lanza et al., 2003; Muthén & Muthén, 2004).

Parameters estimated in LCA are similar to factor loadings in factor analysis, whereby the parameters describe the relationship between the manifest variables and the latent variable. A probability near 0 or 1 reflects a strong relationship between the variable and the latent construct, such that given a latent class, there is a low or high probability predicting how an individual would respond to an item, respectively. Alternatively, a probability near 0.5 for a dichotomous indicator suggests that given a latent class, there is no greater ability than chance to predict how an individual would respond to an item (Lanza et al., 2003).
Multilevel LCA is a fairly recent extension of traditional LCA that allows the measurement model to be fit while accounting for non-independence of observations due to cluster sampling (Asparouhov & Muthén, 2006; Muthén & Muthén, 2004). The present study specified students as being nested within communities. As such, the item response probabilities for each individual student were modeled at level one and the item response probabilities for each community modeled at level two, along with the variation in parameters between individuals within communities.

There are two assumptions to any latent class model. First, all individuals in a latent class are assumed to have the same conditional response probabilities for the items. Second, there is conditional independence given the latent class, namely the indicators are independent of one another (Lanza et al., 2003).

**Model Selection**

Class enumeration proceeded through two steps. First, competing models (i.e., models with 1- through \(n\)-class solutions) were estimated and compared to determine the number of classes necessary to represent the heterogeneity in responses to the manifest variables among the sample. Selection of the appropriate number of classes was aided by model selection indices, such as the Bayesian Information Criterion (BIC; Raftery, 1986) and Akaike Information Criterion (AIC; Akaike, 1973), which provide a relative measure of model fit. They are calculated based on the likelihood ratio statistic \(G^2 = 2 \sum_y \text{obs} \log \left( \frac{\text{obs}}{\text{exp}} \right)\), the number of parameters estimated, and, in the case of BIC, sample size. Simulation studies have suggested that when comparing model selection indices, the BIC is superior when determining the number of classes (Collins, Fidler, Wugalter, & Long, 1993; Hagenaars & McCutcheon, 2002; Lanza et
al., 2003; Nylund, Asparouhov, & Muthén, 2007); thus, the solution with the lowest BIC is typically preferred.

An alternative index, the Lo, Mendell, Rubin likelihood ratio test (LMR; Lo, Mendell, & Rubin, 2001), may also be helpful during class enumeration. The LMR test allows for comparison of nested latent class models, where the fit of a model with \( k \) classes is compared to its neighboring model with \( k-1 \) classes. Its estimate is two times the loglikelihood difference of the competing models and yields a \( p \)-value that can be used to determine if there is a statistically significant improvement in fit with the inclusion of an additional class. While its application has been limited, it may be a helpful, secondary tool for determining the most appropriate solution (Nylund, Asparouhov, & Muthén, 2007).

Unfortunately, such tools for model selection do not always agree on the best-fitting model (Kuha, 2004). Thus, the interpretation of the classes must be considered throughout the model selection process and be founded upon substantive theory (Lanza et al., 2003; Muthén et al., 2002), here the Theory of Triadic Influence (Flay & Petraitis, 1994) and Wagenaar and Perry’s Model of Drinking Behavior (Wagenaar & Perry, 1994).

Second, the conditional item-response probabilities (\( \rho \)) were examined to ascertain the meaning of each class. The strength of the \( \rho \) parameters lends to assignment of substantive labels for each latent class. The class membership probabilities (\( \gamma \)) allow the comparison of the prevalence of each neighborhood class. For a well identified model, the \( \rho \) parameters suggest distinct, interpretable labels for each class (Lanza et al., 2003). For the present study, the \( \rho \) parameters indicated the probability of being above the mean of a neighborhood risk or protective item conditional on neighborhood class membership. For instance, LCA estimates the probability of being above the mean of a neighborhood risk item given membership in the
“highest risk” class. This probability is expected to be high when compared to the probability of being above the mean of a neighborhood risk item given membership in a “lower risk” class.

**General Linear Mixed Effects Regression**

General linear mixed effect regression was used in Paper 2 (Chapter 4) to examine the predictive utility of the latent alcohol-related neighborhood risk classes identified in Paper 1 (Chapter 3) on the trajectories of alcohol use and intentions. This analysis integrated person- and variable-centered approaches, allowing the person-centered, latent, alcohol-related neighborhood risk class membership to be incorporated into a longitudinal, multilevel regression model, where the mean of the outcome variable is modeled as a function of one or more independent variables with hierarchical or clustered data (Fitzmaurice et al., 2004). This type of “mixed model” incorporates fixed and random effects, where fixed effects represent the mean response modeled as a combination of characteristics that are assumed to be homogeneous across individuals and random effects represent effects that are unique to the individual and represent the variability around the mean response (Fitzmaurice et al., 2004). For longitudinal data, incorporating random effects allows the covariation among repeated measures to be expressed as a function of time. Here, the mixed model approach allowed for estimation of the variability between communities and the variability within individuals over time. Ignoring the positive correlations among responses within these units, or levels, may potentially introduce bias into the estimated effects and increase the likelihood of Type I error (Murray, 1998).

Using mixed effects regression to fit a growth model involves several steps, as outlined by Muller and Fetterman (Muller & Fetterman, 2002). First, it is necessary to determine the appropriate covariance structure to account for repeated individual observations over time. Previous work with these data (Komro et al., 2007) indicated that an unstructured error structure is most appropriate. This covariance structure is the least restrictive and assumes that all
correlations between observations are different within subjects (Twisk, 2006). Second, the maximum model considered is specified and co-linearity between predictors evaluated. Next, the unconditional model for the outcome variable is examined. This model describes the underlying, unadjusted trajectory of the outcome. Lastly, bivariate relationships between predictors and outcome variables are examined, and significant predictors ($p < .10$) are retained in the final model.

Raudenbush and Bryk (Raudenbush & Bryk, 2002) describe three advantages to mixed effects regression over traditional linear regression: (1) improved estimation of individual effects, (2) ability to model cross-level effects, and (3) ability to partition variance and covariance components. In addition, using mixed effects regression to estimate a growth curve model allows inclusion of all data for a participant, even if there is missing data at one or more time points. These advantages considered, mixed effects regression was an appropriate method for examining how alcohol-related neighborhood context predicted the growth in alcohol use and intentions over time.

**Multilevel Structural Equation Modeling**

Paper 3 (Chapter 5) used multilevel structural equation modeling to examine the direct and indirect relationships between alcohol-related neighborhood context, home and family management, and alcohol use. This approach was particularly advantageous for examining these relations, as it analyzes relations between latent variables without random error (Bollen, 1989) and, in Mplus, allows direct and indirect effects to be estimated simultaneously (Muthén & Muthén, 2004).

Structural equation modeling (SEM) is a technique used to test causal models where the independent and dependent variables are latent (Vogt, 2005). Each SEM consists of two parts (1) a measurement model, where observed indicators are related to latent constructs (e.g.,
confirmatory factor analysis); and (2) a structural model, which specifies hypothesized causal relationships among the latent variables through a series of linear, logistic or probit regression equations, for continuous, categorical and ordinal factors, respectively (Muthén & Muthén, 2004). Analyses generally proceed through a sequence of five processes (1) model specification, (2) model identification, (3) model estimation, (4) model testing, and (5) model modification (Schumacker & Lomax, 2004).

First, model specification involves determining all variables, relations and parameters of interest. As SEM is a method for model-testing, rather than model development, these determinations should be founded upon sound scientific theory and the extant scientific literature (Klem, 2000). Failure to identify important constructs, or inclusion of extraneous constructs, contributes to “specification error,” whereby the model being tested is not consistent with the true population model (Schumacker & Lomax, 2004). Such a model is said to be “misspecified,” and produces estimates that are systematically biased from their true values. Thus, consideration of all potential variables related to the model is the critical, and often hardest, first step to SEM.

Second, model identification involves determining whether a unique set of parameter estimates can be found given the sample covariance matrix and the population covariance matrix implied by the tested model (Schumacker & Lomax, 2004). Schumacker (2004) describes three levels of identification, where a model is (1) underidentified, such that there is not enough information in the covariance matrix to uniquely determine one or more parameters, (2) just identified, where there is just enough information in the covariance matrix for all parameters to be uniquely determined, or (3) overidentified, such that there is more than one way to estimate the parameters because there is more than enough information in the covariance matrix. Three methods can be used to address these identification issues (1) parameter constraints may be
imposed on the measurement model; either one indicator for each latent variable can be fixed to 1, or the variance of each latent variable must be fixed to 1; (2) the parameters can be estimated using maximum likelihood estimation, rather than ordinary least squares; and (3) estimation could begin with the most parsimonious model, with additional parameters included only after the simplest model is identified.

Once the first two processes have been satisfied, the implied theoretical model is then estimated. Several methods for estimating the parameters in the model are available, including unweighted, weighted or ordinary least squares, generalized least squares, and maximum likelihood (Schumacker & Lomax, 2004). Maximum likelihood (ML) estimation is the method most frequently used in SEM, and has been found to be robust to violation of normality (Klem, 2000); however it is not feasible with more complex models involving more than 3 or 4 latent variables, as it requires integration across many different matrices (Muthén & Muthén, 2004). The present study utilized the minimum variance weighted least squares estimator, which uses pairwise deletion to handle missing data among categorical and/or ordinal variables (Muthén & Muthén, 2004).

The fourth process in SEM is model testing. Once parameter estimates have been obtained, it is necessary to determine how well the data fit the model (Schumacker & Lomax, 2004). Several indices may be used for this assessment (1) comparative fit index (CFI), (2) Tucker-Lewis fit index (TLI), (3) root mean square error of approximation (RMSEA) and (4) 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). Further, parameter values should make sense, being in the expected direction and within the range of plausible values (Schumacker & Lomax, 2004).

Lastly, model modification ensues when the strength of the theoretical model is questioned. Several procedures can be used to further examine model specification, including (1) consideration of the statistical significance of estimated parameters—non-significant parameters could be removed from the model if deemed theoretically irrelevant, or constrained to zero in subsequent models; (2) examination of fitted residuals—the differences in the observed covariance matrix and the model covariance matrix should be small and not vary in magnitude from one variable to another; (3) examination of the squared multiple correlations for each observed variable; and (4) use of expected parameter change, Lagrange multiplier, and Wald statistics to evaluate the effect of freeing parameters (Schumacker & Lomax, 2004).

Recent methodological developments have extended SEM to accommodate multilevel data. In the context of the present study, the SEM consisted of three measurement models and the structural model relating them. The measurement model components included (1) an exploratory factor analysis (EFA) to determine the appropriate factor structure for the alcohol-related neighborhood context items; (2) an EFA of the home alcohol access, parental monitoring/communication, and alcohol-specific communication items; and (3) a CFA to verify the factor structure of the alcohol use items. Community membership was specified as a nested random effect to account for the dependency of observations among youth within each community.
Garson (2007) describes several advantages of SEM relative to multiple regression methods, including more flexible assumptions, a reduction in measurement error related to having multiple indicators per latent variable, and the ability to (1) test models overall rather than coefficients individually, (2) test models with multiple dependents, (3) model mediating variables, (4) model error terms, (5) test coefficients across multiple between-subjects groups, and (6) handle difficult data. Given the complexity of the data and relationships investigated in the present study, and the recent methodological advancements in Mplus and other statistical software, multilevel structural equation modeling was a valid technique.

**Missing Data**

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 ($\chi^2(5) = 107.417, p<0.001$) and live with both parents ($\chi^2(1) =37.887, p<0.001$), 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.

To handle missing data, the respective analyses used either maximum likelihood estimation or pairwise deletion. The multilevel LCA (Paper 1, Chapter 3) in Mplus and general linear mixed effects regression models in SAS (Paper 2, Chapter 4) used ML estimation, where estimated parameters represent the parameter values for which the probability of the observed data takes its maximum (Agresti, 2007; Muthén & Muthén, 2004). ML estimation is one of two recommended strategies for handling missing data that provides robust parameter estimates (Schafer & Graham, 2002). The multilevel SEM (Paper 3, Chapter 5) used 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. ML estimation is preferable to pairwise deletion, which may introduce bias into the estimates of effect and produce nonpositive definite matrices. However, these threats are reduced among larger samples (Marsh, 1998) and is the best available option when estimating complex models with more than 3 or 4 latent variables, as was the case here.
Table 2-1. Summary of research questions, study design and analytic approaches.

<table>
<thead>
<tr>
<th>Research question(s)</th>
<th>Study design</th>
<th>Analytical approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>How many latent classes are necessary to describe the heterogeneity in neighborhood risk among young adolescent residents of urban, multi-ethnic communities?</td>
<td>Cross-sectional</td>
<td>Multilevel latent class analysis</td>
</tr>
<tr>
<td>What are the prevalence and characteristics of the heterogeneous latent neighborhood risk classes?</td>
<td>Cross-sectional</td>
<td>Multilevel latent class analysis</td>
</tr>
<tr>
<td>How does neighborhood context influence the trajectories of alcohol use and intentions during early adolescence?</td>
<td>Longitudinal</td>
<td>Mixed Effects Regression</td>
</tr>
<tr>
<td>How does neighborhood context influence home and family management practices (e.g., home alcohol access, parental monitoring, parent/child communication, alcohol-specific communication)?</td>
<td>Longitudinal</td>
<td>Multilevel structural equation modeling</td>
</tr>
<tr>
<td>Do home and family management practices mediate the effects of neighborhood risk on alcohol use during early adolescence?</td>
<td>Longitudinal</td>
<td>Multilevel structural equation modeling</td>
</tr>
</tbody>
</table>
Table 2-2. Comparison of 66 study schools with average for Chicago Public Schools.

<table>
<thead>
<tr>
<th></th>
<th>Intervention</th>
<th>Control</th>
<th>Chicago Public Schools</th>
<th>Frequency/Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td># Units</td>
<td>10</td>
<td>12</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td># Schools</td>
<td>28</td>
<td>32</td>
<td>330</td>
<td>77</td>
</tr>
<tr>
<td># Communities</td>
<td>20</td>
<td>22</td>
<td>77</td>
<td></td>
</tr>
<tr>
<td># Students</td>
<td>1,755</td>
<td>2,285</td>
<td>420,322</td>
<td></td>
</tr>
<tr>
<td>% White</td>
<td>13.9</td>
<td>11.4</td>
<td>9.1</td>
<td></td>
</tr>
<tr>
<td>% African American</td>
<td>46.8</td>
<td>40.4</td>
<td>49.7</td>
<td></td>
</tr>
<tr>
<td>% Hispanic</td>
<td>21.8</td>
<td>34.0</td>
<td>37.6</td>
<td></td>
</tr>
<tr>
<td>% Mixed/Other</td>
<td>17.5</td>
<td>14.1</td>
<td>12.7</td>
<td></td>
</tr>
<tr>
<td>% Low income</td>
<td>65.7</td>
<td>72.8</td>
<td>85.2</td>
<td></td>
</tr>
<tr>
<td>% Truant</td>
<td>2.1</td>
<td>1.7</td>
<td>3.6</td>
<td></td>
</tr>
<tr>
<td>% Math at/above norms</td>
<td>48.3</td>
<td>48.8</td>
<td>43.0</td>
<td></td>
</tr>
<tr>
<td>% Reading at/above norms</td>
<td>42.3</td>
<td>42.5</td>
<td>42.9</td>
<td></td>
</tr>
</tbody>
</table>
Table 2-3. Data used from Project Northland Chicago.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Data source</th>
<th># of items</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>T4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NEIGHBORHOOD</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deprivation</td>
<td>Census 2000</td>
<td>17</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of alcohol outlets per community area</td>
<td>Chicago licensing department</td>
<td>1</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commercial alcohol access</td>
<td>Alcohol purchase attempts</td>
<td>1</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol ads with 1500 feet of each school</td>
<td>Observation</td>
<td>1</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neighborhood strength</td>
<td>Leader survey</td>
<td>5</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Neighborhood and police prevention action</td>
<td>Leader survey</td>
<td>9</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Neighborhood problems</td>
<td>Parent survey</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td><strong>HOME &amp; FAMILY</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home alcohol access</td>
<td>Student survey</td>
<td>4</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Parental monitoring</td>
<td>Student survey</td>
<td>1</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Parent/child communication</td>
<td>Student survey</td>
<td>3</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Alcohol-specific communication</td>
<td>Student survey</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td><strong>INDIVIDUAL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol use</td>
<td>Student survey</td>
<td>5</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Alcohol use intentions</td>
<td>Student survey</td>
<td>4</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
Table 2-4. Characteristics of students who completed 1 or more PNC surveys.

<table>
<thead>
<tr>
<th></th>
<th>Boys</th>
<th>Girls</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>2942</td>
<td>2868</td>
<td>5812</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian (N = 305)</td>
<td>5.3</td>
<td>5.2</td>
<td>5.3</td>
</tr>
<tr>
<td>African American (N = 2506)</td>
<td>41.6</td>
<td>44.7</td>
<td>43.1</td>
</tr>
<tr>
<td>Hispanic (N = 1657)</td>
<td>28.8</td>
<td>28.2</td>
<td>28.5</td>
</tr>
<tr>
<td>Native American (N = 58)</td>
<td>1.3</td>
<td>0.7</td>
<td>1.0</td>
</tr>
<tr>
<td>White (N = 730)</td>
<td>13.4</td>
<td>11.7</td>
<td>12.6</td>
</tr>
<tr>
<td>Mixed/Other (N = 552)</td>
<td>9.6</td>
<td>9.4</td>
<td>9.5</td>
</tr>
<tr>
<td>Family composition</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Living with both parents (N = 2719)</td>
<td>49.2</td>
<td>44.6</td>
<td>46.9</td>
</tr>
<tr>
<td>Living with both parents, but at separate homes/Parent &amp; Step-parent (N = 642)</td>
<td>11.1</td>
<td>11.0</td>
<td>11.1</td>
</tr>
<tr>
<td>Living with mother mostly (N = 1792)</td>
<td>28.1</td>
<td>33.8</td>
<td>30.9</td>
</tr>
<tr>
<td>Living with father mostly (N = 157)</td>
<td>3.1</td>
<td>2.2</td>
<td>2.7</td>
</tr>
<tr>
<td>Living with grandparent or other relative (N = 422)</td>
<td>7.2</td>
<td>7.3</td>
<td>7.3</td>
</tr>
<tr>
<td>Other (N = 67)</td>
<td>1.2</td>
<td>1.1</td>
<td>1.2</td>
</tr>
<tr>
<td>Free or reduced price lunch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes (N = 4178)</td>
<td>68.5</td>
<td>75.5</td>
<td>72.0</td>
</tr>
<tr>
<td>No (N = 1628)</td>
<td>31.5</td>
<td>24.5</td>
<td>28.0</td>
</tr>
<tr>
<td>Language at home</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English (N = 4267)</td>
<td>73.2</td>
<td>73.9</td>
<td>73.6</td>
</tr>
<tr>
<td>Spanish (N = 1070)</td>
<td>18.5</td>
<td>18.4</td>
<td>18.4</td>
</tr>
<tr>
<td>Other (N = 464)</td>
<td>8.3</td>
<td>7.7</td>
<td>8.0</td>
</tr>
</tbody>
</table>

Note: Numbers may not add up to 5812 due to missing values.
Table 2-5. Racial/Ethnic distribution (%) among PNC study communities from Census 2000.

<table>
<thead>
<tr>
<th>Community</th>
<th>N</th>
<th>Asian</th>
<th>African American</th>
<th>Hispanic</th>
<th>Native American</th>
<th>White</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armour Square</td>
<td>66</td>
<td>19.70</td>
<td>33.33</td>
<td>28.79</td>
<td>0.00</td>
<td>9.09</td>
<td>9.09</td>
</tr>
<tr>
<td>Ashburn</td>
<td>209</td>
<td>0.96</td>
<td>65.55</td>
<td>19.14</td>
<td>2.39</td>
<td>3.83</td>
<td>8.13</td>
</tr>
<tr>
<td>Austin</td>
<td>193</td>
<td>0.00</td>
<td>86.01</td>
<td>5.18</td>
<td>4.15</td>
<td>0.00</td>
<td>4.66</td>
</tr>
<tr>
<td>Avalon Park</td>
<td>79</td>
<td>0.00</td>
<td>92.41</td>
<td>0.00</td>
<td>1.27</td>
<td>0.00</td>
<td>6.33</td>
</tr>
<tr>
<td>Beverly</td>
<td>115</td>
<td>0.00</td>
<td>44.35</td>
<td>1.74</td>
<td>2.61</td>
<td>33.04</td>
<td>18.26</td>
</tr>
<tr>
<td>Bridgeport</td>
<td>133</td>
<td>60.15</td>
<td>2.26</td>
<td>18.80</td>
<td>0.00</td>
<td>9.02</td>
<td>9.77</td>
</tr>
<tr>
<td>Clearing</td>
<td>88</td>
<td>1.16</td>
<td>2.33</td>
<td>39.53</td>
<td>6.98</td>
<td>41.86</td>
<td>8.14</td>
</tr>
<tr>
<td>Douglas</td>
<td>77</td>
<td>2.60</td>
<td>89.61</td>
<td>0.00</td>
<td>1.30</td>
<td>0.00</td>
<td>6.49</td>
</tr>
<tr>
<td>East Garfield Park</td>
<td>46</td>
<td>0.00</td>
<td>91.13</td>
<td>2.17</td>
<td>4.35</td>
<td>2.17</td>
<td>2.17</td>
</tr>
<tr>
<td>East Side</td>
<td>64</td>
<td>4.69</td>
<td>76.56</td>
<td>0.00</td>
<td>12.50</td>
<td>6.25</td>
<td></td>
</tr>
<tr>
<td>Englewood</td>
<td>72</td>
<td>2.78</td>
<td>90.28</td>
<td>2.78</td>
<td>1.39</td>
<td>0.00</td>
<td>2.78</td>
</tr>
<tr>
<td>Fuller Park</td>
<td>36</td>
<td>0.00</td>
<td>91.67</td>
<td>5.56</td>
<td>2.78</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Gage Park</td>
<td>86</td>
<td>0.00</td>
<td>94.19</td>
<td>0.00</td>
<td>3.49</td>
<td>2.33</td>
<td></td>
</tr>
<tr>
<td>Garfield Ridge</td>
<td>63</td>
<td>1.61</td>
<td>6.45</td>
<td>30.65</td>
<td>1.61</td>
<td>50.00</td>
<td>9.68</td>
</tr>
<tr>
<td>Grand Boulevard</td>
<td>48</td>
<td>0.00</td>
<td>93.75</td>
<td>0.00</td>
<td>2.08</td>
<td>2.08</td>
<td>2.08</td>
</tr>
<tr>
<td>Hegewisch</td>
<td>29</td>
<td>0.00</td>
<td>24.14</td>
<td>37.93</td>
<td>0.00</td>
<td>17.24</td>
<td>20.69</td>
</tr>
<tr>
<td>Humboldt Park</td>
<td>89</td>
<td>0.00</td>
<td>7.87</td>
<td>83.15</td>
<td>1.12</td>
<td>1.12</td>
<td>6.74</td>
</tr>
<tr>
<td>Hyde Park</td>
<td>48</td>
<td>0.00</td>
<td>83.33</td>
<td>4.17</td>
<td>8.33</td>
<td>0.00</td>
<td>4.17</td>
</tr>
<tr>
<td>Jefferson Park</td>
<td>38</td>
<td>7.89</td>
<td>13.16</td>
<td>23.68</td>
<td>0.00</td>
<td>50.00</td>
<td>5.26</td>
</tr>
<tr>
<td>Kenwood</td>
<td>116</td>
<td>0.86</td>
<td>90.52</td>
<td>0.00</td>
<td>1.72</td>
<td>0.00</td>
<td>6.90</td>
</tr>
<tr>
<td>Lake View</td>
<td>118</td>
<td>0.85</td>
<td>13.56</td>
<td>63.56</td>
<td>2.54</td>
<td>14.41</td>
<td>5.08</td>
</tr>
<tr>
<td>Lincoln Park</td>
<td>38</td>
<td>2.63</td>
<td>21.05</td>
<td>63.16</td>
<td>0.00</td>
<td>2.63</td>
<td>10.53</td>
</tr>
<tr>
<td>Logan Square</td>
<td>139</td>
<td>0.00</td>
<td>7.91</td>
<td>82.73</td>
<td>2.88</td>
<td>2.88</td>
<td>3.60</td>
</tr>
<tr>
<td>Lower West Side</td>
<td>83</td>
<td>0.00</td>
<td>0.00</td>
<td>85.54</td>
<td>6.02</td>
<td>3.61</td>
<td>4.82</td>
</tr>
<tr>
<td>Morgan Park</td>
<td>72</td>
<td>0.00</td>
<td>45.83</td>
<td>0.00</td>
<td>1.39</td>
<td>37.50</td>
<td>15.28</td>
</tr>
<tr>
<td>Mount Greenwood</td>
<td>59</td>
<td>0.00</td>
<td>15.79</td>
<td>5.26</td>
<td>1.75</td>
<td>66.67</td>
<td>10.53</td>
</tr>
<tr>
<td>Near North Side</td>
<td>70</td>
<td>0.00</td>
<td>91.30</td>
<td>2.90</td>
<td>0.00</td>
<td>0.00</td>
<td>5.80</td>
</tr>
<tr>
<td>Near West Side</td>
<td>204</td>
<td>0.01</td>
<td>77.45</td>
<td>10.29</td>
<td>2.94</td>
<td>0.00</td>
<td>7.35</td>
</tr>
<tr>
<td>New City</td>
<td>89</td>
<td>0.00</td>
<td>29.21</td>
<td>21.35</td>
<td>4.49</td>
<td>32.58</td>
<td>12.36</td>
</tr>
<tr>
<td>North Center</td>
<td>73</td>
<td>8.22</td>
<td>9.59</td>
<td>31.51</td>
<td>0.00</td>
<td>35.62</td>
<td>15.07</td>
</tr>
<tr>
<td>North Lawndale</td>
<td>181</td>
<td>0.56</td>
<td>92.22</td>
<td>0.56</td>
<td>2.78</td>
<td>0.00</td>
<td>3.89</td>
</tr>
<tr>
<td>North Park</td>
<td>111</td>
<td>36.94</td>
<td>1.80</td>
<td>27.93</td>
<td>0.90</td>
<td>22.52</td>
<td>9.91</td>
</tr>
<tr>
<td>Norwood Park</td>
<td>39</td>
<td>0.00</td>
<td>5.26</td>
<td>15.79</td>
<td>0.00</td>
<td>71.05</td>
<td>7.89</td>
</tr>
<tr>
<td>Portage Park</td>
<td>280</td>
<td>2.51</td>
<td>0.72</td>
<td>45.52</td>
<td>1.43</td>
<td>42.29</td>
<td>7.53</td>
</tr>
<tr>
<td>Roseland</td>
<td>75</td>
<td>0.00</td>
<td>85.33</td>
<td>0.00</td>
<td>1.33</td>
<td>0.00</td>
<td>13.33</td>
</tr>
<tr>
<td>South Lawndale</td>
<td>199</td>
<td>0.50</td>
<td>0.50</td>
<td>95.98</td>
<td>0.50</td>
<td>1.01</td>
<td>1.51</td>
</tr>
<tr>
<td>Washington Heights</td>
<td>38</td>
<td>0.00</td>
<td>94.74</td>
<td>0.00</td>
<td>2.63</td>
<td>0.00</td>
<td>2.63</td>
</tr>
<tr>
<td>West Elsdon</td>
<td>142</td>
<td>0.70</td>
<td>0.00</td>
<td>84.51</td>
<td>1.41</td>
<td>9.15</td>
<td>4.23</td>
</tr>
<tr>
<td>West Garfield Park</td>
<td>181</td>
<td>0.55</td>
<td>90.61</td>
<td>1.10</td>
<td>3.31</td>
<td>0.55</td>
<td>3.87</td>
</tr>
<tr>
<td>West Pullman</td>
<td>36</td>
<td>2.78</td>
<td>72.22</td>
<td>2.78</td>
<td>5.56</td>
<td>0.00</td>
<td>16.67</td>
</tr>
<tr>
<td>West Ridge</td>
<td>212</td>
<td>24.17</td>
<td>6.16</td>
<td>26.54</td>
<td>0.95</td>
<td>34.12</td>
<td>8.06</td>
</tr>
<tr>
<td>Woodlawn</td>
<td>125</td>
<td>0.00</td>
<td>85.60</td>
<td>1.60</td>
<td>2.40</td>
<td>0.00</td>
<td>10.40</td>
</tr>
</tbody>
</table>
Table 2-6. Descriptive statistics for measures of deprivation from Census 2000.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Mean</th>
<th>Standard deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population aged $\geq 25$ y with $&lt; 9$ y of education, %</td>
<td>0.58</td>
<td>0.56</td>
<td>0.01</td>
<td>2.50</td>
</tr>
<tr>
<td>Population aged $\geq 25$ y with a high school diploma, %</td>
<td>24.18</td>
<td>8.21</td>
<td>5.71</td>
<td>37.88</td>
</tr>
<tr>
<td>Employed persons aged $\geq 16$ y in white-collar occupations, %</td>
<td>3.79</td>
<td>4.12</td>
<td>0.23</td>
<td>20.90</td>
</tr>
<tr>
<td>Median family income, $</td>
<td>47,232.46</td>
<td>21,619.11</td>
<td>14,476.40</td>
<td>133,832.80</td>
</tr>
<tr>
<td>Income disparity (Aggregate)</td>
<td>1,104,490.08</td>
<td>1,137,047.25</td>
<td>140,358.82</td>
<td>7,349,900.00</td>
</tr>
<tr>
<td>Median home value, $</td>
<td>5,163,971.09</td>
<td>4,132,734.99</td>
<td>165,600.00</td>
<td>16,903,700.00</td>
</tr>
<tr>
<td>Median monthly rent, $</td>
<td>580.66</td>
<td>145.47</td>
<td>224.00</td>
<td>953.30</td>
</tr>
<tr>
<td>Median monthly mortgage, $</td>
<td>1228.35</td>
<td>441.84</td>
<td>773.00</td>
<td>3005.80</td>
</tr>
<tr>
<td>Owner-occupied housing units, %</td>
<td>4.94</td>
<td>2.93</td>
<td>0.26</td>
<td>11.85</td>
</tr>
<tr>
<td>Civilian labor force population aged $\geq 16$ y unemployed, %</td>
<td>12.51</td>
<td>8.10</td>
<td>2.93</td>
<td>33.53</td>
</tr>
<tr>
<td>Families below poverty level, %</td>
<td>2.46</td>
<td>2.82</td>
<td>0.03</td>
<td>11.74</td>
</tr>
<tr>
<td>Population below 150% of the poverty threshold, %</td>
<td>31.86</td>
<td>18.04</td>
<td>6.11</td>
<td>69.25</td>
</tr>
<tr>
<td>Single-parent households with children aged $&lt; 18$ y, %</td>
<td>18.29</td>
<td>13.24</td>
<td>2.68</td>
<td>52.13</td>
</tr>
<tr>
<td>Households without a motor vehicle, %</td>
<td>3.87</td>
<td>3.79</td>
<td>0.07</td>
<td>18.05</td>
</tr>
<tr>
<td>Households without a telephone, %</td>
<td>0.98</td>
<td>1.25</td>
<td>0.00</td>
<td>5.26</td>
</tr>
<tr>
<td>Occupied housing units without complete plumbing, %</td>
<td>0.31</td>
<td>0.39</td>
<td>0.00</td>
<td>1.56</td>
</tr>
<tr>
<td>Households with more than 1 person per room, %</td>
<td>1.34</td>
<td>1.46</td>
<td>0.03</td>
<td>6.42</td>
</tr>
</tbody>
</table>
Table 2-7. Descriptive statistics for neighborhood context measures, 2002.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Protective factors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neighborhood strength&lt;sup&gt;a&lt;/sup&gt;</td>
<td>16.45</td>
<td>2.17</td>
<td>5.00</td>
<td>25.00</td>
</tr>
<tr>
<td>Neighborhood &amp; police preventive action&lt;sup&gt;b&lt;/sup&gt;</td>
<td>31.70</td>
<td>4.14</td>
<td>9.00</td>
<td>45.00</td>
</tr>
<tr>
<td>Organizational preventive efforts&lt;sup&gt;c&lt;/sup&gt;</td>
<td>23.89</td>
<td>4.66</td>
<td>8.00</td>
<td>40.00</td>
</tr>
<tr>
<td>Community action&lt;sup&gt;d&lt;/sup&gt;</td>
<td>15.32</td>
<td>3.55</td>
<td>4.00</td>
<td>20.00</td>
</tr>
<tr>
<td><strong>Risk factors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived neighborhood problems&lt;sup&gt;e&lt;/sup&gt;</td>
<td>20.01</td>
<td>9.93</td>
<td>7.00</td>
<td>35.00</td>
</tr>
<tr>
<td>Mean number of alcohol ads per school per community</td>
<td>17.11</td>
<td>21.61</td>
<td>0.00</td>
<td>74.00</td>
</tr>
<tr>
<td>Mean number of off-sale alcohol outlets per 1,000 population</td>
<td>0.22</td>
<td>0.16</td>
<td>0.07</td>
<td>0.70</td>
</tr>
<tr>
<td>Alcohol purchase attempt success rate</td>
<td>0.35</td>
<td>0.20</td>
<td>0.00</td>
<td>0.72</td>
</tr>
<tr>
<td>Area deprivation index&lt;sup&gt;f&lt;/sup&gt;</td>
<td>95.58</td>
<td>18.01</td>
<td>45.60</td>
<td>152.60</td>
</tr>
</tbody>
</table>

<sup>a</sup>A higher score on this scale indicates more neighborhood strength. <sup>b</sup>A higher score on this scale indicates more neighborhood and police preventive action. <sup>c</sup>A higher score on this scale indicates more organizational preventive efforts. <sup>d</sup>A higher score on this scale indicates more community action. <sup>e</sup>A higher score on this scale indicates more neighborhood problems. <sup>f</sup>A higher score on this scale indicates more area deprivation.
Table 2-8. Frequencies of alcohol use and intentions items T1 – T4 (2002-2005)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>N = 4,259</td>
<td>N = 4,240</td>
<td>N = 3,778</td>
<td>N = 3,804</td>
<td></td>
</tr>
</tbody>
</table>

### Alcohol use

#### Past year

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0 occasions</td>
<td>81.72</td>
<td>76.16</td>
<td>66.19</td>
<td>58.32</td>
</tr>
<tr>
<td>1-2 occasions</td>
<td>12.51</td>
<td>15.76</td>
<td>19.40</td>
<td>21.00</td>
</tr>
<tr>
<td>3-5 occasions</td>
<td>3.65</td>
<td>4.80</td>
<td>8.08</td>
<td>10.04</td>
</tr>
<tr>
<td>6-9 occasions</td>
<td>0.94</td>
<td>1.80</td>
<td>3.11</td>
<td>4.79</td>
</tr>
<tr>
<td>10-19 occasions</td>
<td>0.68</td>
<td>0.87</td>
<td>1.65</td>
<td>3.11</td>
</tr>
<tr>
<td>20-39 occasions</td>
<td>0.16</td>
<td>0.28</td>
<td>0.61</td>
<td>1.42</td>
</tr>
<tr>
<td>40 or more occasions</td>
<td>0.33</td>
<td>0.33</td>
<td>0.96</td>
<td>1.32</td>
</tr>
</tbody>
</table>

#### Past month

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0 occasions</td>
<td>92.23</td>
<td>89.47</td>
<td>83.32</td>
<td>77.88</td>
</tr>
<tr>
<td>1-2 occasions</td>
<td>5.93</td>
<td>7.83</td>
<td>11.58</td>
<td>14.50</td>
</tr>
<tr>
<td>3-5 occasions</td>
<td>1.08</td>
<td>1.66</td>
<td>2.92</td>
<td>4.67</td>
</tr>
<tr>
<td>6-9 occasions</td>
<td>0.35</td>
<td>0.47</td>
<td>0.96</td>
<td>1.32</td>
</tr>
<tr>
<td>10-19 occasions</td>
<td>0.19</td>
<td>0.31</td>
<td>0.40</td>
<td>0.90</td>
</tr>
<tr>
<td>20-39 occasions</td>
<td>0.05</td>
<td>0.05</td>
<td>0.24</td>
<td>0.32</td>
</tr>
<tr>
<td>40 or more occasions</td>
<td>0.16</td>
<td>0.21</td>
<td>0.58</td>
<td>0.42</td>
</tr>
</tbody>
</table>

#### Past week

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0 occasions</td>
<td>96.26</td>
<td>94.57</td>
<td>92.33</td>
<td>88.10</td>
</tr>
<tr>
<td>1-2 occasions</td>
<td>2.80</td>
<td>4.23</td>
<td>5.76</td>
<td>8.98</td>
</tr>
<tr>
<td>3-5 occasions</td>
<td>0.56</td>
<td>0.66</td>
<td>0.96</td>
<td>1.69</td>
</tr>
<tr>
<td>6-9 occasions</td>
<td>0.16</td>
<td>0.14</td>
<td>0.27</td>
<td>0.55</td>
</tr>
<tr>
<td>10-19 occasions</td>
<td>0.07</td>
<td>0.14</td>
<td>0.35</td>
<td>0.21</td>
</tr>
<tr>
<td>20-39 occasions</td>
<td>0.02</td>
<td>0.07</td>
<td>0.08</td>
<td>0.05</td>
</tr>
<tr>
<td>40 or more occasions</td>
<td>0.12</td>
<td>0.19</td>
<td>0.27</td>
<td>0.42</td>
</tr>
</tbody>
</table>

### Ever drunk

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>94.47</td>
<td>91.53</td>
<td>88.66</td>
<td>82.14</td>
</tr>
<tr>
<td>Once</td>
<td>4.21</td>
<td>5.89</td>
<td>6.56</td>
<td>9.95</td>
</tr>
<tr>
<td>Twice</td>
<td>0.80</td>
<td>1.56</td>
<td>2.52</td>
<td>4.12</td>
</tr>
<tr>
<td>3-5 times</td>
<td>0.26</td>
<td>0.66</td>
<td>1.38</td>
<td>2.43</td>
</tr>
<tr>
<td>6-9 times</td>
<td>0.14</td>
<td>0.12</td>
<td>0.42</td>
<td>0.50</td>
</tr>
<tr>
<td>10 or more times</td>
<td>0.12</td>
<td>0.24</td>
<td>0.45</td>
<td>0.87</td>
</tr>
</tbody>
</table>

### Heavy episodic use

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>95.15</td>
<td>94.24</td>
<td>93.13</td>
<td>90.54</td>
</tr>
<tr>
<td>Once</td>
<td>3.20</td>
<td>3.76</td>
<td>3.85</td>
<td>5.11</td>
</tr>
<tr>
<td>Twice</td>
<td>1.08</td>
<td>1.25</td>
<td>1.64</td>
<td>2.34</td>
</tr>
<tr>
<td>3-5 times</td>
<td>0.31</td>
<td>0.38</td>
<td>0.88</td>
<td>1.19</td>
</tr>
<tr>
<td>6-9 times</td>
<td>0.09</td>
<td>0.07</td>
<td>0.16</td>
<td>0.40</td>
</tr>
<tr>
<td>10 or more times</td>
<td>0.16</td>
<td>0.31</td>
<td>0.34</td>
<td>0.42</td>
</tr>
</tbody>
</table>
Table 2-8. Continued

<table>
<thead>
<tr>
<th></th>
<th>Frequency (%)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N = 4,259</td>
<td>N = 4,240</td>
<td>N = 3,778</td>
<td>N = 3,804</td>
</tr>
<tr>
<td>Alcohol use intentions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drink if best friend offered</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1.91</td>
<td>3.54</td>
<td>7.39</td>
<td>12.82</td>
</tr>
<tr>
<td>Not sure</td>
<td>12.02</td>
<td>17.37</td>
<td>24.75</td>
<td>27.24</td>
</tr>
<tr>
<td>No</td>
<td>86.07</td>
<td>79.08</td>
<td>67.85</td>
<td>59.94</td>
</tr>
<tr>
<td>Drink next month</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1.41</td>
<td>2.62</td>
<td>5.65</td>
<td>11.37</td>
</tr>
<tr>
<td>Not sure</td>
<td>8.51</td>
<td>12.85</td>
<td>19.18</td>
<td>22.49</td>
</tr>
<tr>
<td>No</td>
<td>90.08</td>
<td>84.52</td>
<td>75.17</td>
<td>66.14</td>
</tr>
<tr>
<td>Drink in high school</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>7.39</td>
<td>10.75</td>
<td>17.16</td>
<td>24.35</td>
</tr>
<tr>
<td>Not sure</td>
<td>29.12</td>
<td>35.19</td>
<td>37.93</td>
<td>37.06</td>
</tr>
<tr>
<td>No</td>
<td>63.49</td>
<td>54.05</td>
<td>44.91</td>
<td>38.59</td>
</tr>
<tr>
<td>Drink when and adult</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>20.43</td>
<td>24.67</td>
<td>33.47</td>
<td>38.09</td>
</tr>
<tr>
<td>Not sure</td>
<td>42.70</td>
<td>44.33</td>
<td>41.97</td>
<td>39.81</td>
</tr>
<tr>
<td>No</td>
<td>36.87</td>
<td>31.00</td>
<td>24.56</td>
<td>22.10</td>
</tr>
</tbody>
</table>
Table 2-9. Frequencies of home and family management items T3 (2004).

<table>
<thead>
<tr>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N = 3,778</td>
</tr>
<tr>
<td>Home alcohol access</td>
</tr>
<tr>
<td>Easy to get alcohol from parent</td>
</tr>
<tr>
<td>Easy</td>
</tr>
<tr>
<td>In-between</td>
</tr>
<tr>
<td>Hard</td>
</tr>
<tr>
<td>Easy to get alcohol from home</td>
</tr>
<tr>
<td>Easy</td>
</tr>
<tr>
<td>In-between</td>
</tr>
<tr>
<td>Hard</td>
</tr>
<tr>
<td>Last time drank, received alcohol from parent</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>Last time drank, took alcohol from home</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>Parent monitoring/communication</td>
</tr>
<tr>
<td>Parent ask about school</td>
</tr>
<tr>
<td>Never</td>
</tr>
<tr>
<td>Hardly ever</td>
</tr>
<tr>
<td>Sometimes</td>
</tr>
<tr>
<td>A lot</td>
</tr>
<tr>
<td>All the time</td>
</tr>
<tr>
<td>Parent praise when do a good job</td>
</tr>
<tr>
<td>Never</td>
</tr>
<tr>
<td>Hardly ever</td>
</tr>
<tr>
<td>Sometimes</td>
</tr>
<tr>
<td>A lot</td>
</tr>
<tr>
<td>All the time</td>
</tr>
<tr>
<td>Eat dinner with parent</td>
</tr>
<tr>
<td>Never</td>
</tr>
<tr>
<td>Hardly ever</td>
</tr>
<tr>
<td>Sometimes</td>
</tr>
<tr>
<td>A lot</td>
</tr>
<tr>
<td>All the time</td>
</tr>
<tr>
<td>Parent ask who with</td>
</tr>
<tr>
<td>Never</td>
</tr>
<tr>
<td>Hardly ever</td>
</tr>
<tr>
<td>Sometimes</td>
</tr>
<tr>
<td>A lot</td>
</tr>
<tr>
<td>All the time</td>
</tr>
</tbody>
</table>
Table 2-9. Continued.

```
<table>
<thead>
<tr>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N = 3,778</td>
</tr>
</tbody>
</table>

Parent/child conversations

<table>
<thead>
<tr>
<th></th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>8.25</td>
</tr>
<tr>
<td>Hardly ever</td>
<td>13.90</td>
</tr>
<tr>
<td>Sometimes</td>
<td>34.96</td>
</tr>
<tr>
<td>A lot</td>
<td>22.74</td>
</tr>
<tr>
<td>All the time</td>
<td>20.15</td>
</tr>
</tbody>
</table>

Alcohol-specific communication

Parent talk about problems drinking alcohol can cause

<table>
<thead>
<tr>
<th></th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>17.63</td>
</tr>
<tr>
<td>Hardly ever</td>
<td>18.85</td>
</tr>
<tr>
<td>Sometimes</td>
<td>27.32</td>
</tr>
<tr>
<td>A lot</td>
<td>17.89</td>
</tr>
<tr>
<td>All the time</td>
<td>18.32</td>
</tr>
</tbody>
</table>

Parent talk about family rules against drinking alcohol

<table>
<thead>
<tr>
<th></th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>87.96</td>
</tr>
<tr>
<td>Yes</td>
<td>12.04</td>
</tr>
</tbody>
</table>

Parent talk about consequences of drinking alcohol

<table>
<thead>
<tr>
<th></th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>21.73</td>
</tr>
<tr>
<td>Hardly ever</td>
<td>18.91</td>
</tr>
<tr>
<td>Sometimes</td>
<td>25.01</td>
</tr>
<tr>
<td>A lot</td>
<td>17.33</td>
</tr>
<tr>
<td>All the time</td>
<td>17.01</td>
</tr>
</tbody>
</table>

Parent talk about influence of ads and commercials

<table>
<thead>
<tr>
<th></th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>33.25</td>
</tr>
<tr>
<td>Hardly ever</td>
<td>16.51</td>
</tr>
<tr>
<td>Sometimes</td>
<td>27.07</td>
</tr>
<tr>
<td>A lot</td>
<td>12.60</td>
</tr>
<tr>
<td>All the time</td>
<td>10.57</td>
</tr>
</tbody>
</table>
```
CHAPTER 3
MULTI-ETHNIC, URBAN YOUTH’S EXPOSURE TO PATTERNS OF ALCOHOL-RELATED NEIGHBORHOOD CHARACTERISTICS

Executive Summary

Background

Research has shown the importance of social capital (Coleman, 2007) and exposure and access to alcohol in preventing and/or promoting a number of negative outcomes (Collins et al., 2007; Gorman, Labouvie et al., 1998; Kawachi et al., 1997; Pasch et al., 2007; Poortinga, 2006; Scribner et al., 1999; Scribner et al., 1994; Scribner et al., 2007; Siahpush et al., 2006). Youth residing in urban neighborhoods may be at disproportionate risk, as their extant social capital may be less and their exposure and access to alcohol more than their suburban and rural counterparts (Coleman, 2007; Forrest & Kearns, 2001; Hackbart et al., 2001; Pollack et al., 2005; Treno et al., 2000). However, this disparate risk may not only be present across urban, suburban and rural areas, but also across neighborhoods within urban areas. Further, risk disparities may exist across race/ethnicity, as racial/ethnic minority youth are disproportionately residents of metropolitan cities (U.S. Census Bureau, 2000), where many social problems (e.g., crime, delinquency, drug use, public disorder, and school dropout) are significantly clustered (Coulton et al., 1995; Duncan et al., 2002; Sampson, 1992).

The present study provides a description of the urban communities in which a large sample of racial/ethnic minority youth reside, using measures of social capital and exposure and access to alcohol obtained from Census 2000, reports by parents and community leaders within each study community, or assessed directly. Specifically, the research questions are (1) How many latent classes are necessary to describe heterogeneity in neighborhood characteristics of

---

urban communities in which multi-ethnic early adolescents reside? and (2) What are the characteristics and proportions of adolescents residing in the heterogeneous latent neighborhood classes?

**Methods**

Data included baseline measures from a group-randomized trial of an alcohol preventive intervention for multi-ethnic urban youth (Project Northland Chicago; Komro et al., 2008), encompassing 42 of 77 city-defined Chicago community areas. The sample in this secondary data analysis included 4,215 youth who completed school-based surveys when beginning 6th grade. Students were predominantly African American or Hispanic (42% and 30%, respectively), had an equal gender distribution (50% male), lived in the United States for all their life (86%), spoke English in their homes (72%), lived in two-parent households (53%) and were low income (70%).

Neighborhood measures included (1) mean number of alcohol outlets per 1,000 population per community area; (2) alcohol purchase attempt rate by pseudo-underage youth; (3) average number of alcohol advertisements within 1500 feet of each school per community; and (4) a Census 2000-based deprivation index. Parents and community leaders provided data on perceived neighborhood problems and parental prevention actions, and neighborhood strength and preventive action by communities, law enforcement, and community organizations, respectively. Measures were dichotomized at their means to improve interpretability of results and identification of how the community characteristics differed.

Multilevel latent class analysis (LCA; Asparouhov & Muthén, 2006) was used to identify the number and characteristics of heterogeneous latent neighborhood classes among students residing in study communities using the nine dichotomous indicators. Analyses were conducted at the individual (student) level (given the individual-level data provided by the parent),
adjusting for the correlation of responses among students within each community. Mplus 4.21 was used for all analyses (Muthén & Muthén, 2007).

Results

Five classes best described the heterogeneity among the sample (1) Low social capital/low exposure/high access to alcohol (19.8%), (2) Low social capital/low exposure/low access to alcohol (24.5%), (3) Moderate social capital/low exposure/high access to alcohol (30.0%), (4) Moderate social capital/moderate exposure/low access to alcohol (20.1%), and (5) High social capital/moderate exposure/high access to alcohol (5.6%). We found considerable segregation across the neighborhood classes, where Hispanic youth were the clear majority in the Low social capital/low exposure/low access to alcohol and Moderate social capital/moderate exposure/low access to alcohol classes. African American youth were the clear majority for the other classes: Low social capital/low exposure/high access to alcohol, Moderate social capital/low exposure/high access to alcohol, and High social capital/moderate exposure/high access to alcohol. The majority of both African Americans and Hispanics resided in communities characterized by low social capital (58.4% and 51.5%, respectively). Only 10% of the African American and 3% of the Hispanic youth in this sample resided in communities characterized by high social capital. The majority of African American youth resided in communities characterized by high access to alcohol (79.8%); whereas, the majority of Hispanic youth resided in communities characterized by low access to alcohol (19.9%).

Conclusions

Results suggest there is substantive heterogeneity among this seemingly homogeneous urban population. Youth at greatest risk may be those in communities characterized by low social capital and high access to alcohol (Class 1) and moderate social capital and high access to alcohol (Class 3). Further, findings highlight the socioeconomic disadvantage of these inner-city
communities and the resource disparity across the racial/ethnic groups. Understanding the
nuances in urban neighborhood contexts provides the foundation for understanding subsequent
effects on family functioning and problem behaviors, may appropriately inform theory, suggest
targets for intervention, and help prioritize limited resources (Duncan et al., 2002; Griffin et al.,
2000).
CHAPTER 4
EFFECTS OF ALCOHOL-RELATED NEIGHBORHOOD CONTEXT ON THE
TRAJECTORIES OF ALCOHOL USE AND INTENTIONS AMONG YOUNG
ADOLESCENTS

Abstract

Background

African American and Hispanic youth disproportionately reside in inner cities. As a result, they are at greater risk for maladaptive social and behavioral outcomes, including alcohol and other drug use. Little is known about the etiology of alcohol use among this growing, high-risk segment of the population. Likewise, our knowledge of how their unique context influences their alcohol use and alcohol use intentions is limited. This study extends the scientific knowledge about these relationships by examining the direct effects of alcohol-related neighborhood contextual risk on the trajectories of alcohol use behaviors and alcohol use intentions among a large sample of urban, racial/ethnic minority, young adolescents.

Methods

Participants included 4,215 youth residing in 42 community areas in Chicago, Illinois who completed surveys at the beginning of 6th grade (2002), end of 6th grade (2003), end of 7th grade (2004) and end of 8th grade (2005). Participants responded to nine items assessing their frequency of alcohol use and intentions to use alcohol. Neighborhood risk was characterized using five, mutually exclusive, alcohol-related neighborhood risk classes describing extant social capital and exposure and access to alcohol. Participants were assigned to one of the five classes using maximum rule assignment. General linear mixed effects regression was used to assess the change in alcohol use and alcohol use intentions over time beginning at grade six to grade eight attributable to alcohol-related neighborhood risk.
Results

None of the neighborhood risk classes were significantly associated with the trajectories of alcohol use/intentions relative to the other classes for either African Americans or Hispanics. Among the individual neighborhood risk/protective items comprising the composite indicator, organizational preventive efforts and perceived neighborhood problems were significantly associated with reduced alcohol use/intentions over time for African American and Hispanic youth, respectively. However, the direction of the perceived neighborhood problems effect was opposite to that hypothesized. None of the effects for the other risk/protective items reached statistical significance.

Conclusions

The lack of significant effects highlights the need for examining the role of family management and functioning in mediating/moderating the deleterious effects of risky neighborhood contexts.

Key Words

Adolescents, Communities, Context, Alcohol, Social Capital

Introduction

Despite slight declines in recent years, alcohol remains the most frequently used drug among youth in the United States throughout adolescence. 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 et al., 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 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 use is not without considerable consequence, as it contributes to
traffic crashes, increased risk for disease, risky sexual behavior, homicides, suicides, crime, and unintentional injury (Borowsky et al., 2001; Dunn et al., 2003; Greenfeld, 1998; Gyimah-Brempong, 2001; National Highway Traffic Safety Administration, 2005; National Institute on Alcohol Abuse and Alcoholism, 2000; Smith et al., 1999; Sorenson & Berk, 2001). Additionally, exposure to alcohol in adolescence can have detrimental effects on cognitive growth and functioning and increases the likelihood for later addiction (Brown et al., 2000; Monti et al., 2005).

Given the prevalence and consequences of alcohol use among adolescent youth, a substantial body of literature has been devoted to understanding factors associated with this behavior. However, to date, most has focused on more proximal influences (e.g., resistance self-efficacy, attitudes and norms favorable to use, peer use), whereas the influences of more distal, contextual factors (e.g., social capital, community disorganization, alcohol control policies) have more often been assumed than quantified empirically (Britt et al., 2005; Duncan et al., 2002; Gibbons et al., 2004; National Institute on Alcohol Abuse and Alcoholism, 2004; Roski et al., 1997; Toumbourou et al., 2007; Wagenaar et al., 2004). Additionally, relatively few longitudinal studies have been conducted 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 (Hobbs & Stoops, 2002; 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 and other drug use, attributable to a number of factors, including neighborhood disorder, a sense of hopelessness, psychological distress, increased opportunity for drug use, weaker economic conditions and fewer neighborhood resources
(Arkes, 2007; Crum et al., 1996; Duncan et al., 2002; Elliott et al., 1996; Hill & Angel, 2005; Karvonen & Rimpela, 1997; Wilson et al., 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 (National Institute on Alcohol Abuse and Alcoholism, 2000).

Current 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. Alcohol use among racial/ethnic minority youth residing in urban communities may be the result of not only more proximal, individual characteristics, but also the interaction of their unique, distal environmental and cultural contexts (Godette et al., 2006). The present study extends the scientific knowledge about the etiology of alcohol use among young adolescents residing in urban communities by examining longitudinally the direct effects of alcohol-related neighborhood risks on alcohol use behaviors and intentions over time. Specifically, neighborhood risk was described by extant social capital and exposure and access to alcohol.

Research has shown associations between social capital (Coleman, 1994, 2007) and exposure and access to alcohol and a number of negative outcomes. For example, social capital has been associated with self-rated health and health behaviors (Poortinga, 2006), smoking (Siahpush et al., 2006), and mortality (Kawachi et al., 1997). Additionally, alcohol outlets and advertisements are disproportionately located in urban, low-income, minority communities (Hackbart et al., 2001; Pollack et al., 2005; Treno et al., 2000) and associated with alcohol consumption and intentions to drink (Collins et al., 2007; Ellickson et al., 2005; Fleming et al.,
2004; Pasch et al., 2007; Scribner et al., 2000; Scribner et al., 2007; Snyder et al., 2006; Stacy et al., 2004), violence (Gorman, Labouvie et al., 1998; Gorman, Speer et al., 1998; Scribner et al., 1999; Speer et al., 1998), and traffic crashes (Scribner et al., 1994). Moreover, despite existing laws that make it illegal for youth under the age of 21 to purchase alcohol in the United States, underage youth can, and do, purchase it. Studies indicate that underage buyers are able to purchase alcohol without showing age identification in 47-97% of attempts (Forster et al., 1994; Grube, 1997; Paschall, Grube, Black, Flewelling et al., 2007; Preusser & Williams, 1992). Such commercial access to alcohol may contribute to the large percent of underage youth who use and abuse alcohol (Johnston et al., 2008). Considered together, these contextual factors are considerable risks to the healthy development of urban minority youth and warrant further scientific investigation.

This study provides a distinctive description of the direct effects of alcohol-related neighborhood risk on alcohol use among young adolescents residing in an urban context by using a multi-dimensional latent class indicator of alcohol-related neighborhood risk (Chapter 3) to predict the trajectories of alcohol use and alcohol use intentions. Much of the extant literature describing the neighborhood context, and subsequent maladaptive behaviors, among youth has relied on either census data (Allison et al., 1999; Chuang et al., 2005; Elliott et al., 1996; Galea et al., 2007) or self-report measures (Crum et al., 1996; Gibbons et al., 2004; Hill & Angel, 2005), whereas context in this study was defined by five heterogeneous latent classes of neighborhood risk. These classes were identified previously using nine indicators of social capital and exposure and access to alcohol obtained from Census 2000, reports by parents and community-leaders within each study community, or assessed directly.
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., 2004; 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 4,215 youth residing in the 42 study communities who were present and completed school-based surveys at the beginning of 6th grade (2002). The students were predominantly African American or Hispanic (42% and 30%, respectively), had an equal gender distribution (50% male), lived in the United States for all their life (86%), spoke English in their homes (72%), lived in two-parent households (53%) and were low income (70% 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. Also, the study schools were similar to schools throughout CPS with respect to truancy (1.9% PNC, 3.6% CPS) and the percentages of students at, or above, the norms for math (48.6% PNC, 43% CPS) and reading (42.4% PNC, 42.9% CPS).

Data Collection

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 6th, 7th and 8th grades. 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.

**Measures**

**Neighborhood risk**

Students were classified into one of five, mutually exclusive, latent neighborhood risk classes identified with a multilevel latent class analysis of nine indicators of neighborhood risk and protective factors (1) neighborhood strength; (2) neighborhood and police preventive action; (3) organizational preventive efforts; (4) community action; (5) perceived neighborhood problems; (6) mean number of alcohol advertisements within 1500 of each public school per community; (7) mean number of off-sale alcohol outlets per 1,000 population; (8) alcohol purchase attempt success rate; and (9) a Census 2000-based area deprivation index (Chapter 3). Six of these measures were conceptualized as measures of social capital (Coleman, 1994, 2007): neighborhood strength, neighborhood and police preventive action, organizational preventive efforts, community action, perceived neighborhood problems, and area deprivation. The mean number of alcohol advertisements and off-sale alcohol outlet density provided measures of exposure to alcohol, whereas the alcohol purchase attempt success rate provided a direct measure of commercial accessibility of alcohol.

The five neighborhood risk classes and the proportion of the sample within each included (1) low social capital/low exposure/high access to alcohol (19.8%), (2) low social capital/low exposure/low access to alcohol (24.5%), (3) moderate social capital/low exposure/high access to alcohol (30.0%), (4) moderate social capital/moderate exposure/low access to alcohol (20.1%), and (5) high social capital/moderate exposure/high access to alcohol (5.6%). “High,” “Moderate” and “Low” labels were assigned using the number of items in each category (i.e., social capital, exposure to alcohol, access to alcohol) that had high probabilities of being above the mean for
each latent class. Membership in the respective latent neighborhood risk class was represented with a categorical variable with five levels.

**Alcohol use and alcohol use intentions**

The tendency to use alcohol was assessed longitudinally with a nine item scale measuring alcohol use/intentions (1) “During the last 12 months, on how many occasions, or times, have you had alcoholic beverages to drink?”; (2) “During the last 30 days, on how many occasions, or times, have you had alcoholic beverages to drink?”; (3) “During the last 7 days, on how many occasions, or times, have you had alcoholic beverages to drink?”; (4) “Think back over the last 2 weeks, on how many times have you had five or more alcoholic drinks in a row?”; (5) “Have you ever become really drunk from drinking alcoholic beverages so you fell down or became sick?”; (6) “Would you drink alcohol if your best friend offered it to you?”; (7) “Do you think you will be drinking alcohol in the next month?”; (8) “Do you think you will be drinking alcohol when a senior in high school?”; and (9) Do you think you will be drinking alcohol when you are an adult?”(Cronbach’s alpha: 0.85-0.88; Range: 9-45). A higher score on this scale indicated greater alcohol use/intentions.

**Covariates**

A baseline measure of family composition was selected for inclusion as a covariate in the analyses, as it is theoretically related to alcohol use among youth (Bergmark & Andersson, 1999; Bjarnason et al., 2003; Foxcroft & Lowe, 1991; Miller, 1997) and had a disproportionate distribution among the neighborhood risk classes. Family composition was dichotomized such that “mother and father together” was compared to “other” (“mother and father equally, at separate homes,” “mother mostly,” “father mostly,” “grandparent,” “other relative,” “foster parents,” “other”). Race/ethnicity was considered for inclusion as a covariate; however, the
race/ethnicities were disproportionately distributed across the neighborhood risk classes (See Chapter 3). Therefore, each race/ethnicity was modeled separately.

Analytical Strategy

Using the neighborhood classes identified and described previously among this sample (Chapter 3), each individual’s class membership was determined using maximum rule assignment, where the class assigned reflects that for which their posterior probability is the highest. Nagin (1999; 2005; 2001) suggested that an average posterior probability for each class of 0.80 indicates adequate assignment. Here, the average posterior probability for each class ranged from 0.96 to 1.0.

To assess the change in alcohol use/intentions over time attributable to membership in the respective neighborhood risk classes, we used general linear mixed modeling (i.e., multilevel growth curve analysis). The alcohol use/intentions scale used in the present study had an approximate normal distribution (skewness = 2.33; kurtosis = 7.34) which did not significantly benefit from log or root-based transformations. Therefore, analyses were conducted using PROC MIXED (SAS version 9.1), a procedure in SAS designed to handle dependent variables that are Gaussian and which does not apply list-wise deletion. Based on diagnostics outlined by Muller and Fetterman (2002) and described previously (Komro et al., 2007), we specified an unstructured error structure and linear functional form for the dependent variable. Community was specified as a nested random effect to account for the dependency of observations among students within each study community. Additionally, given the disproportionate racial/ethnic distribution among the neighborhood risk classes (Table 4-1; Chapter 3), analyses were conducted separately for the African American and Hispanic youth.

The alcohol use/intentions scale was regressed on time, baseline alcohol use/intentions, family composition, and alcohol-related neighborhood risk class. Table 4-1 presents the
descriptive statistics for all variables included in the models by race/ethnicity. A partial test approach was used, where estimates do not depend on the order of variables in the model and represent the impact of each predictor while controlling for all others. As there was no clear, “low/no risk” referent class among the five (e.g., high social capital/low exposure/low access to alcohol), all possible contrasts of the neighborhood risk classes were examined.

**Missing Data**

White, Asian, Native American, and youth from “Other” race/ethnicities were excluded from analyses because their sample sizes did not provide sufficient statistical power to detect significant effects when modeled independently. The analysis samples for the African American and Hispanic youth included 98.1% (n = 1,710) and 97.8% (n = 1,213) of the eligible samples, respectively, as a result of missing values among at least one of the independent variables at baseline. There were no statistically significant differences between the eligible and analysis samples across the neighborhood risk classes for either African American or Hispanic. The eligible and analysis samples did differ significantly for both African Americans and Hispanics in that youth reporting less alcohol use/intentions were more likely to be included in the analysis sample. The eligible and analysis samples did not differ significantly across family composition for either race/ethnicity. Seventy-two percent of the cohort students completed three or four surveys, while 28% completed one or two. All available follow-up data were used in the analysis. Students who completed three or four surveys differed significantly from those who completed one or two in that older students were less likely to have completed three or four surveys. Students who completed three or four surveys did not differ significantly from those who completed only one or two with respect to neighborhood risk class, race/ethnicity, gender, family composition, and alcohol use/intentions.
Results

Table 4-2 presents the results from the general linear mixed model regressions for each racial/ethnic group. We examined all possible contrasts of the neighborhood risk classes. However, the only effects that were near marginal significance were for contrasts with the low social capital/low exposure/low access to alcohol class (Class 2). Therefore, all results presented in Table 2 are relative to this class. All analyses controlled for baseline values of the outcome and family composition.

Neighborhood risk class membership at age 12 was not significantly associated with the trajectories of alcohol use/intentions from age 12 to 14 when controlling for baseline alcohol use/intentions and family composition for either the African American or Hispanic samples. Two contrasts among the Hispanic sample approached marginal significance (i.e., $p < 0.10$)—compared to the low social capital/low exposure/low access to alcohol class, Hispanic youth in the moderate social capital/low exposure/high access to alcohol and moderate social capital/moderate exposure/low access to alcohol classes were less likely to report alcohol use/intentions over time, albeit not statistically significant ($p = 0.1349$ and $p = 0.1247$, respectively).

Given the lack of significant results using the composite neighborhood risk class indicator as a predictor of alcohol use/intentions over time, we examined the predictive utility of the individual neighborhood risk/protective items that defined the classes. Table 4-3 presents the results of these post hoc, bivariate analyses, where alcohol use/intentions over time was regressed on the individual risk/protective item, time and baseline alcohol use/intentions. For African American youth, organizational preventive efforts were significantly associated with reduced trajectories of alcohol use/intentions (Standardized Slope: $-0.0452$, $p = 0.0224$). Among Hispanics, perceived neighborhood problems exhibited a significant inverse relationship with
alcohol use/intentions over time, such that increases in perceived neighborhood problems were associated with reduced trajectories of alcohol use/intentions (Standardized Slope: -0.0602, \( p = 0.0072 \)). None of the other risk/protective items were significantly associated with alcohol use/intentions over time for either racial/ethnic group.

**Discussion**

The present study examined the direct effects of alcohol-related neighborhood contexts (i.e., risk) on the trajectories of alcohol use/intentions among a large sample of urban, racial/ethnic minority youth. None of the neighborhood risk classes were significantly associated with the trajectories of alcohol use/intentions relative to the other classes for either African Americans or Hispanics. Among the Hispanic youth, two contrasts approached marginal significance—relative to the low social capital/low exposure/low access to alcohol class (Class 2), Hispanic youth in the moderate social capital/low exposure/high access to alcohol and moderate social capital/moderate exposure/low access to alcohol classes were less likely to report alcohol use/intentions over time. However, these effects were not statistically significant. Among the individual neighborhood risk/protective items comprising the composite indicator, organizational preventive efforts and perceived neighborhood problems were significantly associated with reduced alcohol use/intentions over time for African American and Hispanic youth, respectively. However, the direction of the perceived neighborhood problems effect was opposite to that hypothesized—increases in perceived neighborhood problems were associated with reduced alcohol use/intentions over time. None of the effects for the other risk/protective items were statistically significant.

Results are consistent with previous research on the role of neighborhood context in alcohol and other drug behavior (Duncan et al., 2002; Lambert et al., 2004) and suggest a need to examine potential mediators of the relationships examined here. For example, Lambert and
colleagues (2004) found that among their sample of urban, African American adolescents, the effects of neighborhood characteristics on substance use were entirely mediated by drug beliefs for females and partially mediated by drug beliefs for males. Fulkerson and colleagues (In Press) also reported no significant direct effects of a contextual measure, informal social control, on alcohol use, alcohol use intentions, and other violent and delinquent behaviors in their cross-sectional analyses among the same sample used in the present study. Rather, the authors found that the effects of informal social control on high risk behaviors were entirely mediated by parental monitoring. Certainly, more proximal, individual-level factors, such as attitudes and norms regarding substance use, warrant investigation as mediators, as do family-level factors, such as parental monitoring, parent/child communication, and the like.

All of these youth were at considerable risk given their urban context, as none of the youth resided in “low/no risk” neighborhood (e.g., high social capital/low exposure/low access to alcohol). Research has shown that urban environments are at increased risk for crime, delinquency, drug use, public disorder, school dropout, and exposure and commercial access to alcohol relative to their suburban and rural counterparts (Bernstein et al., 2007; Coulton et al., 1995; Duncan et al., 2002; Gruenewald et al., 2002; Kwate et al., 2007; LaVeist & Wallace, 2000; Sampson, 1992). Thus, the lack of effects here, given the risks associated with residence in urban environments, suggest the need for mediation analyses to determine how family functioning and/or interpersonal characteristics may buffer the effects of neighborhood risk on alcohol use/intentions. A mediation analysis will be the focus of future work and may provide a more complete understanding of the etiology of alcohol use/intentions among urban, minority, adolescents.
This study had several limitations. First, there was no clear, “low/no risk,” referent class among the five (e.g., high social capital/low exposure/low access to alcohol). We examined all possible contrasts and the selection of Class 2, low social capital/low exposure/low access to alcohol, was somewhat arbitrary, as it provided the only near marginally significant effects. Second, we examined the effects of neighborhood context at one point in time (age 12) as a potential predictor of the trajectories of alcohol use and alcohol use intentions from age 12 to 14. The saliency of context in shaping alcohol use among youth may vary throughout adolescence (Szapocznik & Coatsworth, 1999). Accordingly, future research should examine associations between context and drinking behaviors and intentions of youth as they evolve and develop across time. Our data precluded such an examination. Third, the sample for this study were low-income, racial/ethnic minority, young adolescents residing in Chicago, Illinois. More studies are needed to examine the relationships presented here both during mid- to late-adolescence and among youth residing in other metropolitan cities as well as rural and suburban areas. Effects may not be consistent across developmental periods or across differing economic and cultural contexts. Lastly, measures of neighborhood risk and protection used do not represent the universe of neighborhood or social capital descriptors. Future research should examine the influence of neighborhood contexts on alcohol use and alcohol use intentions while 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 both the etiology of alcohol use among urban, racial/ethnic minority youth and the effects of neighborhood context on alcohol use and alcohol use intentions over time. Moreover, this study used a distinct alcohol-related neighborhood risk indicator created by using data from Census
2000, self-report measures from parents and community leaders and direct environmental assessments (Chapter 3). This is a particular 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; Elliott et al., 1996; Galea et al., 2007) or self-report measures (Crum et al., 1996; Gibbons et al., 2004; Hill & Angel, 2005). The lack of significant effects highlights the need for examining the role family management and functioning in mediating/moderating the deleterious effects of risky neighborhood contexts.
Table 4-1. Descriptive statistics for variables included in each model

<table>
<thead>
<tr>
<th>Variable</th>
<th>Full sample (n=4215)</th>
<th>African Americans (n=1770)</th>
<th>Hispanics (n=1265)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Prevalence/ % “Yes”</td>
</tr>
<tr>
<td>Neighborhood risk class</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class 1: Low social capital/Low exposure/High access to alcohol</td>
<td>-</td>
<td>-</td>
<td>19.8</td>
</tr>
<tr>
<td>Class 2: Low social capital/Low exposure/Low access to alcohol</td>
<td>-</td>
<td>-</td>
<td>24.5</td>
</tr>
<tr>
<td>Class 3: Moderate social capital/Low exposure/High access to alcohol</td>
<td>-</td>
<td>-</td>
<td>30.0</td>
</tr>
<tr>
<td>Class 4: Moderate social capital/Moderate exposure/Low access to alcohol</td>
<td>-</td>
<td>-</td>
<td>20.1</td>
</tr>
<tr>
<td>Class 5: High social capital/Moderate exposure/High access to alcohol</td>
<td>-</td>
<td>-</td>
<td>5.6</td>
</tr>
<tr>
<td>Covariates at baseline</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family composition</td>
<td>-</td>
<td>-</td>
<td>52.7</td>
</tr>
<tr>
<td>Alcohol use &amp; alcohol use intentions&lt;sup&gt;a&lt;/sup&gt;</td>
<td>11.05</td>
<td>2.88</td>
<td></td>
</tr>
<tr>
<td>Outcome variable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol use &amp; alcohol use intentions&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6&lt;sup&gt;th&lt;/sup&gt; grade</td>
<td>11.72</td>
<td>3.49</td>
<td></td>
</tr>
<tr>
<td>7&lt;sup&gt;th&lt;/sup&gt; grade</td>
<td>12.80</td>
<td>4.32</td>
<td></td>
</tr>
<tr>
<td>8&lt;sup&gt;th&lt;/sup&gt; grade</td>
<td>13.96</td>
<td>5.39</td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup>Minimum = 9.00, Maximum = 45.00; A higher score on this scale indicated greater alcohol use/intentions.
<table>
<thead>
<tr>
<th></th>
<th>Standardized slope</th>
<th>SE</th>
<th>t-value</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>African Americans</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>0.0372</td>
<td>0.0698</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Time</td>
<td>0.1993</td>
<td>0.0136</td>
<td>14.70</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td><strong>Neighborhood risk class</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class 1: Low social capital/Low exposure/High access to alcohol</td>
<td>-0.0031</td>
<td>0.0815</td>
<td>-0.04</td>
<td>0.9695</td>
</tr>
<tr>
<td>Class 2: Low social capital/Low exposure/Low access to alcohol</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Class 3: Moderate social capital/Low exposure/High access to alcohol</td>
<td>-0.0062</td>
<td>0.0807</td>
<td>-0.08</td>
<td>0.9391</td>
</tr>
<tr>
<td>Class 4: Moderate social capital/Moderate exposure/Low access to alcohol</td>
<td>-0.1146</td>
<td>0.1222</td>
<td>-0.94</td>
<td>0.8521</td>
</tr>
<tr>
<td>Class 5: High social capital/Moderate exposure/High access to alcohol</td>
<td>0.0252</td>
<td>0.1351</td>
<td>0.19</td>
<td>0.3488</td>
</tr>
<tr>
<td><strong>Covariates</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline alcohol use &amp; alcohol use intentions</td>
<td>0.4988</td>
<td>0.0178</td>
<td>27.99</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Family composition (mother &amp; father together)</td>
<td>-0.0263</td>
<td>0.0164</td>
<td>-1.61</td>
<td>0.1078</td>
</tr>
<tr>
<td><strong>Hispanics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>0.0688</td>
<td>0.0455</td>
<td>1.51</td>
<td>0.1410</td>
</tr>
<tr>
<td>Time</td>
<td>0.2295</td>
<td>0.0136</td>
<td>16.90</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td><strong>Neighborhood risk class</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class 1: Low social capital/Low exposure/High access to alcohol</td>
<td>-0.0558</td>
<td>0.1381</td>
<td>-0.40</td>
<td>0.6864</td>
</tr>
<tr>
<td>Class 2: Low social capital/Low exposure/Low access to alcohol</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Class 3: Moderate social capital/Low exposure/High access to alcohol</td>
<td>-0.1085</td>
<td>0.0725</td>
<td>-1.50</td>
<td>0.1349</td>
</tr>
<tr>
<td>Class 4: Moderate social capital/Moderate exposure/Low access to alcohol</td>
<td>-0.1022</td>
<td>0.0666</td>
<td>-1.54</td>
<td>0.1247</td>
</tr>
<tr>
<td>Class 5: High social capital/Moderate exposure/High access to alcohol</td>
<td>-0.0428</td>
<td>0.1168</td>
<td>-0.37</td>
<td>0.7143</td>
</tr>
<tr>
<td><strong>Covariates</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline alcohol use &amp; alcohol use intentions</td>
<td>0.4395</td>
<td>0.0180</td>
<td>24.43</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Family composition (mother &amp; father together)</td>
<td>-0.0225</td>
<td>0.0180</td>
<td>-1.25</td>
<td>0.2118</td>
</tr>
</tbody>
</table>

*a Class 2, Low social capital/Low exposure and access to alcohol, was the referent class.
Table 4-3. Results from bivariate analyses of individual neighborhood risk/protective items at age 12 as predictors of the trajectories of alcohol use and alcohol use intentions from age 12 to 14 while controlling for baseline levels of intentions/use.

<table>
<thead>
<tr>
<th></th>
<th>African Americans</th>
<th></th>
<th></th>
<th>Hispanics</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Standardized slope</td>
<td>SE</td>
<td>P-value</td>
<td>Standardized slope</td>
<td>SE</td>
<td>P-value</td>
</tr>
<tr>
<td><strong>Protective factors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neighborhood strength</td>
<td>-0.0235</td>
<td>0.0220</td>
<td>0.2844</td>
<td>-0.0068</td>
<td>0.0236</td>
<td>0.7739</td>
</tr>
<tr>
<td>Neighborhood &amp; police preventive action</td>
<td>0.0093</td>
<td>0.0214</td>
<td>0.6648</td>
<td>-0.0131</td>
<td>0.0252</td>
<td>0.6035</td>
</tr>
<tr>
<td>Organizational preventive efforts</td>
<td>-0.0452</td>
<td>0.0198</td>
<td>0.0224</td>
<td>-0.0032</td>
<td>0.0236</td>
<td>0.8908</td>
</tr>
<tr>
<td>Community action</td>
<td>0.0143</td>
<td>0.1900</td>
<td>0.4518</td>
<td>-0.0017</td>
<td>0.0220</td>
<td>0.9379</td>
</tr>
<tr>
<td><strong>Risk factors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived neighborhood problems</td>
<td>-0.0164</td>
<td>0.0195</td>
<td>0.3996</td>
<td>-0.0602</td>
<td>0.0224</td>
<td>0.0072</td>
</tr>
<tr>
<td>Mean number of alcohol advertisements</td>
<td>-0.0092</td>
<td>0.0255</td>
<td>0.7186</td>
<td>0.0031</td>
<td>0.0303</td>
<td>0.9174</td>
</tr>
<tr>
<td>Mean number of off-sale alcohol outlets per 1,000 pop.</td>
<td>0.0427</td>
<td>0.0302</td>
<td>0.1571</td>
<td>-0.0367</td>
<td>0.0268</td>
<td>0.1700</td>
</tr>
<tr>
<td>Alcohol purchase attempt success rate</td>
<td>0.0070</td>
<td>0.0252</td>
<td>0.7818</td>
<td>-0.0071</td>
<td>0.0230</td>
<td>0.7561</td>
</tr>
<tr>
<td>Area deprivation index</td>
<td>0.0205</td>
<td>0.0245</td>
<td>0.4022</td>
<td>0.0199</td>
<td>0.0267</td>
<td>0.4557</td>
</tr>
</tbody>
</table>
CHAPTER 5
RELATIONSHIPS BETWEEN NEIGHBORHOOD CONTEXT, FAMILY MANAGEMENT PRACTICES AND ALCOHOL USE AMONG URBAN, MULTI-ETHNIC, YOUNG ADOLESCENTS

Abstract

Background

African American and Hispanic youth are disproportionately residents of inner-city communities. Little is known about how their unique context influences early onset of alcohol use. We examined relations between alcohol-related neighborhood context, protective home and family management practices, and alcohol use among urban, racial/ethnic minority, adolescents.

Methods

Data were part of a longitudinal study of multi-ethnic urban youth (Project Northland Chicago). 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 at baseline included (1) alcohol outlet density; (2) commercial alcohol accessibility; (3) alcohol advertisement exposure; (4) perceived neighborhood strength, reported by parents and community leaders; and (5) area deprivation. Structural equation modeling was used to assess direct and indirect relations between alcohol-related neighborhood context at baseline, home alcohol access and family management practices in 7th grade, and alcohol use in 8th grade.

Results

Neighborhood strength was negatively, and exposure to alcohol advertisements positively, associated with alcohol use (β = -0.082, p ≤ 0.05 and β = 0.049, p ≤ 0.05, respectively). Neighborhood strength and commercial alcohol access were associated with home
alcohol access ($\beta = 0.063, p \leq 0.05$ and $\beta = -0.124, p \leq 0.001$, respectively) and protective family management practices ($\beta = -0.070, p \leq 0.01$ and $\beta = 0.073, p \leq 0.001$, respectively). Home alcohol access had a positive association with alcohol use ($\beta = 0.399, p \leq 0.001$), 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 relation between neighborhood strength and alcohol use, although this indirect effect was marginally significant ($\beta = 0.025, p = 0.062$).

**Conclusions**

Neighborhood context had significant direct and indirect associations with alcohol use. 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 among inner-city, adolescent youth.

**Key Words**

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 et al., 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 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 (Grant, Stinson, & Harford, 2001; Gruber, DiClemente, Anderson, & Lodico, 1996; Hingson et al., 2002; Hingson, Heeren, Winter et al., 2003; Hingson et al., 2001; Hingson, Heeren, Zakocs, Winter, & Wechsler, 2003; Hingson et al., 2006). Additionally, exposure to alcohol in adolescence can have detrimental effects on cognitive growth and functioning and increases the likelihood for later addiction (Brown et al., 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 et al., 2005; Duncan et al., 2002; 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 (Hobbs & Stoops, 2002; 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 et al., 2002; Hill & Angel, 2005; Wilson et al., 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 (National Institute on Alcohol Abuse and Alcoholism, 2000).
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 et al., 2006). For example, several neighborhood characteristics have been associated with alcohol use among youth, including alcohol outlet density (Pollack et al., 2005; Scribner et al., 2007; Treno et al., 2000), exposure to alcohol advertisements (Collins, Wileyto, Murphy, & Munafo, 2007; Pasch et al., 2007; Snyder et al., 2006), commercial alcohol accessibility (Forster et al., 1994; Grube, 1997; Paschall, Grube, Black, & Ringwalt, 2007; Sobel, 1982), 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 (Coleman, 2007; Forrest & Kearns, 2001; Pollack et al., 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 et al., 1999; Komro et al., 2007), parental monitoring (Alvarez et al., 2003; Borawski et al., 2003; Cleveland et al., 2005), parent/child communication (Kelly et al., 2002; Wills et al., 2003), relationship satisfaction (Lépideau et al., 2002; Nelson et al., 1999; Wills et al., 2003), and supervision (Aizer, 2004; Coley et al., 2004; Richardson et al., 1993). 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 (Beyers et al., 2003; Chuang et al., 2005) and mediating the effects of risky neighborhood environments on alcohol use.
(Beyers et al., 2003; Chuang et al., 2005). These findings are consistent with Beck and Lockhart’s model of parental involvement in adolescent drinking (Beck & Lockhart, 1992), as well as more comprehensive theories of adolescent health behaviors (Flay & Petraitis, 1994; Wagenaar & Perry, 1994). These theories suggest that as parental awareness of the alcohol-related risks in their environment increase, so also do their protective home and family management practices (e.g., availability of alcohol in the home, parental monitoring, communication). 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 [i.e., theory of triadic influence (Flay & Petraitis, 1994) and Wagenaar and Perry's model of drinking behavior (Wagenaar & Perry, 1994)] and previous research (Figure 5-1). 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, Grube, Black, & Ringwalt, 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 (Dent, Grube, & Biglan, 2005; Hawkins et al., 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 5,655 youth residing in the 42 study communities who completed at least one study survey when they were in the 6th, 7th, or 8th 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). Less than half of the students (47%) lived in two-parent households. 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. Also, the study schools were similar to schools throughout CPS with respect to truancy (1.9% PNC, 3.6% CPS) and the percentages of students at, or above, the norms for math (48.6% PNC, 43% CPS) and reading (42.4% PNC, 42.9% CPS). At the end of the intervention period, there were no statistically significant differences in alcohol use, intentions, norms or attitudes between the intervention and control conditions (Komro et al.,
Thus, 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 6th, 7th and 8th grades. 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
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 from the Monitoring the Future study (Johnston et al., 2008) 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 (6th grade), home alcohol access and family management practices in 7th grade, and
alcohol use in 8th grade. The SEM framework was particularly advantageous for the present study, as it analyzes relationships between latent variables without random error (Bollen, 1989) and, in Mplus, allows direct and indirect effects to be estimated simultaneously (Muthén & Muthén, 2004).

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 (6th, 7th or 8th grade) were used, with sample sizes ranging from 3801-4170, with 2.1%, 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 8th 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 ($\chi^2 (5) = 107.417, p < 0.001$) and live with both parents ($\chi^2 (1) = 37.887, p < 0.001$), 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.

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 5-1 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 5-2. 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 ($r = -0.462, p \leq 0.001$).

Baseline neighborhood strength was negatively, and exposure to alcohol advertisements positively, associated with alcohol use in 8th grade ($\beta = -0.082, p \leq 0.05$ and $\beta = 0.049, p \leq 0.05$, 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 ($\beta = 0.063, p \leq 0.05$ and $\beta = -0.124, p \leq 0.001$, respectively) and family management practices ($\beta = -0.070, p \leq 0.01$ and $\beta = 0.073, p \leq 0.001$, 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 ($\beta = 0.399, p \leq 0.001$) 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, and commercial alcohol access negatively, associated with home alcohol access; while neighborhood strength was negatively, and commercial alcohol access 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, and counterintuitive. The positive relation between commercial alcohol access and protective family management was hypothesized based on previous studies (Beyers et al., 2003; Brook et al., 1989; Chuang et al., 2005; Rankin & Quane, 2002; Tobler et al., 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 (Kosterman, Hawkins, Guo, Catalano, & Abbott, 2000; National Center for Chronic Disease Prevention and Health Promotion, 2008) and the considerable consequences associated with use during this critical developmental period (Grant et al., 2001; Gruber et al., 1996; Hingson et al., 2002; Hingson, Heeren, Winter et al., 2003; Hingson et al., 2001; Hingson, Heeren, Zakocs et al., 2003; Hingson
et al., 2006), 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; Resnick et al., 1997; 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 6th grade were directly and significantly associated with alcohol use in 8th 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; Snyder et al., 2006), and suggest that incorporating community-level intervention components that build neighborhood strength and limit exposure to alcohol advertisements may enhance intervention effects. This is 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 were 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 (Beck, Shattuck, Haynie, et al., 1999; Beck & Treiman, 1996; Borawski, et al., 2003; Cleveland et al., 2005; Kegler et al., 2005; Rankin & Quane, 2002; Sellstrom & Bremberg, 2006). 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; Galea et al., 2007) 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.
Table 5-1. Standardized, geomin-rotated factor loadings and fit statistics for measurement models.

<table>
<thead>
<tr>
<th>Item</th>
<th>Model 1 (n = 4170)</th>
<th>Model 2 (n = 3778)</th>
<th>Model 3 (n = 3801)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol-related Neighborhood Context</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived neighborhood strength</td>
<td>0.737</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neighborhood and police preventive action</td>
<td>0.866</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived neighborhood problems</td>
<td>-0.373</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home and Family Management</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Last time drank, received alcohol from parent</td>
<td>0.049</td>
<td>-0.010</td>
<td></td>
</tr>
<tr>
<td>Last time drank, took alcohol from home</td>
<td>0.097</td>
<td>0.072</td>
<td></td>
</tr>
<tr>
<td>Easy to get alcohol from parent</td>
<td>0.793</td>
<td>0.320</td>
<td></td>
</tr>
<tr>
<td>Easy to get alcohol from home</td>
<td>0.783</td>
<td>0.381</td>
<td></td>
</tr>
<tr>
<td>Parent ask about school</td>
<td>0.206</td>
<td>0.699</td>
<td></td>
</tr>
<tr>
<td>Parent praise when do a good job</td>
<td>0.189</td>
<td>0.658</td>
<td></td>
</tr>
<tr>
<td>Eat dinner with parent</td>
<td>0.202</td>
<td>0.485</td>
<td></td>
</tr>
<tr>
<td>Parent ask who with</td>
<td>0.249</td>
<td>0.571</td>
<td></td>
</tr>
<tr>
<td>Parent/child conversations</td>
<td>0.198</td>
<td>0.671</td>
<td></td>
</tr>
<tr>
<td>Parent talk about problems alcohol can cause</td>
<td>0.430</td>
<td>0.790</td>
<td></td>
</tr>
<tr>
<td>Parent talk about family rules against drinking</td>
<td>0.443</td>
<td>0.542</td>
<td></td>
</tr>
<tr>
<td>Parent talk about consequences of drinking</td>
<td>0.455</td>
<td>0.735</td>
<td></td>
</tr>
<tr>
<td>Parent talk about influence of ads and commercials</td>
<td>0.362</td>
<td>0.611</td>
<td></td>
</tr>
<tr>
<td>Alcohol Use and Intentions</td>
<td></td>
<td></td>
<td>0.885</td>
</tr>
<tr>
<td>Past year alcohol use</td>
<td>1.000</td>
<td>0.976</td>
<td>0.984</td>
</tr>
<tr>
<td>Past month alcohol use</td>
<td></td>
<td></td>
<td>0.972</td>
</tr>
<tr>
<td>Past week alcohol use</td>
<td></td>
<td></td>
<td>0.888</td>
</tr>
<tr>
<td>Heavy episodic alcohol use</td>
<td></td>
<td></td>
<td>0.857</td>
</tr>
<tr>
<td>Ever been drunk</td>
<td></td>
<td></td>
<td>0.777</td>
</tr>
<tr>
<td>Fit Indices</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFI</td>
<td>1.000</td>
<td>0.976</td>
<td>0.984</td>
</tr>
<tr>
<td>TLI</td>
<td>1.000</td>
<td>0.965</td>
<td>0.989</td>
</tr>
<tr>
<td>RMSEA</td>
<td>&lt; 0.001</td>
<td>0.059</td>
<td>0.102</td>
</tr>
<tr>
<td>SRMSR</td>
<td>&lt; 0.001</td>
<td>0.063</td>
<td>-</td>
</tr>
</tbody>
</table>
Figure 5-1. Hypothesized structural model.
Figure 5-2. 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.)
Participants in this study resided in 42 of 77 city-defined communities in Chicago, Illinois. Among these communities, there was considerable racial/ethnic heterogeneity and variability in several census-based indicators of deprivation. For example, the median family income ranged from $14,476 to $133,832 per community, unemployment ranged from 19% to 58% and the proportion of the population below 150% of the poverty threshold ranged from 6% to 69% per community (Table 2-6). Further, nearly half of the communities were relatively racially/ethnically homogeneous; among 14 communities, over 80% of the population was African American and among 6 communities, 80% of the population was Hispanic (Table 2-5).

Youth in Chicago, and those of other large, metropolitan cities, face a myriad of distinct challenges related to their environment (Griffin, Botvin, Epstein, Doyle, & Diaz, 2000). For instance, ecological studies have shown that crime, delinquency, drug use, public disorder, and school dropout are significantly clustered in urban communities (Coulton et al., 1995; Duncan et al., 2002; Sampson, 1992). In 2006, the rates per 100,000 population in Chicago were higher than those across the United States for murders, rapes, robberies, aggravated assaults, burglaries, and thefts (MDNH, 2008). Moreover, in 2007 youth in Chicago report higher rates of marijuana (44% Chicago, 38% U.S.), heroin (3.7% Chicago, 2.3% U.S.) and ecstasy use than youth across the United States (6.4% Chicago, 5.8%, U.S.; Centers for Disease Control and Prevention, 2008). Alcohol use among youth in Chicago is similar to that found nationwide (Centers for Disease Control and Prevention, 2008). Gangs are also problematic. There are approximately 120 street gangs with an estimated 100,000 to 130,000 members in Chicago. Of these, it is estimated that more than 40 percent are under the age of 18, with many joining as early as age 11 (Risley, 2004).
Given the social milieu among youth in this study, their alcohol-specific contexts contribute to environments that may place them at elevated risk for deleterious social and behavioral outcomes. This study sought to define the heterogeneous alcohol-related contexts of a large sample of urban, racial/ethnic minority youth and examine how exposure to these contexts related to alcohol use and intentions. It also examined the role of home and family management practices in mediating these relationships. These goals were accomplished through completion of three distinct empirical investigations.

Paper 1 (Chapter 3) examined patterns of alcohol-related neighborhood characteristics of the 42 urban community areas in which the sample resided using multilevel latent class analyses (LCA). Five heterogeneous classes of neighborhoods were identified and characterized by extant social capital and exposure and access to alcohol. Twenty percent of youth resided in communities with low social capital and high access to alcohol; 24% resided in communities with low social capital and low exposure and access to alcohol; 30% resided in communities with moderate social capital and high access to alcohol; 20% resided in communities with moderate social capital and moderate exposure to alcohol; and 6% resided in communities with high social capital and moderate exposure and high access to alcohol. There was considerable heterogeneity in the racial/ethnic distribution of the classes. For example, African American youth were more likely to live in neighborhoods with high access to alcohol. The majority of both African American and Hispanic youth in the sample resided in communities characterized by low social capital, highlighting the disadvantage of these inner-city communities and the resource disparity across these racial/ethnic groups.

Paper 2 (Chapter 4) used the latent classes identified in Paper 1 to examine the direct effects of alcohol-related neighborhood risk class membership on the trajectories of alcohol use.
and intentions. None of the neighborhood risk classes were significantly associated with the trajectories of alcohol use/intentions relative to the other classes for either African Americans or Hispanics. Among the Hispanic youth, two contrasts approached marginal significance—relative to the low social capital/low exposure/low access to alcohol class (Class 2), Hispanic youth in the moderate social capital/low exposure/high access to alcohol and moderate social capital/moderate exposure/low access to alcohol classes were less likely to report alcohol use/intentions over time. However, these effects were not statistically significant.

Given the insignificant effects in Paper 2 when using the more broadly-defined, latent risk class indicator to predict alcohol use/intentions over time and the complex interpretation of effects without a “low/no risk” class to serve as a referent class, Paper 3 (Chapter 5) began with factor analyses to determine the number of latent constructs among the nine indicators of alcohol-related neighborhood risk. Structural Equation Modeling (SEM) was then used to examine the direct and indirect relationships between alcohol-related neighborhood context, home and family management practices, and alcohol use. 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). Two alcohol-related neighborhood constructs had significant, direct relationships 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 and commercial alcohol access was negatively associated with home alcohol access; whereas neighborhood strength was negatively and commercial alcohol access was 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.

Collectively, findings from these investigations have important implications for scientific theory and preventive interventions targeting alcohol use among racial/ethnic minority youth in urban cities. First, while there was substantive heterogeneity in alcohol-related neighborhood risk, membership in the alcohol-related neighborhood risk classes defined using the multilevel LCA did not significantly affect the trajectories of alcohol use/intentions. However, the structural equation model suggested that baseline neighborhood strength and exposure to alcohol advertisements were significant predictors of alcohol use in 8th grade. These findings, together with a mixed literature on the effects of neighborhood context on alcohol use (Allison et al., 1999; Brook et al., 1989; Chuang et al., 2005; Crum et al., 1996; Duncan et al., 2002; Elliott et al., 1996; Galea et al., 2007; Gibbons et al., 2004; Hill & Angel, 2005), suggest that observed effects are particularly sensitive to measurement and unit of analysis. Thus, null effects when examining these and other similar relations should not be construed as unimportant for either theory or preventive efforts. More research is needed to further elucidate the role of alcohol-related neighborhood contexts and refine hypothesized direct effects, as well as define the best measurement and methodological approaches for examining these complex relations. Findings from this study suggest that it may be more appropriate to individually consider the influence of specific neighborhood characteristics rather than using a more broadly defined, composite indicator of risk.
Second, the observed direct effects among the alcohol-related neighborhood contextual factors and alcohol use were small in comparison to those for more proximal factors. For example, the effects of neighborhood strength and exposure to alcohol advertisements in 6th grade on alcohol use in 8th grade were approximately one-fourth those for home alcohol access and protective family management practices. This is consistent with extant scientific theory (e.g., Flay & Petraitis, 1994; Szapocznik & Coatsworth, 1999; Wagenaar & Perry, 1994), as well as other research (Hawkins et al., 1992) and suggests that community-level characteristics are important and influential in shaping alcohol use behaviors among youth, albeit with smaller effects than inter- and intra-personal predictors of use. Therefore, incorporating community-level intervention components that build neighborhood strength and limit exposure to alcohol advertisements may enhance the effects of preventive interventions targeting more proximal influences on alcohol use behavior. Still, given the magnitude of effects, efforts focusing on these two distal factors alone may be insufficient to produce sustained, protective effects. Further, given 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, 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, respectively.

Third, in this study the area deprivation scale did not have any significant direct or indirect effects on alcohol use or protective home and family management practices when considered with the other alcohol-related neighborhood contextual factors (Effects were statistically significant in the structural equation model when considered alone.). Deprivation has
been significantly associated with a number of deleterious outcomes (Boardman & Saint-Onge, 2005; Scheier et al., 2000). Yet, these findings suggest that exposure and access to alcohol and neighborhood strength are more prominent predictors of alcohol use. This is a logical conclusion given these measures were specific to the behavior considered and is an encouraging finding for prevention scientists, as these constructs are more adept to change than poverty, unemployment, housing, and the like (Turner, 1998; Wasworthx, 1997).

Lastly, findings suggest 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 and home alcohol access decrease. 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. Thus, parental alcohol-specific and family management behaviors warrant consideration in scientific theory and preventive interventions for urban youth. Resnicow and colleagues (2002) describe the need to “culturally-tailor” scientific theory and its applications, as many of our broadly defined scientific theories may not be robust to variations in racial/ethnic composition and context of the population. However, these results are consistent with a body of literature identifying parents as key contributors to alcohol use behaviors among racial/ethnic majority and minority youth alike (Beck et al., 1999; Beck & Treiman, 1996; Borawski et al., 2003; Brody et al., 2006; Komro et al., 2006; Komro et al., 2008; Spoth, Shin, Guyll, Redmond, & Azevedo, 2006). This suggests that the need to engage parents in prevention activities targeting alcohol abuse may be robust to variations in cultural and geographic context. However, more research is needed to refine scientific theory and determine
how home and family management practices differ and how best to engage parents in prevention strategies across these social and environmental contexts.

This study is not without its limitations. First, community-level data included only static measures of neighborhood risk and protective factors. Ecodevelopmental theory (Szapocznik & Coatsworth, 1999) suggests that youth and their contexts evolve across time. Thus, both the number and interpretation of neighborhood latent classes in which the sample resided could vary across time, as could the factors identified in Paper 3. The data suggest that these alcohol-related risk indicators remained relatively stable as youth progressed from 6th to 8th grade. However, our data precluded a parallel process examination of these contextual changes and alcohol use and intentions. Future research should examine how contexts of youth evolve across time and how this change covaries with adolescent alcohol use.

Second, the sample for this study included low-income, racial/ethnic minority, young adolescents residing in Chicago, Illinois. More studies are needed to examine the associations presented here among youth residing in other metropolitan cities as well as rural and suburban areas. Effects may not be consistent across differing economic and cultural contexts. 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).

Lastly, measures of alcohol-related neighborhood context used in this study 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 comprehensively 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
contexts and etiology of alcohol use among urban, racial/ethnic minority youth. Moreover,
multiple dimensions of alcohol-related neighborhood context were considered, 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
on census data (Allison et al., 1999; Chuang et al., 2005; Galea et al., 2007) 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. Lastly, advanced, state-
of-the-science methods were implemented for each investigation. Findings showed substantive
heterogeneity in the alcohol-related neighborhood contexts in which the sample resided,
considerable variation in risk across racial/ethnic subgroup and significant direct and indirect
associations between alcohol-related neighborhood context and alcohol use. Further, they
suggest that multifaceted, community-level components of alcohol use preventive interventions
may be fruitful avenues to reduce alcohol use among urban youth in concert with strategies to
engage parents in restricting alcohol access in the home or improving monitoring and
communication with children.
Student Assent Form

You are invited to be part of a research study about young people and their health behaviors. You were selected as a possible participant because we are interested in learning about students living in large cities, and your school agreed to participate in this research project. Please read this form and ask any questions you may have before agreeing to be in the study. This study is being conducted by Dr. Kelli Komro from the School of Public Health at the University of Minnesota.

One purpose of this study is to find out about feelings, behaviors, and problems young people sometimes face. Another purpose is to find out about programs that might be helpful to young people in keeping them healthy and safe.

If you agree to participate in this study, we would ask you to complete this survey. This survey will take about 40 minutes. You may keep the pencil as a thank you for participating.

Your responses to this survey are kept private. In any sort of report we might publish, we will not include any information that will make it possible to identify a student. We put your name on this assent form with an I.D. number so we can see if students completing the survey each year change from time to time. Because of this I.D. number there is a slight risk of invasion of privacy due to the link with your name. This assent form will be removed from the rest of the survey and kept in a separate locked file so that your name will not be kept with your answers. Your answers will be treated confidentially. Keeping this confidential means that your parents, teachers, and friends will NOT see your answers. One of the reasons we do this is so that you will feel free to answer the questions honestly. Does anyone have any questions about what we mean by “confidential”?

In order to further protect the confidentiality of your responses, we have obtained a Certificate of Confidentiality from the federal government to protect the privacy of your answers. It means the police and the rest of the government can’t force us to tell them your information. However, the researchers may choose to voluntarily report to the appropriate authorities information that indicates the potential of serious harm to you or others. Because this research is sponsored by a federal agency (NIAAA), staff from this or other Department of Health and Human Services agencies may review records that identify you, but they will maintain the confidentiality of the information. When results of the study are published, your name will not be used. The Certificate of Confidentiality does not represent an endorsement of this research project by the Secretary of Health and Human Services.

You do not have to complete this survey if you don’t want to, but your participation in our research is very important. Your decision whether or not to participate will not affect your current or future relations with the University of Minnesota. If you decide to participate, you are free to stop at any time. If you decide not to participate, please study quietly while the rest of the class completes the survey.

We appreciate your help and hope that you will enjoy taking part in the survey. We will administer follow-up surveys in the future. Each time we will ask for your assent to participate and we will read and fill out a form similar to this one. You may ask questions you have now. If you have questions later, you may contact Dr. Komro at 1-888-447-4417.

If you have any questions or concerns regarding the study, and would like to talk to someone other than the researcher, contact the Research Advocate’s line at 612-625-1650 (mailing address: IRB, Box 820 Mayo, 420 Delaware St. SE, Minneapolis, MN 55455).
If you have decided to complete the survey, please print your name in capital letters in the boxes below. Also, fill in today’s date, your date of birth, “X” the boy/girl box, and sign your name in cursive on the line below. Then detach this page carefully at the perforation (dotted line). We will begin the survey after everyone has turned in their assent form. If you wish, we will be happy to give you a copy of this assent form.

Directions
1. Use the pencil provided by the survey team. Do not use a pen.
2. Use an “X” to mark your answers.
3. Erase completely any response you wish to change.
4. Please mark each answer clearly.
5. Please use capital letters for handwritten areas.

PRINT LIKE THIS:  MARKING INSTRUCTIONS
"X" your answers like this:

PRINT YOUR NAME IN CAPITAL LETTERS HERE:

First Name

M.I.

Last Name

TODAY’S DATE HERE:

MONTH  DAY  YEAR

YOUR BIRTHDATE HERE:

MONTH  DAY  YEAR

ARE YOU:

X  Boy  X  Girl

SIGN YOUR NAME IN CURSIVE HERE

Office Use Only

SCH

ID

MONTHS:

January = 01  July = 07
February = 02  August = 08
March = 03  September = 09
April = 04  October = 10
May = 05  November = 11
June = 06  December = 12
We would like to start with a few general questions about you.

1. What grade are you in right now?
   - 4th grade
   - 5th grade
   - 6th grade
   - Other, please write here:_____________________

2. How do you describe yourself? Mark all that describe you. If you are not sure, mark other and write in how you describe yourself.
   - Asian American or Asian Indian
   - Black or African American
   - Latino, Hispanic, or Mexican American
   - Native American or American Indian
   - White, Caucasian, or European American
   - Other, please write here:_____________________

3. What is the language most often spoken in your home? Mark only one answer.
   - English
   - Spanish
   - Some other language, please write here:_____________________

4. Who do you live with most of the time? Mark only one answer.
   - Mother and father together
   - Mother and father equally, at separate homes
   - Mother mostly
   - Father mostly
   - Grandparent
   - Other relative
   - Foster parents
   - Other, please write here:_____________________

5. How long have you lived in the United States?
   - All of your life
   - 7-9 years
   - 4-6 years
   - 1-3 years
   - Less than one year

6. Do you receive free or reduced-price lunches at school?
   - Yes
   - No
   - Don't know
Now, we would like to ask some questions about how you spend your time.

7 About how many HOURS A DAY do you usually spend doing homework or studying?

- None
- Less than 1 hour
- 1-2 hours
- 3-4 hours
- 5 or more hours

8 About how many HOURS A DAY do you usually spend without an adult around?

- None
- Less than 1 hour
- 1-2 hours
- 3-4 hours
- 5 or more hours

9 About how many HOURS IN A WEEK do you usually spend doing physical activities outside of gym class, such as team sports, drill teams, biking, walking, or skateboarding?

- None
- 1-2 hours
- 3-5 hours
- 6-10 hours
- 11 hours or more

10 About how many HOURS IN A WEEK do you usually spend in after-school clubs or groups with adult supervision?

- None
- 1-2 hours
- 3-5 hours
- 6-10 hours
- 11 hours or more

11 About how many HOURS IN A WEEK do you usually spend attending services, groups, activities or programs at a church, temple, synagogue, or mosque?

- None
- 1-2 hours
- 3-5 hours
- 6-10 hours
- 11 hours or more

The next questions ask about cigarette use.

12 Have you ever smoked a cigarette?

- Yes
- No

13 DURING THE LAST MONTH, have you smoked a cigarette?

- Yes
- No
The next questions are about drinking alcohol. For these questions, the definition of an alcoholic drink is:

- A bottle or can of beer
- A bottle or can of malt liquor; for example, Colt 45, or Schlitz Red Bull
- A glass of wine or wine cooler
- Flavored alcohol drink; for example, Sublime, Hooper’s Hooch, Mike’s Hard Lemonade, Apple Jack
- A shot glass of hard liquor; for example, whiskey, vodka, or rum
- A mixed drink; for example, a rum and coke

**SIPS DON'T COUNT**

14 Would you drink alcohol if your best friend offered it to you?
- Yes
- Not sure
- No

15 Do you think you will be drinking alcohol in the next month?
- Yes
- Not sure
- No

16 Do you think you will drink alcohol when you are a senior in high school?
- Yes
- Not sure
- No

17 Do you think you will drink alcohol when you are an adult?
- Yes
- Not sure
- No

**REMEMBER—SIPS DON'T COUNT**

18 DURING THE LAST 12 MONTHS, on how many occasions, or times, have you had alcoholic beverages to drink?
- 0 occasions
- 1-2 occasions
- 3-5 occasions
- 6-9 occasions
- 10-19 occasions
- 20-39 occasions
- 40 or more occasions

19 DURING THE LAST 30 DAYS, on how many occasions, or times, have you had alcoholic beverages to drink?
- 0 occasions
- 1-2 occasions
- 3-5 occasions
- 6-9 occasions
- 10-19 occasions
- 20-39 occasions
- 40 or more occasions
20 DURING THE LAST 7 DAYS, on how many occasions, or times, have you had alcoholic beverages to drink?

- 0 occasions
- 1-2 occasions
- 3-5 occasions
- 6-9 occasions
- 10-19 occasions
- 20-39 occasions
- 40 or more occasions

21 Think back over the LAST TWO WEEKS. How many times have you had five or more alcoholic drinks in a row?

- Never
- Once
- Twice
- Three to five times
- Six to nine times
- Ten or more times

22 Have you ever gotten really drunk from drinking alcoholic beverages, so you fell down or got sick?

- Never
- Once
- Twice
- Three to five times
- Six to nine times
- Ten or more times

23 If you have ever had an alcoholic drink, think back to the LAST TIME YOU DRANK. How did you get the alcohol? Mark only one answer.

- You've never had an alcoholic drink

OR

- Your parent or guardian gave it to you
- Your friend's parent or guardian gave it to you
- Another adult over 21 gave it to you
- Someone under 21 gave it to you
- You took it from home
- You took it from a friend's house
- You bought it at a grocery or convenience store
- You bought it at a liquor store
- You bought it at a bar or restaurant
- You got it some other way. How did you get it?: 
  Please write here: ________________________________

24 If you have ever had an alcoholic drink, think back to the LAST TIME YOU DRANK. What did you drink? Mark all that apply.

- You've never had an alcoholic drink

OR

- Beer
- Malt liquor; for example, Colt 45, or Schlitz Red Bull
- Wine or wine cooler
- Flavored alcohol drink; for example, Sublime, Hooper's Hooch, Mike's Hard Lemonade, Apple Jack
- Hard liquor; for example, whiskey, vodka, or rum
- Mixed drink; for example, rum and coke
25 If you have ever had an alcoholic drink, think back to the LAST TIME YOU DRANK. What was the name or brand of the alcohol?
- You’ve never had an alcoholic drink
- OR
- What was the name or brand?

The next section asks about things you might have done.

28 DURING THE LAST MONTH, how many times have you damaged property on purpose, for example, broken windows or furniture, put paint on walls or signs, put scratches or dents in a car?
- Never
- 1-3 times
- 4 or more times

29 DURING THE LAST MONTH, how many times have you called someone a bad name to their face?
- Never
- 1-3 times
- 4 or more times

30 DURING THE LAST MONTH, how many times have you told someone you were going to hit or beat them up?
- Never
- 1-3 times
- 4 or more times

31 DURING THE LAST MONTH, how many times have you pushed, shoved, pulled someone’s hair, or grabbed someone?
- Never
- 1-3 times
- 4 or more times
<table>
<thead>
<tr>
<th>Question</th>
<th>Response Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>32 During the last month, how many times have you kicked, hit, or beat up another person?</td>
<td>Never, 1-3 times, 4 or more times</td>
</tr>
<tr>
<td>33 During the last month, how many times have you taken part in a fight where a group of your friends were against another group?</td>
<td>Never, 1-3 times, 4 or more times</td>
</tr>
<tr>
<td>34 During the last month, how often have you stolen something from a store?</td>
<td>Never, 1-3 times, 4 or more times</td>
</tr>
<tr>
<td>35 During the last month, how often have you cut or skipped school?</td>
<td>Never, 1-3 times, 4 or more times</td>
</tr>
<tr>
<td>36 During the last month, how often have you done poorly on a test or important school project?</td>
<td>Never, 1-3 times, 4 or more times</td>
</tr>
<tr>
<td>37 During the last month, how often have you been in trouble for not following school rules?</td>
<td>Never, 1-3 times, 4 or more times</td>
</tr>
<tr>
<td>38 During the last month, how often have you been sent to the principal's office for doing something wrong or had detention?</td>
<td>Never, 1-3 times, 4 or more times</td>
</tr>
<tr>
<td>39 During the last month, how often have you gotten into serious trouble with your parent or guardian?</td>
<td>Never, 1-3 times, 4 or more times</td>
</tr>
<tr>
<td>40 During the last month, how often have you gotten into trouble with the police?</td>
<td>Never, 1-3 times, 4 or more times</td>
</tr>
<tr>
<td>41 During the last month, how often have you felt sad or depressed?</td>
<td>Never, 1-3 times, 4 or more times</td>
</tr>
</tbody>
</table>
Now, we would like to ask you about how often the following things have happened to you.

42. During the last month, how many times has someone offered or given you alcohol?
   - Never
   - 1-3 times
   - 4 or more times

43. During the last month, how many times have your friends asked you to drink alcohol?
   - Never
   - 1-3 times
   - 4 or more times

44. During the last month, how many times have your friends asked you to get drunk?
   - Never
   - 1-3 times
   - 4 or more times

The next questions ask about how hard or easy it is to get alcohol if you wanted to get alcohol.

45. How hard would it be for you to get alcohol from a friend?
   - Easy
   - In-between
   - Hard

46. How hard would it be for you to get alcohol from your parent or guardian?
   - Easy
   - In-between
   - Hard

47. How hard would it be for you to get alcohol from an adult who is not part of your family?
   - Easy
   - In-between
   - Hard

48. How hard would it be for you to buy alcohol from a salesperson at a store?
   - Easy
   - In-between
   - Hard

49. How hard would it be for you to get alcohol at a party?
   - Easy
   - In-between
   - Hard
50 How hard would it be for you to take it from your home?
- Easy
- In-between
- Hard

51 How hard would it be for you to take it from a friend's home?
- Easy
- In-between
- Hard

52 How many of your friends drink alcohol?
- None
- A few
- Some
- Many
- Almost all

53 How many people your age will drink alcohol by the time they are seniors in high school?
- None
- A few
- Some
- Many
- Almost all

54 How many adults in your neighborhood drink alcohol?
- None
- A few
- Some
- Many
- Almost all

55 How often does your parent or guardian ask you about what you are doing in school?
- Never
- Hardly ever
- Sometimes
- A lot
- All the time

56 How often does your parent or guardian praise you when you do a good job?
- Never
- Hardly ever
- Sometimes
- A lot
- All the time
57 How often do you eat dinner with a parent or guardian?
- Never
- Hardly ever
- Sometimes
- A lot
- All the time

58 How often does your parent or guardian ask you where you are going or who you will be with?
- Never
- Hardly ever
- Sometimes
- A lot
- All the time

59 How often does your parent or guardian have a conversation with you that lasts 10 minutes or more?
- Never
- Hardly ever
- Sometimes
- A lot
- All the time

60 How often does your parent or guardian talk with you about problems drinking alcohol can cause young people?
- Never
- Hardly ever
- Sometimes
- A lot
- All the time

61 How often does your parent or guardian talk with you about family rules against young people drinking alcohol?
- Your family does not have rules against young people drinking alcohol
- Your family has rules, but you never talk about them
- Your family has rules, but you hardly ever talk about them
- You sometimes talk about them
- You talk about them a lot
- You talk about them all the time

62 How often does your parent or guardian talk with you about what would happen if you were caught drinking alcohol?
- Never
- Hardly ever
- Sometimes
- A lot
- All the time

Now we are going to read some statements. Mark an "X" whether you agree or disagree with them. Please mark the answer that best matches how you feel.

63 Kids who drink alcohol are more grown-up. Do you . . .
- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

142
64. Kids who drink alcohol have more friends. Do you...
   - Strongly disagree
   - Disagree
   - Neither agree nor disagree
   - Agree
   - Strongly agree

65. Drinking alcohol lets you have more fun. Do you...
   - Strongly disagree
   - Disagree
   - Neither agree nor disagree
   - Agree
   - Strongly agree

The next questions ask about what you think will happen if you were to drink alcohol.

66. If you were to drink alcohol, do you think you would get sick or hurt?
   - Yes
   - Maybe yes
   - Not sure
   - Maybe no
   - No

67. If you were to drink alcohol, do you think you would get into trouble at school?
   - Yes
   - Maybe yes
   - Not sure
   - Maybe no
   - No

68. If you were to drink alcohol, do you think you would get into trouble with the police?
   - Yes
   - Maybe yes
   - Not sure
   - Maybe no
   - No

69. If you were to drink alcohol, do you think you would lose a friendship?
   - Yes
   - Maybe yes
   - Not sure
   - Maybe no
   - No

70. If you were to drink alcohol, do you think you would get in trouble with your parent or guardian?
   - Yes
   - Maybe yes
   - Not sure
   - Maybe no
   - No
A young person can have many reasons not to use alcohol. This is a list of reasons not to use alcohol. How important is each of these reasons to you?

71 Your parent or guardian has rules against alcohol use by people your age.
- This is an important reason for you not to use alcohol
- This is not an important reason for you
- You're not sure

72 If you use alcohol, it would hurt your reputation or make you look bad.
- This is an important reason for you not to use alcohol
- This is not an important reason for you
- You're not sure

73 You would be breaking school rules.
- This is an important reason for you not to use alcohol
- This is not an important reason for you
- You're not sure

74 You want to be able to make your own decisions and not give in to peer pressure.
- This is an important reason for you not to use alcohol
- This is not an important reason for you
- You're not sure

75 Your friends don't use alcohol.
- This is an important reason for you not to use alcohol
- This is not an important reason for you
- You're not sure

76 You don't want to be influenced by what you see on TV or in movies.
- This is an important reason for you not to use alcohol
- This is not an important reason for you
- You're not sure

The next questions ask about how sure you are about being able to say "no" to offers of alcohol.

77 How sure are you that you could say "no" if you were offered alcohol by a friend?
- Could say "no"
- Not sure
- Could not say "no"

78 How sure are you that you could say "no" if you were offered alcohol by a boyfriend or girlfriend?
- Could say "no"
- Not sure
- Could not say "no"
79 How sure are you that you could say "no" if you were offered alcohol at a party or dance?
- Could say "no"
- Not sure
- Could not say "no"

80 How sure are you that you could say "no" if you were offered alcohol by older kids?
- Could say "no"
- Not sure
- Could not say "no"

81 How sure are you that you could say "no" if you were offered alcohol by an adult?
- Could say "no"
- Not sure
- Could not say "no"

83 Your favorite advertisement or commercial for alcohol is:

Please write here:
- Mark this box if you don't have one
- Mark this box if you don't know

84 Do you own or collect anything that has the name of an alcoholic beverage on it, like a t-shirt, hat, poster, or water bottle?
- Yes
- No

85 Would you ever wear or use an item that has the name of an alcoholic beverage on it, like a t-shirt, hat, poster, or water bottle?
- Yes
- Not sure
- No

86 How often does your parent or guardian limit or restrict which music or music videos you listen to?
- Never
- Hardly ever
- Sometimes
- A lot
- All the time

The next questions are about advertisements and commercials.
87 Does your parent or guardian talk to you about how ads and commercials are used to get you to buy things?

- Never
- Hardly ever
- Sometimes
- A lot
- All the time

88 How many ads and commercials show life the way it really is?

- Almost all of them
- A lot of them
- Some of them
- Only a few of them
- None of them

89 How likely is it that seeing a lot of alcohol ads and commercials would make a kid drink alcohol?

- Very likely
- Likely
- Possible
- Unlikely
- Very unlikely
Thank you!
APPENDIX B
2002 PARENT SURVEY

Dear Parent of 6th Grade Student:

The University of Minnesota’s School of Public Health in cooperation with the Chicago Public Schools is undertaking a research project concerning social and health concerns facing young people and their families. This study is funded by the National Institutes of Health to Dr. Kelli Komro. As part of this project we would like to ask for your input on a brief, confidential survey. If you complete this survey and return it in the postage paid envelope provided, we will send you a check for $25 and your child will receive a $5 gift certificate to Subway. Because parent involvement is important to our research, you will receive another copy of this survey.

We are contacting parents of sixth grade students enrolled in Chicago Public Schools during the 2002/2003 school year. We obtained your name from a list of parents of sixth grade students. Your participation will help us understand how schools, communities and families can and do work together to deal with social and health problems young people living in large cities sometimes face. We will administer a follow up survey in the future. At that time you will be notified with a letter again.

The survey takes approximately 10-15 minutes to complete. The responses you give will not have your name on it. There is a slight risk of invasion of privacy due to the link between name and ID code. However, reports written on the basis of this survey will only include summaries of the data and will never identify anyone by name or location.

In order to further protect the confidentiality of your responses, we have obtained a Certificate of Confidentiality from the U.S. Department of Health and Human Services (DHHS). The Certificate authorizes withholding the names and other identifying characteristics of individuals who participate as subjects in the specified research project. This protects you from being identified in any civil, criminal, administrative, legislative, or other proceedings whether Federal, State, or local. However, the investigators may choose to voluntarily report to the appropriate authorities information that indicates the potential of serious harm to you or others. Because this research is sponsored by NIAAA, staff from this or other DHHS agencies may review records that identifies you, but they will maintain the confidentiality of the information. When results of this study are published, your name will not be used. The Certificate of Confidentiality does not represent an endorsement of this research project by the Secretary of Health and Human Services.

If we can answer any additional questions, please feel free to contact Karen Munson toll-free at 1-888-447-4417. As a parent, your insights and opinions are valued and important. However, if you do not wish to participate, please call Ms. Munson at the number listed above.

If you have any questions or concerns regarding the study and would like to talk to someone other than the researcher, contact the Research Advocate’s line at 612-625-1650 (mailing address: IRB, Box 820 Mayo, 420 Delaware St. SE, Minneapolis, MN 55455).

Please take a few minutes to complete this survey. Your opinions and your time are very important to us. When you have completed the survey, please seal it in the enclosed postage paid envelope and drop it in the mail. Thank you for your time.

Sincerely,

Kelli A. Komro
Assistant Professor

Karen A. Munson
Coordinator

In partnership with Chicago Public Schools

1707878 1

148
PAYMENT PROCESSING FORM

PLEASE COMPLETE THIS FORM. From the information you provide, we will create a $25 check in your name. We will mail the check to you at the address you provide.

- TO RECEIVE THE $25 CHECK, YOU MUST FILL OUT AND RETURN THIS FORM, along with your completed survey, in the enclosed postage paid envelope.

- PLEASE WRITE CLEARLY. Leave a space in between words. Forms are scanned by a machine. The check will be printed based on scanned information. One check will be sent to your home via US Mail.

- YOUR SIGNATURE IS REQUIRED to receive payment. One check will be issued to parents or guardians over the age of 18. (One $25 check per family/household.) Thank you for your participation!

INFORMATION BELOW MUST BE COMPLETED BY THE PARENT OR GUARDIAN, OVER THE AGE OF 18:

First Name of Parent or Guardian

Last Name of Parent or Guardian

ADDRESS:
Street
Apt. #

City

State Zip Code

HOME PHONE NUMBER:
Area Code Telephone Number

WORK PHONE NUMBER:
Area Code Telephone Number

I have completed the enclosed parent survey for the University of Minnesota. In return, I understand the University will send me one check for $25 to the address that I have listed above (one check per family/household).

Signature of Parent or Guardian over the age of 18 Date
### Survey of 6th Grade Parents

This survey should be completed by the parent or guardian who is the primary caregiver of the 6th grade student who delivered it.

#### 1. What is your relationship to your 6th grader? Please mark only one answer.
- [x] Mother
- [x] Father
- [x] Stepmother
- [x] Stepfather
- [x] Grandmother
- [x] Grandfather
- [x] Aunt
- [x] Uncle
- [x] Foster mother
- [x] Foster father
- Other, please write here: 

#### 4. During the past 7 days, about how often did you check to see if your 6th grader's homework was completed?
- [x] Never, we were too busy
- [x] Once or twice during the past 7 days
- Three or four times during the past 7 days
- Five or six times during the past 7 days
- Seven or more times

#### 5. In a usual day, how often do you know where your 6th grader is?
- [x] Never
- [x] Almost never
- About half the time
- Almost always
- Always

#### 6. How often do you know whom your 6th grader is with when he or she is away from home?
- [x] Never
- [x] Almost never
- About half the time
- Almost always
- Always
<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>7 How often do you monitor what your 6th grader watches on TV?</strong></td>
<td>- Never</td>
</tr>
<tr>
<td></td>
<td>- Hardly ever</td>
</tr>
<tr>
<td></td>
<td>- Sometimes</td>
</tr>
<tr>
<td></td>
<td>- A lot</td>
</tr>
<tr>
<td></td>
<td>- All the time</td>
</tr>
<tr>
<td><strong>8 How often do you monitor the music your 6th grader listens to?</strong></td>
<td>- Never</td>
</tr>
<tr>
<td></td>
<td>- Hardly ever</td>
</tr>
<tr>
<td></td>
<td>- Sometimes</td>
</tr>
<tr>
<td></td>
<td>- A lot</td>
</tr>
<tr>
<td></td>
<td>- All the time</td>
</tr>
<tr>
<td><strong>9 How many of your 6th grader's friends do you know?</strong></td>
<td>- None</td>
</tr>
<tr>
<td></td>
<td>- A few</td>
</tr>
<tr>
<td></td>
<td>- About half</td>
</tr>
<tr>
<td></td>
<td>- Most</td>
</tr>
<tr>
<td></td>
<td>- All of them</td>
</tr>
<tr>
<td><strong>10 How many of the parents of your 6th grader's friends do you know?</strong></td>
<td>- None</td>
</tr>
<tr>
<td></td>
<td>- A few</td>
</tr>
<tr>
<td></td>
<td>- About half</td>
</tr>
<tr>
<td></td>
<td>- Most</td>
</tr>
<tr>
<td></td>
<td>- All of them</td>
</tr>
<tr>
<td><strong>11 How often have you told your 6th grader that it's not ok for him or her to drink alcohol?</strong></td>
<td>- Never, it hasn't come up yet</td>
</tr>
<tr>
<td></td>
<td>- Hardly ever</td>
</tr>
<tr>
<td></td>
<td>- Sometimes</td>
</tr>
<tr>
<td></td>
<td>- A lot</td>
</tr>
<tr>
<td></td>
<td>- All the time</td>
</tr>
<tr>
<td><strong>12 How often do you explain your family's rules about underage drinking to your 6th grader?</strong></td>
<td>- Never, it hasn't come up yet</td>
</tr>
<tr>
<td></td>
<td>- Hardly ever</td>
</tr>
<tr>
<td></td>
<td>- Sometimes</td>
</tr>
<tr>
<td></td>
<td>- A lot</td>
</tr>
<tr>
<td></td>
<td>- All the time</td>
</tr>
<tr>
<td><strong>13 How often do you explain what would happen if the family rules against underage drinking were broken by your 6th grader?</strong></td>
<td>- Never, it hasn't come up yet</td>
</tr>
<tr>
<td></td>
<td>- Hardly ever</td>
</tr>
<tr>
<td></td>
<td>- Sometimes</td>
</tr>
<tr>
<td></td>
<td>- A lot</td>
</tr>
<tr>
<td></td>
<td>- All the time</td>
</tr>
<tr>
<td><strong>14 During the past 30 days, how many times have you talked to your 6th grader about how movies, television and other media can make drinking alcohol look good?</strong></td>
<td>- Never</td>
</tr>
<tr>
<td></td>
<td>- 1 time</td>
</tr>
<tr>
<td></td>
<td>- 2 times</td>
</tr>
<tr>
<td></td>
<td>- 3 times</td>
</tr>
<tr>
<td></td>
<td>- 4 or more times</td>
</tr>
</tbody>
</table>
15 During the past 30 days, how many times have you talked to your 6th grader about how to resist pressure from their friends to use alcohol?

- Never
- 1 time
- 2 times
- 3 times
- 4 or more times

16 If your 6th grader were going to a party, how likely is it that you would call to ask if an adult will be present?

- Would not call
- Not very likely to call
- Somewhat likely to call
- Very likely to call
- Definitely would call

17 How acceptable do you think it is for a 6th grader to drink alcohol as long as their parent(s) is supervising?

- Never acceptable
- An occasional sip is acceptable
- A small amount is acceptable on rare occasions, like weddings
- Sometimes acceptable, like on holidays and other family celebrations
- Almost always acceptable, as long as a parent is supervising

The next questions are about practices in your home.

18 How often is alcohol, including beer, malt liquor, wine, or hard liquor, present in your home?

- Always
- Most of the time
- Sometimes
- Seldom
- Never

19 Do you keep track of the alcohol supply in your home?

- Always
- Most of the time
- Sometimes
- Seldom
- Never
- Does not apply, there is no alcohol in my home

20 Do you keep alcohol locked up?

- Always
- Most of the time
- Sometimes
- Seldom
- Never
- Does not apply, there is no alcohol in my home

21 Is your 6th grader ever allowed to drink alcoholic beverages in your home?

- Never
- An occasional sip
- A small amount on rare occasions, like weddings
- Sometimes, like on holidays and other family celebrations
- Almost always
22 How difficult would it be for your 6th grader to get alcohol from your home?

- Easy
- Not very difficult
- Difficult
- Very difficult
- Impossible

23 During the past 30 days, how many times have you asked your 6th grader to bring an alcoholic drink to you?

- 0 times
- 1 time
- 2 times
- 3 times
- 4 or more times

24 During the past 12 months, have you done things to make it more difficult for your 6th grader to get alcohol from your home or other places?

- Yes
- No

25 If teenagers were hanging out on your block drinking alcohol, how likely is it that you or some of your neighbors would do something about it?

- Would not do something about it
- Not very likely to do something about it
- Somewhat likely to do something about it
- Very likely to do something about it
- Definitely would do something about it

26 If a store on your block was selling alcohol to teenagers, how likely is it that you or some of your neighbors would call the police?

- Would not call the police
- Not very likely to call the police
- Somewhat likely to call the police
- Very likely to call the police
- Definitely would call the police

27 If there was a loud party involving young people going on in a house on your block, how likely is it that you or some of your neighbors would do something about it?

- Would not do something about it
- Not very likely to do something about it
- Somewhat likely to do something about it
- Very likely to do something about it
- Definitely would do something about it

28 If there was a liquor store that had alcohol advertisements visible from outside the store, how likely is it that you or some of your neighbors would try to reduce the amount of alcohol advertisements (ads)?

- Would not try to reduce the amount of ads
- Not very likely to try to reduce the amount of ads
- Somewhat likely to try to reduce the amount of ads
- Very likely to try to reduce the amount of ads
- Definitely would try to reduce the amount of ads

29 How do you feel about giving a fine to adults, 21 or older, who provide alcohol to minors?

- Strongly oppose
- Somewhat oppose
- Neither favor nor oppose
- Somewhat favor
- Strongly favor
30 How do you feel about taking away the liquor license of stores caught selling alcohol to teenagers?

- Strongly oppose
- Somewhat oppose
- Neither favor nor oppose
- Somewhat favor
- Strongly favor

31 How do you feel about allowing alcohol to be sold at community events attended by teenagers?

- Strongly oppose
- Somewhat oppose
- Neither favor nor oppose
- Somewhat favor
- Strongly favor

32 How do you feel about allowing bars to sponsor youth sports teams?

- Strongly oppose
- Somewhat oppose
- Neither favor nor oppose
- Somewhat favor
- Strongly favor

33 How do you feel about police spending more time preventing illegal sales of alcohol to young people?

- Strongly oppose
- Somewhat oppose
- Neither favor nor oppose
- Somewhat favor
- Strongly favor

34 How do you feel about getting rid of alcohol advertisements (ads) on billboards?

- Strongly oppose
- Somewhat oppose
- Neither favor nor oppose
- Somewhat favor
- Strongly favor

35 How do you feel about reducing the amount of alcohol advertising (ads) in neighborhoods?

- Strongly oppose
- Somewhat oppose
- Neither favor nor oppose
- Somewhat favor
- Strongly favor

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:

36 Drug dealing?

- Not a problem
- A minor problem
- A serious problem

37 Unsupervised youth?

- Not a problem
- A minor problem
- A serious problem

38 People drinking alcohol on the street?

- Not a problem
- A minor problem
- A serious problem
39 Too many stores that sell alcohol?
   - Not a problem
   - A minor problem
   - A serious problem

40 Lack of supervised activities for youth?
   - Not a problem
   - A minor problem
   - A serious problem

41 Too many alcohol advertisements (ads)?
   - Not a problem
   - A minor problem
   - A serious problem

42 Poor police response?
   - Not a problem
   - A minor problem
   - A serious problem

43 Are you Hispanic or Latino?
   - Yes
   - No

44 How do you describe yourself? Mark all that describe you.
   - American Indian or Alaskan Native
   - Asian
   - Black or African American
   - Native Hawaiian or Other Pacific Islander
   - White
   - Other, please write here:

45 What is the highest grade or year of school that you completed? PLEASE MARK ONLY ONE ANSWER.
   - Did not graduate high school
   - High school graduate
   - Went to or graduated from vocational/business school
   - Associate degree
   - Some college, but no degree
   - College graduate
   - Advanced degree (post college—such as Masters or M.D.)

46 Are you currently . . . PLEASE MARK ONLY ONE ANSWER.
   - Married
   - Living with someone in a marriage-like relationship
   - Separated
   - Divorced
   - Widowed
   - Never married

47 How many children are currently living in your home?
   - children

48 Did someone help with or translate this survey?
   - Yes
   - No

Thank you!
Hello. My name is ________________, and I am calling from the University of Minnesota, School of Public Health. We’re interviewing representatives from neighborhood organizations that are near a public school in Chicago, regarding social and health concerns facing young people. You were selected because of the position you hold within your organization. We sent you a letter about this a week or so ago.

This interview will take about 8 to 10 minutes. Is this a good time, or would another time be better?

Before we begin, let me just mention that all answers will be kept at the University as research files identified with numbers, not with names. Individual answers will not be shared with anyone except the researchers doing the study. And if you have any questions as we go along, please feel free to stop me.

The researcher in charge of the study is Dr. Kelli Komro. If you’d like her number at any time, I can give it to you. (DR. KELLI KOMRO, 1-800-500-8638, STUDY CALL-IN LINE)

If you have any questions or concerns regarding the study, and would like to talk with someone other than the researcher, you can call the Research Advocate’s line at the University of Minnesota; I can give you that number if you want to write it down. [612-625-1650] [MAILING ADDRESS: IRB, BOX 820 MAYO, 420 DELAWARE ST. S.E., MINNEAPOLIS, MN 55455]
As you answer these questions, please think about __________________ and the neighborhood that surrounds it. You have been chosen to answer these questions because of your role as __________________ at __________________. (THIS PAST YEAR)

First I have a few general questions about the neighborhood surrounding __________________

1. These questions deal with some of the strengths of the neighborhood. How would you rate the neighborhood in terms of having a strong community identity — would you rate that as high, medium, or low?
   
   1 □ HIGH
   3 □ MEDIUM
   5 □ LOW
   8 □ DK
   9 □ REF

2. And how about the level of local community resources, such as community services, programs, parks and so forth. Would you rate that as high, medium, or low for the neighborhood around __________________?
   
   1 □ HIGH
   3 □ MEDIUM
   5 □ LOW
   8 □ DK
   9 □ REF
3. In some neighborhoods, people take part in local activities to improve their neighborhood, for example, block clubs, local committees, and community gardens.

Thinking about the neighborhood around [SCHOOL], on a scale from 1 to 5 where 1 means "very little participation" and 5 means "a great deal", how would you rate the participation level of residents in local activities?

<table>
<thead>
<tr>
<th>VERY LITTLE PARTICIPATION</th>
<th>A GREAT DEAL OF PARTICIPATION</th>
<th>DK</th>
<th>REF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 □ □</td>
<td>4 □ □</td>
<td>8 □</td>
<td>9 □</td>
</tr>
</tbody>
</table>

Then you would say there's not much participation.

Then you would say there's quite a lot of participation.

4. And on a scale from 1 to 5 where 1 means "very little influence", and 5 means "a great deal": how would you rate the level of influence local residents or community groups have on decisions about local policies?

<table>
<thead>
<tr>
<th>VERY LITTLE INFLUENCE</th>
<th>A GREAT DEAL OF INFLUENCE</th>
<th>DK</th>
<th>REF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 □ □</td>
<td>4 □ □</td>
<td>8 □</td>
<td>9 □</td>
</tr>
</tbody>
</table>
5. And again on a scale from 1 to 5 where 1 means "very little effort" and 5 means "a great deal of effort", how would you rate the efforts of residents in addressing the prevention of alcohol use among teenagers?

<table>
<thead>
<tr>
<th>VERY LITTLE EFFORT</th>
<th>A GREAT DEAL OF EFFORT</th>
<th>DK</th>
<th>REF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 □</td>
<td>2 □</td>
<td>3 □</td>
<td>4 □</td>
</tr>
<tr>
<td></td>
<td>5 □</td>
<td>8 □</td>
<td>9 □</td>
</tr>
</tbody>
</table>

6. And where 1 means "very little involvement" and 5 means "a great deal of involvement", how would you rate police involvement in the prevention of alcohol use among teenagers in the neighborhood?

<table>
<thead>
<tr>
<th>VERY LITTLE INVOLVEMENT</th>
<th>A GREAT DEAL OF INVOLVEMENT</th>
<th>DK</th>
<th>REF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 □</td>
<td>2 □</td>
<td>3 □</td>
<td>4 □</td>
</tr>
<tr>
<td></td>
<td>5 □</td>
<td>8 □</td>
<td>9 □</td>
</tr>
</tbody>
</table>

7. On a scale from 1 to 5 where 1 is "not at all good" and 5 is "very good", how would you characterize relationships between your local beat officers and the neighborhood residents surrounding [SCHOOL]?

<table>
<thead>
<tr>
<th>NOT AT ALL GOOD</th>
<th>VERY GOOD</th>
<th>DK</th>
<th>REF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 □</td>
<td>2 □</td>
<td>3 □</td>
<td>4 □</td>
</tr>
<tr>
<td></td>
<td>5 □</td>
<td>8 □</td>
<td>9 □</td>
</tr>
</tbody>
</table>

Then you would say they're not very good. Then you would say they're quite good.
8. Still thinking about the neighborhood surrounding [SCHOOL], on a scale from 1 to 5 where 1 means “not at all likely”, and 5 means “very likely”, if teenagers were hanging out drinking, how likely is it that residents in the neighborhood would do something about it?

<table>
<thead>
<tr>
<th>NOT AT ALL LIKELY</th>
<th>VERY LIKELY</th>
<th>DK</th>
<th>REF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

9. And on the same scale where 1 means “not at all likely” and 5 means “very likely”, if a store was selling alcohol to teenagers, how likely is it that residents in the neighborhood would call the police?

<table>
<thead>
<tr>
<th>NOT AT ALL LIKELY</th>
<th>VERY LIKELY</th>
<th>DK</th>
<th>REF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

10. And still on that same scale, in this neighborhood, if police were called to a loud party involving young people, how likely is it they would check to see if there was underage drinking at the party?

<table>
<thead>
<tr>
<th>NOT AT ALL LIKELY</th>
<th>VERY LIKELY</th>
<th>DK</th>
<th>REF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
11. And, if there was a liquor store that had alcohol advertisements visible from outside the store, how likely is it that a group from the neighborhood would work to reduce the amount of alcohol advertisements?

<table>
<thead>
<tr>
<th>NOT AT ALL LIKELY</th>
<th>VERY LIKELY</th>
<th>DK</th>
<th>REF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

12. How likely is it that if a business served or sold alcohol to minors, the business would be cited by an enforcement agency?

<table>
<thead>
<tr>
<th>NOT AT ALL LIKELY</th>
<th>VERY LIKELY</th>
<th>DK</th>
<th>REF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

13. On the same scale, how likely is it that if an adult provided alcohol to minors, the adult would be cited or ticketed by police?

<table>
<thead>
<tr>
<th>NOT AT ALL LIKELY</th>
<th>VERY LIKELY</th>
<th>DK</th>
<th>REF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

14. And how likely is it that a minor who was in possession of alcohol would be cited or ticketed by police?

<table>
<thead>
<tr>
<th>NOT AT ALL LIKELY</th>
<th>VERY LIKELY</th>
<th>DK</th>
<th>REF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
In the past few years, has your [ORGANIZATION/SCHOOL OR SCHOOL COUNCIL]:

15. Worked to offer or promote alcohol free activities for youth?
   
   1 □ YES
   
   5 □ NO
   
   8 □ DK
   
   9 □ REF

16. Has your [ORGANIZATION/SCHOOL OR SCHOOL COUNCIL] worked to increase or promote police enforcement against underage drinking?

   1 □ YES
   
   5 □ NO
   
   8 □ DK
   
   9 □ REF

17. How about reducing public drunkenness?

   1 □ YES
   
   5 □ NO
   
   8 □ DK
   
   9 □ REF

18. Has your [ORGANIZATION/SCHOOL OR SCHOOL COUNCIL] worked to promote participation in a neighborhood watch or block club?

   1 □ YES
   
   5 □ NO
   
   8 □ DK
   
   9 □ REF
IN THE LAST FEW YEARS, HAS YOUR ORGANIZATION/SCHOOL OR SCHOOL COUNCIL WORKED TO ENCOURAGE:

19. Restricting alcohol advertisements such as on billboards or storefronts?
   1 □ YES
   5 □ NO
   8 □ DK  9 □ REF

20. In the last few years has your _______(ORGANIZATION/SCHOOL, OR SCHOOL COUNCIL) __________ worked to reduce the number of businesses that sell or serve alcohol to underage youth?
   1 □ YES
   5 □ NO  →  GO TO Q. 21, BELOW

   7 □ NA/AREA IS DRY  →  GO TO Q. 22, BELOW

   8 □ DK
   9 □ REF

21. Has your _______(ORGANIZATION/SCHOOL, OR SCHOOL COUNCIL) __________ worked to promote participation in an effort to establish a "dry precinct"?
   1 □ YES
   5 □ NO
   8 □ DK  9 □ REF

22. Changing a policy in your organization related to alcohol use?
   1 □ YES
   5 □ NO
   8 □ DK  9 □ REF
CHECKPOINT: TYPE OF INSTITUTION

RELIGIOUS INSTITUTION —→ GO TO 9. 23, NEXT PAGE

RECREATION CENTERS/PARKS —→ GO TO 9. 35, PAGE 15

NEIGHBORHOOD ORGANIZATIONS —→ GO TO 9. 46, PAGE 19

LOCAL SCHOOL COUNCIL —→ GO TO 9. 61, PAGE 24

POLICE —→ GO TO 9. 68, PAGE 27

BEAT FACILITATORS —→ GO TO 9. 77, PAGE 31
APPENDIX D
ALCOHOL PURCHASE ATTEMPT PROTOCOL

Alcohol Purchase Attempt Protocol And Script

We are only attempting purchase in establishments which have packaged goods licenses. A packaged goods license means alcohol is sold for consumption off the premises. A liquor store is a typical packaged goods establishment.

Very important information: In order to have comparable data across time on the project this protocol needs to be followed as closely as possible. A variety of circumstances will occur while you are making purchase attempts, but you must work within this framework in your dealings with establishment staff.

Vehicle location

- The driver will park the car in close proximity to the establishment, or circle around the block if no parking is available. Keep doors locked and windows up.
- The scout will remain in the car while the buyer goes in. Driver remains in car.
- The car should not be parked where the seller can observe the scout or driver (e.g. park around the corner.)
- The cell phone should remain in the car with the scout and driver.

Safety

Please do your best to attempt a purchase at all locations. However, if a place seems unsafe, do not put yourself at risk. Record specifically what seems unsafe about the establishment, and skip it. Another option is to bring the scout into the establishment if it seems unsafe.
Buyer Directions

♦ Buyer will enter store alone without purse or identification.

♦ When you walk in, immediately start looking around for signs in the establishment. Take your time and go out of your way to look (without drawing attention to yourself)—BE OBSERVANT!

♦ Select a six-pack of cans of Budweiser, Coors, or Miller Lite Beer (preference in that order). If none of those brands are available, then select a six-pack of cans of another inexpensive brand. If no six-pack cans are available, then purchase a twelve-pack of cans of Budweiser, Coors, Miller or other inexpensive brand (preference in that order). If that is not available, then pick a six-pack of bottles of Budweiser, Coors, Miller, or other inexpensive brand. Finally if none of the above is available, then choose a 40-ounce bottle of Budweiser, Coors, Miller, or other inexpensive brand.

♦ Go to the shortest line to attempt the purchase.

♦ Follow the protocol as closely as possible during your purchase attempt.
Purchase request script

♦ If the seller asks how old you are:

How old are you anyway?

You answer honestly.

Well, I think I need to see some ID.

♦ If the seller asks to see your ID:

You state that you do not have your ID on you.
- If the seller hesitates or refuses the sale:

  ![Illustration of a person hesitating]
  
  Umm, I just don’t know what to do... I don’t know if you are 21... I think I might get in trouble if I don’t card you, but you look honest... Umm... you again say that your ID is not on you.

- If the seller refuses the sale, or requests buyer to get their ID:

  ![Illustration of a person declining]
  
  Nope, sorry, just can’t do it. I’m not allowed to sell to people without their IDs! You’ll just have to get your ID or no beer for you.

  You exit the establishment; go to the car, and leave.
If the seller agrees to the sale:

- Purchase the beer.
- If a receipt is offered, accept it, but do not request a receipt.
- Leave the beer in the original bag given by the establishment.
- Leave the establishment with the beer and put it in the trunk.
- Make sure all forms accurately reflect what happened—if you made a purchase, make sure that the point of purchase is accurately recorded.
Alcohol Purchase Form

SCOUT ONLY

1. Driver ID: [ ] Driver Name: __________________________ 31

2. Scout ID: [ ] Scout Name: ____________________________ 33

3. Date: [ ] / [ ] / 0 [ ] 35

4. Time: [ ] : [ ] p.m. [ ] a.m. 41

5. Exterior Maintenance:
   - Good (No trash, no disrepair/peeling paint) 40
   - Fair (Some trash, minor disrepair)
   - Poor (Lots of trash, lots of disrepair, graffiti)

6. Number of People Loitering Outside Outlet:
   - None 47
   - 1 to 5
   - 6 or more
Question by Question:
Alcohol Purchase Form—Scout Only

The label contains the name of the establishment, the address, and phone number. Please mark any changes to the establishment information if you notice that the information on the top of the sheet is incorrect in the course of your purchase attempt.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Driver ID</td>
</tr>
<tr>
<td>2.</td>
<td>Scout ID</td>
</tr>
<tr>
<td>3.</td>
<td>Date</td>
</tr>
<tr>
<td>4.</td>
<td>Time</td>
</tr>
<tr>
<td>5.</td>
<td>Exterior Maintenance</td>
</tr>
<tr>
<td>6.</td>
<td>Number of People Loitering Outside Outlet</td>
</tr>
</tbody>
</table>
### BUYER ONLY

7. Buyer ID: [ ]  
   Buyer Name: ____________________________

8. Purchase attempt outcome: (check one)
   - [ ] Purchased with no questions
   - [ ] Purchased after stating age
   - [ ] Purchased after stating ID not on me
   - [ ] Purchased after explaining ID in car
   - [ ] No purchase

9. Product Attempted/Purchased: ____________________________
   (BRAND)

10. Type of Product:
    - [ ] 6-pack
    - [ ] 12-pack
    - [ ] Single Can

11. Purchase Price of Beer: $ [ ] . [ ]
    (remember even if we don’t purchase)

12. Type of Business (check one):
    - [ ] Gas Station/Convenience Store/Drug Store
    - [ ] Large Grocery Store (full aisle of produce)
    - [ ] Liquor Store
    - [ ] Other – specify: ____________________________
Question by Question:
Alcohol Purchase Form—Buyer Only

The label contains the name of the establishment, the address, and phone number. Please mark any changes to the establishment information if you notice that the information on the top of the sheet is incorrect in the course of your purchase attempt.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7. Buyer ID</td>
<td>Fill-in your 2-digit ID. Refer to ID list in administrative section of manual. If Buyer and Scout have switched roles (to match ethnicity of neighborhood), make sure to write in the ID of the buyer FOR THAT establishment.</td>
</tr>
<tr>
<td>8. Purchase attempt outcome</td>
<td>Check the one answer that best describes what happened in your attempt.</td>
</tr>
<tr>
<td>9. Product purchased (brand)</td>
<td>Write in the brand of beer you attempted to purchase. Do NOT write in the 2-digit box.</td>
</tr>
<tr>
<td>10. Type of product</td>
<td>Write one answer to match what type of product you attempted to purchase. Refer to default list—your first choice should be a Bud Lite 6-pack of cans.</td>
</tr>
<tr>
<td>11. Purchase price of alcohol</td>
<td>You have to remember this whether you buy or not. Fill this in immediately after attempt. Use lead zeros.</td>
</tr>
<tr>
<td>12. Type of business</td>
<td>Check one. See parenthetical definition of grocery store. If you cannot determine the type of business (though most should fall within top three categories), describe in as much detail as possible under “other.”</td>
</tr>
</tbody>
</table>
13. **Seller’s Gender:**
   - [ ] Male
   - [ ] Female

14. **Seller’s Age (check one):**
   - [ ] Less than 20
   - [ ] 20-29
   - [ ] 30-39
   - [ ] 40 or older

15. **Did you see any signs related to underage drinking (such as “no entrance to minors, no sale to minors, ID check calendar”)?**
   - [ ] Yes
   - [ ] No

16. **Establishment status code (check one):**
    ***ONLY ANSWER IF NO ATTEMPT WAS MADE***
    - [ ] Closed, out of business
    - [ ] Closed, limited hours
    - [ ] Closed temporarily (repairs, remodel, etc)
    - [ ] Unable to locate
    - [ ] Unsafe (explain) ________________________________
    - [ ] Out of beer
    - [ ] Did not have time to complete
    - [ ] Don’t (or no longer) sell alcohol
    - [ ] Other (specify) ________________________________ [ ]

---

19
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>13. Seller’s gender</td>
<td>Fill-in gender of salesperson you attempted purchase from. This is the person you interacted with at the register.</td>
</tr>
<tr>
<td>14. Seller’s age</td>
<td>Check one box to indicate your estimate of how old the salesperson appeared to be.</td>
</tr>
<tr>
<td>15. Did you see any signs related to underage drinking ...</td>
<td>We made this question easier. Simply check “yes” if there were signs, “no” if there weren’t. Make sure to look around in the store!</td>
</tr>
<tr>
<td>16. Establishment status code</td>
<td>Check ONE answer to describe what happened, ONLY answer if you were unable to make attempt.</td>
</tr>
<tr>
<td>17. Salesperson’s comments</td>
<td>Document what was said by the salesperson here.</td>
</tr>
<tr>
<td>19. Other comments</td>
<td>Document any other particulars about the attempt here. Its especially important to document anything unusual that occurs in the establishments.</td>
</tr>
</tbody>
</table>

**One Final Note**

You must follow protocol as closely as possible at all times. The validity of this study depends on your diligence in collecting accurate data. There are times when strange things happen, carefully document these incidents. Call the supervisor if necessary; we are here to help you.
APPENDIX E
ALCOHOL ADVERTISEMENT ASSESSMENT DATA COLLECTION AND CODING PROTOCOL

Project Northland Chicago
Ad Assessment Protocol

OBJECTIVE: To document signage located within a 1500 ft. (about 3 blocks) radius around each Project Northland School.

This observational study is designed to document the type, quantity, and location of print advertising in Chicago neighborhoods around each Project Northland School. Specifically:

1. We will document ALL signs in the area that are not attached to or affiliated with a store, whether or not they are alcohol related. This category includes billboards, plus any signs on bus stands, benches and CTA “L” stops, plus all other signs visible from the street or in the area around each school.

2. We will document ALL ALCOHOL-RELATED signs attached to or affiliated with a store, bar, restaurant, or lounge. This includes signage that simply includes an alcohol brand name endorsement (e.g., a sign for a show that is sponsored by Budweiser). This also includes any signs, posters, and banners advertising or promoting alcohol that are located on or in front of alcohol outlets and liquor stores, or bars and lounges, or grocery and convenience stores.
“WHAT TO LOOK FOR”
Instructions

Definition of Billboard: A billboard is defined as any framed, permanent structure with a changeable sign, either free-standng or attached to a building.

General Rule in the field: WHEN IN DOUBT, DOCUMENT IT! Take a photo, a GPS Device reading, and complete a Data Collection Form. We would rather have extra data than miss a location.

- DO NOT document the exterior of a bar or lounge or liquor store exterior or establishment sign UNLESS there is an alcohol product or brand name advertised on the exterior of the building or on the window(s) or on the establishment sign.

- DO NOT document unframed small posters or fliers. For example, do not document fliers advertising a concert or political campaign that may be stapled or glued to the exterior of a building.

- DO NOT document signs on residential property.

- DO NOT document street signs, traffic control signs, or directional signs.

- DO document signs on bus stands and benches located on boulevards or near residential property.

- DO document any signs, posters, or art that make reference to alcoholic beverages or drinking of alcohol. For example, document an artistic, painted mural depicting a community festival with beer for sale or people drinking.
Field Environment and Safety

Your safety is the first priority when you are in the field. If a location seems unsafe, **DO NOT** put yourself or the team at risk. If you are unable to take photos of signs while you are inside the vehicle, you may get out if you feel it is safe to do so. If you feel it is not safe to take photos while out of the vehicle, skip that location, and document the circumstances in the “Additional notes” section of the Data Collection Form.

**NOTE:** Refer to the Personal Safety section in your Survey Interviewer Manual for safety tips in greater detail.

Materials Overview

The following materials will be used by each team to complete the school routes:

School Route envelopes
- School-specific **Cover Sheet**
- School-specific **Data Collection Forms**
- **What to Look For Instructions**
- **Grid maps** of area around school to be assessed
- **Map Instructions** sheet
- Map and directions to the school

Camera and GPS Device bag
- **Digital camera**
- **Camera Instructions** sheet (and manufacturer’s instruction booklet).
- **Extra memory card** in plastic case (see camera instructions about this)
- Extra camera batteries
- **GPS Device**
- **GPS Device Instructions** sheet (and manufacturer’s instruction booklet).
- Additional “AA” batteries for GPS Device

Blue Vinyl expandable pouch
- **Ad Assessment protocol**
- Clipboard
- **Extra Data Collection Forms**
- Chicago map
- **Cell phone**
- Magnifier
- Flashlight plus extra “AA” batteries
- **Letters of explanation about project**
- **Emergency PNC contact information**
- Office supplies
- Safety devices (whistle, screamer)
Team Overview

This project is a team effort, and your team will need a good plan before you start! At the beginning of a shift, make sure your team has each of its roles assigned clearly. The team is responsible for the results of each route.

A team of 3-4 PNC staff members will share the following roles (see instructions for each role below):

- Team Leader
- Driver
- GPS Device Reader
- Navigator
- Photographer
- Recorder

Usually, a team member will have more than one role on a route. Combinations of roles will vary. The role of Team Leader will be indicated on the staff schedule. Here are some possible role combinations:

- Driver/GPS Device Reader (GPS Device functions best on the dashboard)
- Navigator/Photographer (both roles require front seat visibility)
- Recorder

ALL TEAM MEMBERS NOTE: Once you have begun a school route, turn off the car radio and limit non-essential conversation. Team members will need to work with minimal distractions in order to record data accurately.

Roles and Responsibilities

Team Leader:

The primary responsibility of the Team Leader is to assemble materials needed to complete the assigned school routes. See PNC Ad Assessment Assembly Instructions, posted in the PNC Supply Room. The Team Leader will oversee the data collection process. S/he will return all completed data and all school route materials to the PNC Supply Room at the end of each shift. This role may be assigned in combination with other roles.
Driver:

The primary responsibilities of the **Driver** are to drive safely and to read the GPS Device coordinates for each location. The **Driver** must stay with the vehicle at all times.

Based on verbal directions from the **Navigator**, the **Driver** will work systematically through the streets on the grid map, stopping for all sign locations. She will tell you when to pull over and stop for a sign location. If an additional camera memory card is needed, return to the school, so another school sign photo can be taken.

When pulling over to a sign location, always put the car in the “park” position. Try to park legally, if possible. Use your best judgment when stopping the car. Pay special attention to areas around bus stops and driveways to ensure you are not blocking the way.

Please keep an eye on any team members who may be out of the vehicle. Do not drop off team members and come back for them. Try to find a place to park where the team members are visible at all times. **Be very careful!** Watch out for uncontrolled intersections — there are a lot of corners in residential areas without stop signs in any direction. **Look out for pedestrians!** Lots of people walk in the street, especially in business sections.

Do not leave a location until the **Recorder** indicates s/he has completed all documentation and is ready to move on to the next area. If it becomes necessary to move the car immediately, pull around the corner, or somewhere close to the location. **Stop and wait** until the **Recorder** is completely finished.

**NOTES:** On streets where the circled area ends in the middle of the block, continue assessing the street to the next corner.

GPS Device Reader:

The primary responsibility of the **GPS Device Reader** is to take GPS readings at each sign location on the school route.

Upon arrival at the school sign location, the **GPS Device Reader** will turn on the GPS Device (see **GPS Device Instructions** sheet). Give the GPS# (from label) to the **Recorder**. Place the GPS Device on the dashboard of the vehicle. Leave it turned on for the duration of the shift.

The **Navigator** will now direct the **Driver** to the starting location of the route, calling out the streets as they are crossed. The **Driver** will approach the first sign location and park safely. At the first sign location, the **GPS Device Reader** reads the coordinates aloud to the **Recorder** when s/he indicates s/he is ready to document them. For example, say “North is 38 51318 and west is 094.47930.” Read each of the digits. Ask the **Recorder** to read back these coordinates for verification. Remember, the numbers may change slightly as they are read, because the satellites and the earth continue to move, even though the car is parked.

**NOTE:** If the GPS Device fails, document the exact names of the sign location’s cross streets under item #7 on the **Data Collection Form**. For example, document “GPS failure at 34th Avenue South and West Vine Street.” Explain the specific circumstances on the **Data Collection Form** under “Additional Notes.”
Navigator:

The primary responsibility of the Navigator is to direct the Driver along the school routes (see Map Instructions sheet).

Get a set of school-specific grid maps from the Recorder. The Navigator will determine the starting point of the route, and call out that location. For example, s/he can say, “We are now starting to look for signs on West 69th Street and Throop Street.” Using the large-circle grid map, the Navigator will call out the complete name of each street as it is crossed. For example, “We are crossing West 54th Place.” S/he will tell the Driver where to turn and when to stop.

If it is necessary to backtrack, or go outside the circled area to get to a street not yet completed, it is may be helpful to say something like, “start looking for signs now (or again) – we are back on the grid.” If an additional camera memory card is needed, the Navigator will direct the Driver to return to the school, so another school sign photo can be taken for that card.

NOTE: On streets where the circled area ends in the middle of the block, continue assessing the street to the next corner.

Photographer:

The primary responsibilities of the Photographer are to look for and photograph all signs in the grid map area that meet the criteria outlined in the What to Look For Instructions.

NOTE: The Navigator and Photographer on a school route will often be the same person.

The school route begins at the school (see Camera Instructions sheet).

- Give Camera # to the Recorder (bottom of camera).
- Turn camera on, and leave it on for the duration of the school route.
- Photograph the school sign.
- Review the photo. Read the Photo ID# and describe photo to the Recorder. Recorder will document information on the Ad Assessment Cover Sheet and it read back for verification.

The Navigator will now direct Driver to the starting location of the route, calling out the streets as they are crossed. The Photographer will continue to look for signs.

In residential areas, both sides of the street can probably be assessed at the same time. In commercial areas, each side of the street must be observed separately. It may be easiest to observe the opposite side of the street from where the car is driven, because buildings may be too close to the street for convenient assessment.
At a sign location, you may exit the car to take photos if you feel it is safe. The **Recorder** can accompany the **Photographer** out of the vehicle, if desired. **Remember:**

- Take photos of any sign that can be observed from the street or sidewalk.
- Photograph any signs that may appear on sides of buildings.
- Photograph any signs above and below street level.
- Avoid including people in photographs. You can ask people to move, or you can come back to the location later on the route.
- If, for some reason, a location cannot be photographed, document the specifics on the **Data Collection Form**.

At each sign location, take the following kinds of photos (see photos, right):

- A wide-angle photo that shows the area around the location in item #1.
- A close-up picture of each sign posted at the location. For example, a bus stand may have multiple signs posted. In this case, take one wide-angle photo of the bus stand, and a close-up photo of each sign posted on the bus stand.
- **EXCEPTION:** A storefront may have multiple alcohol signs or advertisements positioned very close together. First, take the wide-angle photo and document for item #3 on **Data Collection Form**. Then, take as many additional photos as needed to show all of the close-together signs posted on the wall or window of the storefront. Document the photo ID#s for item #4 on the **Data Collection Form**. Under “Photo Description”, document “multiple signs” and give the total number of signs for that photo. For example, the store shows five neon signs for beer in the window, write “Multiple signs; five neon beer signs in window.”
- If a photo error occurs (you accidentally photographed your foot!), the error must be documented. For example, say, “Photo #24, error.”
- If an additional camera memory card is needed, the team must return to the school, so another school sign photo can be taken.
- After all photos have been taken at a location, review the photos (see **Camera Instructions** sheet). Read each photo ID# and describe the photo to the **Recorder**. Ask the **Recorder** to read back each photo ID# and description for verification.

**NOTE:** When you are completely finished photographing a school route, turn the camera off (see **Camera Instructions** sheet). Remove the used memory card, put it in the correct case, and give it to the **Recorder**.
Recorder:

The primary responsibilities of the Recorder are to highlight on the grid map all streets to be assessed and to complete the Ad Assessment Cover Page and Data Collection Forms for each school route.

Distribute School Route Materials: Give a set of assigned maps to the Navigator. Give the assigned memory card case to the Photographer. Have handy all required forms, maps, and supplies for the assigned school route.

Highlighting the Grid Map: Begin to highlight the streets as they are called out by the Navigator (see Map Instructions sheet).

NOTE: On streets where the circled area ends in the middle of the block, continue assessing the street to the next corner, highlighting accordingly.

Complete the Ad Assessment Cover Page. On this page, document:
1. Camera # of the digital camera (located on bottom of camera; the Photographer will give you this number, read back to verify).
2. GPS # of the GPS Reader (located on front of GPS Reader).
3. Card# of the camera memory card and
4. Photo ID# of the School sign (Photographer will give you these numbers; read back to verify).
5. Photo ID# of the School Sign (get ID# from the Photographer; read back to verify).
6. Date
7. Route starting and ending times.
8. Names of PNC Team members with their roles

NOTE: If an additional memory card is used, record that card#, plus the ID# of another photo of the school sign. Photographer will give you this information; read back to verify.

Complete the Data Collection Form(s) - One form for each location. On each form, record:
1. Page number (upper right corner of Data Collection Form).
2. Location of sign or signs (item #1).
3. GPS Coordinates (item #2).
4. Wide-angle photo ID# (item #3).
5. Close-up photo ID# or ID#s and photo description (item #4).
6. Number of signs posted at this location (item #5).
7. Additional notes, if any (item # 6).

NOTE: If there are multiple sign locations for one pair of GPS coordinates, complete one Data Collection Form for each location. For example, a bus stand and a billboard are observed on the same corner. Complete one form for the bus stand and one form for the billboard. Coordinates will be the same for each form. On the first form, check only one box under item #1 (bus stand), and include only the data for that one location. On the second form, check only one box under item #1 (bus stand; bench), and include only the data for that location.

At the end of a school route: Finish numbering all data collection forms. Get the used memory card case from Photographer and put all materials back in the envelope. File in blue vinyl pouch.
Map Instructions

Each school route envelope will contain sets of two grid maps of the ad assessment area. A large-circle grid map will be used by the Recorder to highlight the streets as the assessments are completed. The small-circle grid map shows a broader view of the area and streets. The distance from the school to the outer edge of the circle is approximately 1500 feet on both size maps.

Using a large-circle grid map, the Navigator will decide the route for observing the neighborhood. In most cases, the Navigator will direct the Driver to begin the assessment at one side of the circle. For example, the Navigator may direct the Driver to the western side of the southern-most horizontal street within the circle, then turn left at the end of the assessment area, and turn left again on the next southern-most street. At the end of that block, two streets will be completed. The team may continue in the same manner along the rest of the horizontal streets. When all of the horizontal streets have been completed, they may use the same method to assess the vertical streets.

Not all neighborhoods will be laid out so neatly. Depending on traffic, uncontrolled intersections, open spaces of land, etc., the route may be driven in both directions within one part of the circle, or a different method may be used than was used for the rest of the circle.

There may be some challenges that aren’t apparent on the grid map. Use arrows to indicate one-way streets on the grid map. When navigating down one-way streets, adjust the driving pattern accordingly. There may be roads indicated on the map that are not really there, or streets that exist but are not shown on the map. Please indicate these streets on the map. Label the additional streets and assess for signs. The most important thing is to drive down every street within the grid and document any signs.

Sometimes, the grid circle will cut through the middle of a street. Start the ad assessment at the far end of that block. The ad assessment will begin outside of the circle because we don’t know exactly where the 1500 foot distance would start.

The Recorder will use the large-circle grid map and highlight the streets where observations have been completed. On residential streets, the Driver will make one pass down the street (one-pass method). The Recorder will highlight down the center of the street as the Navigator announces the street they are driving on and the cross streets. When the route is completed, double check the grid map to be sure that all streets have been highlighted.

On commercial streets, the Driver will pass first down one side of the street, then return up the other side (two-pass method). For example, when moving down the east side of Racine Avenue, highlighting and observing will occur for the west side of the street. Then, when moving up the west side of Racine Avenue, highlighting and observing will occur for the east side. The team must use the same observation method for the entire length of the street. Do not combine the one-pass method with the two-pass method on the same street. It may be necessary to backtrack down some streets, but it is important to maintain consistency in the method used to observe the streets. If at anytime during the route, the Navigator or Recorder is unsure of where they are on the map, the Driver must pull over and park safely until the team can get its bearings.
Map Instructions

Each school route envelope will contain sets of **two grid maps of the ad assessment area**. A **large-circle grid map** will be used by the **Recorder** to highlight the streets as the assessments are completed. The **small-circle grid map** shows a broader view of the area and streets. The distance from the school to the outer edge of the circle is approximately 1500 feet on both size maps.

Using a **large-circle grid map**, the **Navigator** will decide the route for observing the neighborhood. In most cases, the **Navigator** will direct the **Driver** to begin the assessment at one side of the circle. For example, the **Navigator** may direct the **Driver** to the western side of the southern-most horizontal street within the circle, then turn left at the end of the assessment area, and turn left again on the next southern-most street. At the end of that block, two streets will be completed. The team may continue in the same manner along the rest of the horizontal streets. When all of the horizontal streets have been completed, they may use the same method to assess the vertical streets.

Not all neighborhoods will be laid out so neatly. Depending on traffic, uncontrolled intersections, open spaces of land, etc., the route may be driven in both directions within one part of the circle, or a different method may be used than was used for the rest of the circle.

There may be some challenges that aren’t apparent on the grid map. Use arrows to indicate one-way streets on the grid map. When navigating down one-way streets, adjust the driving pattern accordingly. There may be roads indicated on the map that are not really there, or streets that exist but are not shown on the map. Please indicate these streets on the map. Label the additional streets and assess for signs. The most important thing is to **drive down every street within the grid and document any signs**.

Sometimes, the grid circle will cut through the middle of a street. Start the ad assessment at the far end of that block. The ad assessment will begin outside of the circle because we don’t know exactly where the 1500 foot distance would start.

The **Recorder** will use the large-circle grid map and highlight the streets where observations have been completed. On residential streets, the **Driver** will make one pass down the street (one-pass method). The **Recorder** will highlight down the center of the street as the **Navigator** announces the street they are driving on and the cross streets. When the route is completed, double check the grid map to be sure that all streets have been highlighted.

On commercial streets, the **Driver** will pass first down one side of the street, then return up the other side (two-pass method). For example, when moving down the **east side** of Racine Avenue, highlighting and observing will occur for the **west side** of the street. Then, when moving up the **west side** of Racine Avenue, highlighting and observing will occur for the **east side**. The team **must use the same observation method for the entire length of the street**. Do not combine the one-pass method with the two-pass method on the same street. It may be necessary to backtrack down some streets, but it is important to maintain consistency in the method used to observe the streets. If at anytime during the route, the **Navigator** or **Recorder** is unsure of where they are on the map, the **Driver** must pull over and park safely until the team can get its bearings.
Camera Instructions

Getting Started

NOTE: Do not push any buttons other than those described below.

How to check if camera is turned off:

1. Depress shutter button.
   ✓ If camera is turned off, nothing will happen.
   ✓ If camera happens to be turned on, the photo taken accidentally will be recorded as an error.

2. **If camera is on**, turn it off before proceeding
   ✓ Push the red power button on the back of the camera.

Inserting the memory card:

*Camera must be turned off before the memory card is inserted or photos and ID#s may be lost.*

1. On the back right side of the camera open the yellow “Smart Media” door. Insert the memory card with the gold side facing you. Push it all the way. There will be a narrow edge still visible. Close the yellow door.

2. To remove the memory card, open the yellow “Smart Media” door and push the memory card in to release it. Put the memory card back into the plastic envelope, then back into the case it came from (check the number). Close the yellow door.

Changing the battery:

*Camera must be turned off before new batteries are inserted or photos and ID#s may be lost.*

NOTE: The battery indicator is located in the upper left corner of the viewfinder. The battery symbol is green when the power level is high. When it changes to blinking red, the remaining power level is low. Replace the batteries.

1. Find the battery compartment on the bottom of the camera. Slide the locking lever to the right to unlock it. With your fingertips or thumb, slide the cover latch in the direction of the arrow. Lift the cover open.

2. Remove the old batteries and throw them away. Insert two new batteries with contact points facing down (batteries will fit one way only).

3. Close the cover by pushing down, carefully and firmly, in the center of the cover (it will feel as if it might break). Slide the cover latch back to fasten.

4. Move the locking lever to the left to lock it.

**If an additional memory card is used for a school, the team must return to the school to document another photo of the school sign. Each memory card is “filed” according to school, so the school sign photo must be the first photo on each card.
Taking Photos

Turn the camera on when you arrive at the school. Turn the camera off only when a school route is completed, or you go on a break. The camera may go into “sleep mode” while it is not being used, but it will “wake up” when you press the shutter part way. Keep the screen off to conserve battery usage.

**Taking photos:** Remove the lens cap. Push the red power button on the back of the camera. The mode dial on top should have “AUTO” lined up with the small line to the left of the dial. As you look through the viewfinder, you will see a set of brackets. The area inside the brackets is the primary focus area. The sign you are photographing should be in the middle of these brackets.

1. **Focus and shoot:** To focus, center the subject in the brackets. Press the shutter button halfway, slowly and gently. To take the picture, press the shutter button fully. The zoom control is located in front of the shutter button. Move the zoom control to the left to for a wide-angle photo. Move it to the right for a closer photo.

2. **View the photo:** Locate the rectangular button marked Quick View on the lower back middle of the camera. Push this button twice quickly. The last photo you took should appear on the screen. The photo number will appear briefly in the lower right corner. This photo ID# will be documented on the **Data Collection Form.** View the other photos by using the right/left sides of the arrow pad on the back. To return to shooting, press the Quick View once.

**NOTE:** When you are completely finished photographing a school route, turn the camera off (see **Camera Instruction** sheet). Remove the used memory card, put it in the correct case, and give it to the **Recorder.** A fresh memory card will be used at the start of each school route.

* The camera should be able to take 49 pictures with the resolution set at 1280 x 960 or SQ 1.

Troubleshooting

Did you touch anything else?! I told you not to push any other buttons!

- ✔ If the viewfinder appears fuzzy, perhaps the dial next to it needs adjusting.
- ✔ If several numbers/letters appear on the screen, push OK in the center of the mode dial and hope they go away.
- ✔ For other problems, you will need to consult the manufacturer instruction booklet.
GPS Device Instructions

NOTE: Do not push any buttons other than those described below.

The GPS Device will work best when it has an unobstructed view of the sky. If the view of the sky is poor due to buildings, heavy foliage, or other obstructions, the satellite signals can be blocked and the receiver may take longer to compute a position fix. It also may have difficulty if it is located in the backseat of some vehicles. It is suggested that the device be set on the dash of the vehicle when you arrive at the school.

1. Give the GPS# to the Recorder (from label on front of device).

2. Turn on the GPS device when you arrive at the school by pushing the lower button on the right side.

3. It may take a few minutes for the device to compute a position fix. The Skyview graphic on the top half of the screen represents a view looking up at the sky from your current location showing satellites and their assigned number. A Signal Strength Bar for each satellite is shown just below. The stronger the signal, the taller the signal bar.

4. The latitude and longitude readings will appear next to the word LOCATION on the bottom of the screen. The GPS Device Reader will read all of these numbers out loud to the Recorder for documentation on the Data Collection Form.

5. It is very normal for the latitude and longitude numbers to fluctuate even while the vehicle is parked as the satellites and the earth are constantly moving.

6. Turn the device off by pushing the lower button on the right side when you have completed a school route area.

Troubleshooting

Did you touch anything else?! Here we go again! I told you not to push any other buttons!

✓ If the screen says, “Wait... Tracking Satellites”, with a list of choices below it, push the upper right button to reset it.

✓ If you have any other problems, consult the manufacturer instruction booklet.
Ad Assessment Cover Page

School: «School_Name»

School ID: «School_ID»

Region: «Region»

Address: «Street»

School Starts: «Start_Time»

School Ends: «End_Time»

Date: _____________

Camera # ______

GPS Device # _____

Camera Memory Card # ______

(IF ADDITIONAL CARD USED)

Camera Memory Card # ______

Photo ID # of School Sign ______

Photo ID # of School Sign ______

Route Start Time: ______:____

Route End Time: ______:____

Team Leader: ________________________________

Driver: ________________________________

GPS Reader: ________________________________

Photographer: ________________________________

Navigator: ________________________________

Recorder: ________________________________
Project Northland Alcohol Signage Assessment  
Data Collection Form  
(One form per location/wide-angle photo)

School ID: ____________

School Name: ___________________________ Start time: ____________

Address: ___________________________ End time: ____________

<table>
<thead>
<tr>
<th>1. Location of Sign(s) (check only one):</th>
<th>2. Coordinates (GPS receiver):</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ bus stand/bench</td>
<td>N ____ • _________ (latitude)</td>
</tr>
<tr>
<td>☐ billboard</td>
<td>W ____ • _________ (longitude)</td>
</tr>
<tr>
<td>☐ liquor store</td>
<td></td>
</tr>
<tr>
<td>☐ grocery or convenience store</td>
<td></td>
</tr>
<tr>
<td>☐ bar</td>
<td></td>
</tr>
<tr>
<td>☐ other (specify): ________________</td>
<td></td>
</tr>
</tbody>
</table>

3. Wide-angle Photo ID #: ______________________ (of item checked in #1)

4. Take a close-up photo of each sign at this location. Describe the sign briefly.

<table>
<thead>
<tr>
<th>Close-up Photo ID #</th>
<th>Photo Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. Number of signs posted at this location  
(= total from #4 above excluding photo errors) ________________________

Additional Notes:  
_________________________________________________________________  
_________________________________________________________________  
_________________________________________________________________
LIST OF REFERENCES


204


BIOGRAPHICAL SKETCH

Amy Leigh Tobler was born in Ogden, Utah. She is one of four children, having a twin sister and a younger brother and sister. She grew up mostly in Kaysville, Utah but completed high school at River Ridge High School in New Port Richey, Florida in 1998. She earned her B.H.S. in health science and her M.P.H. in community health education from the University of Florida (UF) in 2002 and 2003, respectively.

Upon completion of her master’s degree, Amy entered the workforce, first being employed as an Allied Health Department Chair and Instructor at City College (2004) and then as a Research Coordinator for the Social and Community Epidemiology Research Program in the College of Medicine, Department of Epidemiology and Health Policy Research at UF. She has worked in this capacity since January 2005. This position allowed her the opportunity to earn her Ph.D. in health and human performance with a specialization in health behavior. Amy’s work and time as a doctoral student have afforded her many opportunities, including management of 6 externally funded research grants and co-authorship of several peer-reviewed scientific manuscripts and one book chapter. As a doctoral candidate, Amy received the Health Solutions Graduate Scholarship and Patrick J. Bird Dissertation Research Award. She was also included in Who’s Who Among Executives and Professionals in 2008. Amy is a member of the Society for Prevention Research (SPR), SPR Early Career Prevention Network, and Prevention Science Methodology Group.

Amy will pursue a faculty position where she can continue her research and teach. She has been married to Jeffrey W. Tobler for 6 years.