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Psychosocial factors associated with recent alcohol use among youth

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Abstract

Background: Youth alcohol use is serious health problem. Consequences of youth alcohol use include suicide, homicide, sexual assault, risky sexual behaviors, unintentional injuries, other drug use, and failing grades. Methods: This study examined whether recent alcohol use among 7th - 12th grade students (N = 54,361) differed based on frequency of pro-social behaviors, risky behaviors; friends' involvement in alcohol/drug use; and specific parent, teacher and school factors. Results: Results indicated that 20.3% reported using alcohol in the past month. Male students were more likely than female students to report recent use. Hispanic students were also at increased risk for using. Compared to nonusers, recent alcohol users were more involved in risky behaviors, less involved in pro-social behaviors, and less likely to have parents and teachers talk about and set/enforce rules regarding alcohol use. Conclusions: Recent alcohol use is a significant issue among youth with one in four youth reporting this behavior. Positive connections to parents, teachers/school protected students from recent alcohol use.

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INTRODUCTION

Underage alcohol use continues to remain a significant health problem in the US. Data from the Youth Risk Behavior Survey (YRBS) indicated that 44.7% of US high school students reported consuming alcohol in the 30 days prior to the survey [1]. Monitoring the Future (MTF) 2007 data indicated that recent alcohol use ranged from 15.9% of 8th graders to 44.4% of 12th graders [2]. Johnston et al [2] also found that 17.9% of 8th graders, 41.2% of 10th graders, and 55.1% of 12th graders drank to intoxication at some point in their lives.

Age of alcohol use initiation is becoming younger [3-4] with one in four (23.8%) high school students reporting drinking alcohol before the age of 13 [1]. Youth between 12 and 20 years of age drink nearly 20% of all the alcohol consumed in the US [5]. In addition, underage drinkers tend to consume more drinks per occasion than adult drinkers [6].

Negative consequences of underage drinking are numerous and well documented. Youth who drink alcohol are at higher risk for suicide and homicide [7], sexual assault and unwanted/unprotected sexual activity [8], unintentional injuries [9], marijuana and other illicit drug use [10], absenteeism and failing grades [10], and legal problems [6-8]. Long-term physical consequences include disruption of normal growth, impaired brain functioning, decreased critical thinking skills, reduced memory, and increased risk for cancer, cerebrovascular disease and alcohol dependency [8, 11-14].

Research has identified several risk factors for youth alcohol use and shown them to exist at the individual, family, school, and community levels [15-16]. Individual risk factors include low-self esteem, aggressive and impulsive behavior, conduct disorders, delinquent activity, poor decision-making skills, difficulty controlling responses, and anger management

problems [16-17]. Familial risk factors include having parents who use and abuse alcohol [18-19], poor parental monitoring of adolescent behavior [20-22], poor parent-child relationships [23], use of authoritarian parenting styles [24], and minimal parent-child quality time spent together [18]. School risk factors include child and adolescent transition periods such as middle school to high school and low levels of student connectedness to school [16, 25]. Community risk factors include easy access to alcohol and community disorder influence underage drinking consumption [17].

Regarding protective factors, individual, peer and school protective factors include participation in making healthy decisions, involvement in school and community activities, strong sense of religiosity, positive peer relationships, and lack of peer approval to use alcohol [15, 26-27]. At the family level, protective factors include high levels of family connectedness [25-27], parental involvement in a child's life, family support, and parental setting of clear limits, and consistent enforcement of rules [16, 25, 27]. School and community protective factors include opportunities for positive involvement and empowerment as well as a sense of school/community connectedness, or feelings of belonging, which promotes healthy decision-making among youth and reduces negative externalized behaviors [26, 28].

While much research has been conducted regarding underage drinking, additional studies are needed to more fully explain the psychosocial factors associated with recent youth alcohol use. Such studies can in turn be used to help develop effective prevention and intervention efforts. This study adds to the professional literature by examining how recent alcohol use is associated with frequency of involvement in pro-social behaviors, including participation in school sports, school clubs, and community clubs, attendance at a faith-based institution (church, synagogue, mosque), participating in school clubs, and making good grade and risky behaviors such as skipping school, getting trouble in school, getting in trouble with police, being involved in a gang. The present study also explored the relationship between recent use and frequency of parent/teacher communication and parent/school rule setting. The findings lend themselves to important implications for both the field of prevention and for future research on underage drinking.

The present study examined recent alcohol use and associated variables among youth in 7th through 12th grades. The following research questions were examined: 1) What percent of students are involved in annual, recent, weekly and daily alcohol use? 2) Do the following variables differ based on recent involvement in alcohol use (past month) while controlling for sex,

age and grade: a) frequency of youth participation in positive/pro-social school, community and faith-based activities; b) frequency of youth participation in negative/risky behaviors; c) frequency of friends' involvement in alcohol, tobacco and marijuana; and d) specific parent, teacher and school factors?

METHODS

Participants

A total of 54,361 seventh through twelfth grade students in 133 public and private schools in 8 counties within the Greater Cincinnati area served as the participants of this study. Of a total population of 70,204 students in grades 7 through 12 in participating schools, 54,361 students completed surveys (77.4% response rate). A total of 15,843 refused to complete surveys. School districts and schools were recruited by the Coalition for a Drug Free Greater Cincinnati via phone calls, email messages and coalition meetings. Student participation was voluntary. If parents did not wish to have their child participate, then the child was excluded from the survey. Responses from students were kept anonymous and confidential.

Procedures

Prior to survey distribution, survey administrators at participating schools informed students regarding the purpose of the survey, the confidential and voluntary nature of the survey and the importance of offering honest answers. Students were instructed to skip items that they did not wish to answer. Survey administrators refrained from walking around and looking at students' surveys while they completed them, so as to avoid any student suspicion. Students were instructed to place their completed questionnaires in a designated envelope/folder. Survey administrators in turn gave the envelope/folder of completed surveys to the office staff to be sent out for data entry and analysis. Every student in school on the day of survey administration was given a survey to complete.

Instrument

The Pride Questionnaire for Grades 6-12 sponsored by the Coalition for a Drug-Free Greater Cincinnati was used to survey students. For the purpose of this paper, the following survey sections were utilized: 1) Personal and family information (demographic information); 2) Student information (student involvement in pro-social behaviors and risky behaviors); 3) Frequency of alcohol use; 4) Age at first alcohol use (age of initiation). Stability reliability of the PRIDE survey was established by distributing the survey on two separate occasions to a sample of students (N = 631) one week apart [29]. Student responses were matched and analyzed. Pearson correlation coefficients were

computed for all continuous items and resulted in coefficients ranges of: .814-.851 (Frequency of alcohol use), .802-.842 (Age at first alcohol use), and .578-.825 (Student Information). To test the validity of the PRIDE survey, Adams [30] compared PRIDE results to those of National Institutes of Drug Abuse (NIDA) MTF study and found alcohol use rates to be similar with PRIDE estimates being generally more conservative than NIDA estimates. Craig and Emshoff [31] also tested the psychometrics of the PRIDE survey and found the survey to be valid and reliable with percent agreements of greater than 80% on most variables.

Data Analysis

All data was analyzed using the SPSS statistical software package (Version 18.0). Frequency distributions, means, standard deviations and ranges were used to describe students' demographic and background characteristics. A series of chi-square analyses were performed to determine whether recent involvement in alcohol use differed significantly based on sex, grade and race. A series of multivariate analyses of covariance (MANCOVAs) controlling for sex, grade and race were used to answer research questions two through five. If MANCOVAs were found to be significant, then univariate F-tests were subsequently performed. The alpha level of significance was set at .01.

RESULTS

Demographics

Of a total population of 70,204 students in grades 7 through 12 in participating schools, 54,361 students completed surveys, 15,843 refused to complete surveys (77.4% response rate). Half of students were male and half were female (Table 1). The sample was fairly equally distributed across the grade levels. Regarding race, 75.0% were White, 14.4% African American, 2.4% Asian/Pacific Islander, 1.8% Hispanic/Latino and 6.3% self-reported as another race. Most students (58.7%) reported living with their mother and father, while 16.4% reported living with their mother only and 4.2% reported living with their father only. Greater than two-thirds were not currently employed.

Involvement in Recent Alcohol Use

Results indicated that 42.2% of students reported using alcohol in the past year, 20.3% reported using alcohol in the past month, 9.6% of students reported using alcohol in the past week and 2.0% of students reported using alcohol every day. Average age of onset for any alcohol use ranged from 10 to 17 years ($M = 13.46$; $SD = 1.923$). Males were significantly more likely than females to report using alcohol in the past month, $\chi^2 =$

42.383, $df = 1$, $p < .001$ (Table 2). Hispanic students were significantly more likely than White, African American and other students to report using alcohol in the past month, whereas White students were significantly more likely than African American students to have used alcohol in the past month, $\chi^2 = 225.842$, $df = 3$, $p < .001$. Regarding grade level, a significant linear trend was revealed ($p < .001$): as grade level increased, involvement in recent alcohol use increased. A total of 40.2% of 12th graders used alcohol in the past month compared to 4.1% of 7th graders.

Recent Alcohol Use among Males and Females by Pro-social Behavior, Risky Behavior, Parent Factors and Teacher/School Factors

Logistic regression was used to calculate odds ratios and determine if recent alcohol use differed significantly based on pro-social behaviors, risky behaviors, parent factors, and teacher/school factors. Results indicated that high levels of involvement in pro-social behaviors decreased the risk of recent alcohol use among male and female students (Table 3). Involvement in risky behaviors significantly increased the odds of recent alcohol use by more than 4 times among male and female students. Having high levels of parent protective factors and high levels of teacher/school factors also decreased the odds of recent use. Regarding perceived parent and peer disapproval of recent alcohol use, male and female students reporting high levels of parent and peer disapproval of substance use were at decreased odds for recent alcohol use.

Recent Alcohol Use among 7th and 8th Grade Students and 9th through 12th Grade Students by Pro-social Behavior, Risky Behavior, Parent Factors and Teacher/School Factors

Results indicated that high levels of involvement in pro-social behaviors decreased the risk of recent alcohol use among 7th and 8th grade students and 9th through 12th grade students (Table 4). Involvement in risky behaviors significantly increased the odds of recent alcohol use by more than 11 times among 7th and 8th grade students and increased the odds of recent alcohol use by more than 4.5 times among 9th through 12th grade students. Having high levels of parent protective factors and high levels of teacher/school factors also decreased the odds of recent use. Regarding perceived parent and peer disapproval of recent alcohol use, 7th and 8th grade students and 9th through 12th grade students reporting high levels of parent and peer disapproval of substance use were at decreased odds for recent alcohol use.

Table 1. Demographic and Background Characteristics of Respondents

Item	n	%
Sex		
Male	24062	49.4
Female	24677	50.6
Grade		
7 th	7621	16.1
8 th	7857	16.6
9 th	8643	18.2
10 th	8616	18.2
11 th	7728	16.3
12 th	6998	14.7
Race		
White	38972	75.0
African American	7488	14.4
Hispanic/Latino	946	1.8
Asian/Pacific Islander	1237	2.4
Native American	366	0.7
Mixed Origin	2134	4.1
Other	795	1.5
Living Situation		
Live with Mother and Father	30161	58.7
Live with Mother only	8416	16.4
Live with Father only	2167	4.2
Live with Mother and Stepfather	5534	10.8
Live with Father and Stepmother	1811	3.5
Other	3256	6.3
Job Status		
Have full-time job	2754	5.6
Have part-time job	13263	28.2
Do not have a job	32321	66.2

Notes: Percents denote valid percents; Missing values excluded; N=54,361

Table 2. Recent Involvement in Alcohol Use by Sex, Race and Grade

Demographic Variable	Used in Past Month n (%)	Did Not Use in Past Month n (%)	χ^2	p
Sex				
Male	4932 (20.8)	18745 (79.2)	42.383	< .001
Female	4515 (18.5)	19927 (81.5)		
Race				
White	8201 (21.2)	30407 (78.8)	225.842	< .001
African American	959 (13.2)	6310 (86.8)		
Hispanic	224 (24.2)	701 (75.8)		
Other	886 (19.9)	3556 (80.1)		
Grade				
7 th grade	310 (4.1)	7239 (95.9)	4418.678	< .001
8 th grade	666 (8.6)	7114 (91.4)		
9 th grade	1252 (14.6)	7309 (85.4)		
10 th grade	2007 (23.6)	6514 (76.4)		
11 th grade	2378 (31.2)	5239 (68.8)		
12 th grade	2788 (40.2)	4142 (59.8)		

N=54,361

Table 3. Odds Ratios for Recent Alcohol Use among Males and Females by Pro-social Behavior, Risky Behavior, Parent Factors and Teacher/School Factors

Item	Males					Females				
	Have Not Used in Past Month n (%)	Have Used in Past Month n (%)	OR	(95% CI)	p	Have Not Used in Past Month n (%)	Have Used in Past Month n (%)	OR	(95% CI)	p
Pro-Social Behavior										
Low ^a	8257 (74.2)	2874 (25.8)				7098 (74.8)	2385 (25.2)			
High	9139 (83.8)	1770 (16.2)	.556	(.521, .595)	<.001	11618 (85.7)	1942 (14.3)	.497	(.465, .532)	<.001
Risky Behavior										
Low ^a	10192 (90.1)	1126 (9.9)				14545 (89.2)	1768 (10.8)			
High	7116 (67.3)	3460 (32.7)	4.401	(4.088, 4.738)	<.001	4248 (62.8)	2519 (37.2)	4.878	(4.550, 5.231)	<.001
Parent Factors										
Low ^a	6495 (69.3)	2874 (30.7)				6554 (70.5)	2747 (29.5)			
High	7066 (80.9)	1672 (19.1)	.535	(.499, .573)	<.001	8007 (84.2)	1498 (15.8)	.446	(.416, .479)	<.001
Teacher/School Factors										
Low ^a	5977 (71.3)	2404 (28.7)				5668 (74.6)	1927 (25.4)			
High	12078 (83.4)	2412 (16.6)	.497	(.466, .530)	<.001	13610 (84.3)	2528 (15.7)	.546	(.511, .584)	<.001
Perceived Parent Disapproval of Use										
Low ^a	6519 (64.8)	3535 (35.2)				6141 (66.8)	3047 (33.2)			
High	11302 (90.9)	1137 (9.1)	.186	(.172, .200)	<.001	13093 (90.9)	1308 (9.1)	.201	(.187, .216)	<.001
Perceived Peer Disapproval of Use										
Low ^a	5921 (60.5)	3866 (39.5)				4926 (58.9)	3444 (41.1)			
High	11559 (94.1)	731 (5.9)	.097	(.089, .105)	<.001	14117 (94.2)	863 (5.8)	.087	(.081, .095)	<.001

Notes:

^a Indicates Referent

^b All categories do not total 54,361 due to missing data

Recent Alcohol Use among Males and Females based on Friends' Use of Alcohol, Tobacco and Marijuana

Friends' use of alcohol, tobacco, and marijuana significantly increased the odds of recent alcohol use among males and females (Table 5). In fact, males with friends who use tobacco were 19 times more likely to engage in recent alcohol use whereas females with friends who use tobacco were approximately 17.5

times more likely to report recent alcohol use. Regarding friends' use of alcohol, males with friends who use alcohol were 45 more likely to report recent alcohol use whereas females were nearly 52 times more likely to report recent alcohol use. In addition, results indicated that males and females with friends who use marijuana were nearly 15 times more likely to report recent alcohol use.

Table 4. Odds Ratios for Recent Alcohol Use among Junior High School and High School Students by Pro-social Behavior, Risky Behavior, Parent Factors and Teacher/School Factors

Item	Junior High School (7 th – 8 th Grade)					High School (9 th – 12 th Grade)				
	Have Not Used in Past Month n (%)	Have Used in Past Month n (%)	OR	(95% CI)	p	Have Not Used in Past Month n (%)	Have Used in Past Month n (%)	OR	(95% CI)	p
Pro-Social Behavior										
Low ^a	6525 (89.9)	737 (10.1)				9947 (66.7)	4970 (33.3)			
High	8320 (96.5)	306 (3.5)	.326	(.284, .373)	<.001	13682 (78.6)	3715 (21.4)	.543	(.517, .571)	<.001
Risky Behavior										
Low ^a	9521 (98.6)	138 (1.4)				16672 (84.8)	2991 (15.2)			
High	5460 (85.8)	902 (14.2)	11.398	(9.499, 13.676)	<.001	6789 (54.9)	5566 (45.1)	4.570	(4.336, 4.817)	<.001
Parent Factors										
Low ^a	4405 (87.1)	653 (12.9)				9615 (64.0)	5410 (36.0)			
High	5609 (94.1)	351 (5.9)	.422	(.369, .483)	<.001	10483 (77.1)	3119 (22.9)	.529	(.502, .557)	<.001
Teacher/School Factors										
Low ^a	4110 (89.2)	500 (10.8)				8391 (66.6)	4210 (33.4)			
High	11408 (94.9)	611 (5.1)	.440	(.389, .498)	<.001	15871 (77.0)	4729 (23.0)	.594	(.565, .624)	<.001
Perceived Parent Disapproval of Use										
Low ^a	3808 (83.8)	734 (16.2)				9753 (60.4)	6389 (39.6)			
High	11673 (97.0)	359 (3.0)	.160	(.140, .182)	<.001	14216 (86.1)	2298 (13.9)	.247	(.234, .261)	<.001
Perceived Peer Disapproval of Use										
Low ^a	2619 (78.0)	740 (22.0)				9035 (55.7)	7191 (44.3)			
High	12537 (97.6)	313 (2.4)	.088	(.077, .102)	<.001	14668 (91.3)	1398 (8.7)	.120	(.112, .128)	<.001

Notes:

^a Indicates Referent

^b All categories do not total 54,361 due to missing data

Recent Alcohol Use among 7th and 8th Grade Students and 9th through 12th Grade Students based on Friends' Use of Alcohol, Tobacco and Marijuana

Friends' use of alcohol, tobacco, and marijuana significantly increased the odds of recent alcohol use among 7th and 8th grade students and 9th through 12th grade students (Table 6). In fact, 7th and 8th grade students with friends who use tobacco were 23 times more likely to engage in recent alcohol use whereas 9th through 12th grade students with friends who use tobacco were 13.5 times more likely to report recent alcohol use. Regarding friends' use of alcohol, 7th and

8th grade students with friends who use alcohol were 42 times more likely to report recent alcohol use whereas 9th through 12th grade students were 35 times more likely to report recent alcohol use. Results also indicated that 7th and 8th grade students with friends who use marijuana were 18 times more likely to report recent alcohol use whereas 9th through 12th grade students with friends who use marijuana were approximately 11 times more likely to report recent alcohol use.

Table 5. Odds Ratios for Recent Alcohol Use among Males and Females based on whether Friends Use Alcohol, Tobacco and Marijuana

Item	Males					Females				
	Have Not Used in Lifetime n (%)	Have Used in Lifetime n (%)	OR	(95% CI)	p	Have Not Used in Lifetime n (%)	Have Used in Lifetime n (%)	OR	(95% CI)	p
Friends Use Tobacco										
No ^a	12415 (94.0)	792 (6.0)				13725 (94.4)	807 (5.6)			
Yes	2361 (45.0)	2888 (55.0)	19.174	(17.522, 20.982)	<.001	2402 (49.2)	2480 (50.8)	17.560	(16.041, 19.223)	<.001
Friends Use Alcohol										
No ^a	11705 (97.0)	365 (3.0)				12119 (97.9)	263 (2.1)			
Yes	2412 (41.4)	3409 (58.6)	45.324	(40.340, 50.924)	<.001	2949 (47.0)	3326 (53.0)	51.971	(45.551, 59.295)	<.001
Friends Use Marijuana										
No ^a	13610 (91.4)	1274 (8.6)				14874 (92.5)	1203 (7.5)			
Yes	1767 (41.8)	2456 (58.2)	14.848	(13.654, 16.148)	<.001	1832 (45.3)	2211 (54.7)	14.922	(13.701, 16.252)	<.001

Notes:

^a Indicates Referent

^b All categories do not total 54,361 due to missing data

Table 6. Odds Ratios for Recent Alcohol Use among Junior High School and High School Students based on whether Friends Use Alcohol, Tobacco and Marijuana

Item	Junior High School (7 th – 8 th Grade)					High School (9 th – 12 th Grade)				
	Have Not Used in Lifetime n (%)	Have Used in Lifetime n (%)	OR	(95% CI)	p	Have Not Used in Lifetime n (%)	Have Used in Lifetime n (%)	OR	(95% CI)	p
Friends Use Tobacco										
No ^a	12776 (98.0)	267 (2.0)				14902 (91.1)	1455 (8.9)			
Yes	1186 (67.3)	575 (32.7)	23.199	(19.831, 27.139)	<.001	3983 (43.1)	5250 (56.9)	13.500	(12.615, 14.447)	<.001
Friends Use Alcohol										
No ^a	12915 (98.4)	211 (1.6)				12272 (96.3)	472 (3.7)			
Yes	874 (59.1)	604 (40.9)	42.300	(35.649, 50.191)	<.001	4945 (42.4)	6706 (57.6)	35.259	(31.936, 38.928)	<.001
Friends Use Marijuana										
No ^a	13535 (96.9)	436 (3.1)				16646 (88.2)	2232 (11.8)			
Yes	754 (63.1)	440 (36.9)	18.116	(15.571, 21.077)	<.001	3171 (40.7)	4614 (59.3)	10.852	(10.187, 11.560)	<.001

Notes:

^a Indicates Referent

^b All categories do not total 54,361 due to missing data

DISCUSSION

The significance of this study is its examination into the relationship between recent alcohol use and frequency of student involvement in pro-social behaviors and risky behaviors. Previous studies have identified risk and protective factors to underage drinking. However, alcohol use has often been assessed as either lifetime or annual use. Research specifically investigating the variables associated with recent use is needed. In addition, previous studies have most often dichotomized level/frequency of involvement in pro-social and risky behaviors into two-leveled variables: has been involved or has not been involved. This study adds to the professional literature by more fully examining how recent alcohol use is associated with frequency of involvement in pro-social behaviors and risky behaviors. While the YRBS provides national estimates of alcohol use patterns, it does not examine whether use is associated with pro-social or risky behaviors. The present study addressed this gap in the research while also exploring the relationship between frequency of parental monitoring, parental communication, teacher communication and school rule setting and recent use. The findings of this study lend themselves to important implications for both the field of prevention and for future research on underage drinking.

The current study found that one in five students reported using alcohol in the past month, with males more likely than females to engage in recent alcohol use. Data from the MTF survey found that recent alcohol use ranged from 15.9% in 8th grade to 44.4% in 12th grade. Such findings continue to illustrate concern over the sizeable percentage of youth involved in recent alcohol use. The most recent YRBS and MTF studies did not find significant differences between males and females in recent alcohol use whereas the current study did reveal such a difference [1-2]. This difference may be due to geographical location, local coalition and community initiatives, and specific efforts in the area aimed toward female alcohol use reduction, or other variables. More specifically, in the targeted area, there have been increased initiatives to decrease female alcohol consumption which may in turn account for some of the disparities among males and females in this study. Additional research is clearly needed. Overall, male adolescents are significantly more likely than female adolescents to engage in several risky behaviors, with heavy drinking and illicit substance use being no different. Perhaps that accounts for some of the difference in this study. Based on the findings of this study, increased efforts are needed to more thoroughly increase male youth awareness of the dangers of recent alcohol use. Research has indicated that one in ten males and one in twenty females suffers from dependence or abuse of alcohol [32]. Knowledge

of such information should be included in programmatic and strategic planning efforts aimed at preventing underage drinking.

The present study also found a high percentage of Hispanic students involved in recent alcohol use and significantly more likely than students of other races. Previous studies have also shown that Hispanic students are disproportionately affected by recent alcohol use and other drug use, and tend to initiate AOD use at a younger age than non-Hispanic White students [2]. This difference may contribute to the higher rates of homicides, suicides, and HIV among Hispanics as compared to non-Hispanic Whites [33]. Prado and colleagues [34] suggested that certain acculturation discrepancies between adolescents and parents, and the mismatch between a family's culture of origin and that of the US may play a key role in the high prevalence of alcohol use among Hispanic youth. Because of such factors, the researchers asserted that integrating Hispanic cultural symbols and values are important elements in preventing substance use in this population. Culturally appropriate interventions are clearly needed to address Hispanic youth involvement in recent alcohol use. Efforts are needed that address these and other risk factors specifically experienced by Hispanic students. Additional research on the specific reasons for elevated alcohol use among this group is needed to assist in developing and implementing effective prevention and intervention programs. The potential use of focus groups with Hispanic youth and the acquisition of qualitative data among Hispanic youth to identify further needs and possible successful prevention strategies for this population are warranted.

Regarding grade level, a direct relationship was found between grade and recent alcohol use. While 4% of 7th graders reported using alcohol in the past month, 40% of 12th graders reported using alcohol in the past month. The average age of alcohol initiation in this study was 13.46 years which roughly equates to eighth grade. Early initiation into alcohol use is of serious concern since research in the neurodevelopment of adolescents shows that adolescent brains may be vulnerable to the substance use effects, and may in turn result in substance abuse and dependence [35]. Data from the 2007 YRBS indicated that one in four high school students (23.8%) reported having their first drink before age 13 [1]. Other studies have found that about 40% of individuals who begin drinking at age 14 years or younger develop alcohol dependence at some point in their lives, compared to about 10% of those who begin drinking after the age of 21 who develop dependence [12, 36]. Research shows that the later adolescents delay their first use of alcohol, the less likely they are to become regular alcohol drinkers [37]. In addition, underage drinking is currently considered a rite of passage by most adolescents [8]. Thus, it is

imperative to reach youth at early ages with effective prevention messages. Findings from this study support the continued need for early education regarding the dangers of youth alcohol use. Researchers should continue to evaluate programs to determine their overall efficacy in delaying age of initiation and early involvement in alcohol use.

Youth who use alcohol are at increased risk for substance abuse which in turn increases their risk for legal and educational problems [38-39]. Jessor [40] asserted that adolescent risk behaviors tend to cluster together, with youth who are involved in one risky behavior being significantly more likely than youth not involved in one risky behavior to be involved in other risky behaviors. Supporting these findings, the present study found that recent alcohol users were significantly more likely than their counterparts to get into trouble at school, skip school, get into trouble with the police, and take part in gang activities. Dahl and Hariri [7] found that youth with strong sensation or risk-seeking personalities often try alcohol for the new experience or excitement associated with using alcohol. Youth with histories of behavior problems are more likely to use alcohol than are other youth [8]. Delinquent activity, aggressive and impulsive behaviors and difficulty with anger management are all associated with increased youth alcohol use [17]. Underage drinking increases the risk for school failure, traffic accidents, unplanned sexual activity, criminal activity, and death [15]. Such activities lend themselves to troubling long-term outcomes such as school dropout, unemployment, and chemical dependency.

Students who drank in the past month were significantly more likely to engage in episodic heavy drinking (drink five or more glasses of alcohol within a few hours) and to attend a party where alcohol or marijuana was available. Episodic heavy drinking has remained a problem for youth with respect to their alcohol consuming behavior. Greater than 90% of all alcohol used by youth is consumed in the form of episodic heavy drinking [41] and according to the 2007 YRBS, one in four (26.0%) students engage in current episodic heavy drinking, defined as five or more drinks in a row on one occasion [1]. A sizeable percentage of youth drink to excess and result in inebriation, as evidenced by the high lifetime and current drunk rates found in the MTF study. Inebriated states place youth at elevated risk for violence, depression, suicide, impaired driving, unplanned pregnancy, STDs, and unintentional injuries. Recent alcohol use and episodic heavy drinking are significantly associated and thus should be addressed in prevention efforts.

Recent alcohol users were significantly less likely than their counterparts to make good grades, take part in school sports teams, school activities and clubs,

community activities and attend church. Such pro-social behaviors are associated with increased youth self-esteem [26], enhanced development of life skills [42], increased life satisfaction [43], and decreased psychosocial problems [44]. Continued promotion of pro-social behaviors is warranted. Prevention specialists and educators should encourage youth to become involved in positive, pro-social behaviors. Such behaviors help to teach youth how to constructively use their time while also assisting them to develop healthy communication and decision making skills.

The present study found that the parents of recent users were reportedly less likely to talk to their child about the dangers of AOD use, set clear rules about AODs, and punished them when they broke the rules about AODs. Parents can play a key role in the development of their children's involvement in alcohol use [23] and in reducing the involvement of alcohol misuse and abuse among youth [45]. Adolescents who are poorly monitored by parents tend to begin using alcohol at an early age and are more likely to develop problem drinking behaviors [20-22]. Even though many parents find it difficult to supervise youth alcohol use [46], it is a critical step towards prevention. Increased parental supervision, control of youth alcohol use, clear limits and expectations, consistent enforcement of rules and open communication are associated with lower levels of youth alcohol use [16, 47-49]. Lohman and Billings [50] found that early parental monitoring and academic achievement protected young males' early sexual initiation and risky sexual behaviors by reducing their delinquent behaviors, specifically early drug and alcohol use and school problems.

Regarding parent-child communication, while many parents struggle with how to effectively discuss alcohol issues with their child, most feel it is important to talk about the potential problems associated with alcohol use [51]. In addition, most youth state that they would value having more discussion with their parents regarding alcohol [52]. Clearly and openly communicating with children is an effective strategy in helping young people develop and sustain a sensible relationship with alcohol [24, 53]. In order to engage children in such discussions, quality parent-child relationships must exist, which also serve to reduce youth alcohol use and abuse [23]. Similar to peers, families also influence the adoption of pro-social norms regarding alcohol use [54]. Parental investment in and support for the adolescent [55] and parent-adolescent connectedness [25] are powerful protective processes against adolescent drug use. A strong sense of connectedness between youth and parents protects youth from engagement in alcohol use and should therefore be sought and fostered. Adolescents need to feel that they are cared for and emotionally supported

by their family. When they lack this connection they are at risk for numerous behavioral problems. Quality parent-child connectedness is a key component to prevention. Preventionists and researchers may seek to evaluate programs aimed at teaching parents how to effectively develop such quality connections with their children.

Regarding specific school factors, students who had used alcohol in the past month were significantly less likely to report that their teachers talked with them about the dangers of AOD use and that their school set clear rules on using AODs. Since youth spend such a sizeable amount of time in school, teachers and school professionals are positioned to positively influence underage alcohol use. According to the 2006 School Health Policies and Programs Study, 91.8% of high schools, 84.6% of middle schools and 76.5% of elementary schools require teaching about alcohol and/or other drug use [56]. Teachers can be effective in conveying the harmful consequences of youth alcohol use. Schools need to be aimed at creating and maintaining safe and protective working environments for youth. When youth feel positively connected to their school, they are less apt to engage in harmful behaviors such as substance use [25]. Efforts to enhance school connectedness should be undertaken. Building school partnerships with parents, families, and community leaders can assist in this process.

Substance use and associated problem behaviors occur in multiple social contexts [57] and share common etiological factors found in the cultural, family, school, peer and environmental arenas [58]. The various risk and protective factors as well as the cultural, family, school, peer, and neighborhood trajectories tend to interact and influence one another over time [59]. Multiple strategies are therefore needed to address this complex issue. By reducing risk factors and enhancing protective factors, prevention efforts can result in positive relationships among family, school, peers, and community that increase the use of pro-social skills and decrease the social acceptability of underage drinking [60]. Effective prevention programs are interactively delivered and teach youth how to refuse drug use offers, resist social influences, refute misperceptions that substance use is normative, and increase personal and social competence skills [61]. The use of community coalitions can be helpful in conveying prevention messages and enacting effective prevention initiatives. Data from the recent Drug Free Communities (DFC) Program Evaluation for the Office of National Drug Control Policy [62] found that current substance use rates among high-school students within DFC communities were significantly lower than national rates. Thus, a broad-based approach may be most effective as the interconnectedness of individuals, social influences and communities play important roles

in youth decision-making [63].

Lastly, the limitations of this study should be noted. First, the sample comprised 7th through 12th grade students in the Greater Cincinnati area and therefore results may not generalize to students in other grades or geographical locations. Future studies should be conducted to determine whether these findings hold true in other locales. Second, the monothematic format of the survey may have resulted in a response-set bias in some students. However, the survey was validated, shown to be reliable and similar scales have been successfully used in previous studies. Third, the self-reported and sensitive nature of the survey may have caused some socially desirable responses. The issue of socially desirable responses in self-report data is a continuous concern however students were assured apriori that all of their responses would be kept anonymous and confidential. Fourth, since data was cross-sectional, cause and effect relationships could not be determined. Longitudinal studies are needed to determine cause and effect.

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