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# Parental and Peer Influences on Adolescent Drinking: The Relative Impact of Attachment and Opportunity

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# Parental and peer influences on adolescent drinking: The relative impact of attachment and opportunity

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*Abstract*

The purpose of this paper was to assess the relative effects of parents and peers on adolescent alcohol use via mechanisms of attachment and opportunity. Panel data from the second and third waves of the National Education Longitudinal Survey (NELS:88) were used to examine the relationship between multiple measures of peer and parent-child relations reflecting these concepts and alcohol use among high-school students. Overall, our results indicated that peers are more influential than parents in shaping adolescents' patterns of alcohol consumption and that unstructured peer interaction is an especially powerful predictor of adolescent alcohol use and binge drinking. Our findings further suggest that gender serves as a conditioning factor, moderating the effects of parental and peer variables on high-school students' drinking. Potential programmatic applications, as well as the theoretical implications, of these findings are discussed within the context of control theory and prior research on the relationship between opportunity and delinquency.

The negative consequences of alcohol use among youths have been well-established. Adolescents who use alcohol are more likely than their non-drinking peers to exhibit aggression, to engage in criminal activities, and to be victims of accidents or suicide (Chassin & DeLucia, 1996; Milgram, 1993). They are also more likely than other individuals to experience alcohol and drug problems, and associated deficits in health and interpersonal relationships, as they move into adulthood (Chassin, Pitts & DeLucia, 1999; White, Bates & Labouvie, 1998). These patterns have led researchers to focus on identifying the characteristics that place adolescents at the greatest risk for alcohol use and binge drinking. With the hope of isolating precursors of adolescent alcohol consumption amenable to intervention, many such studies have examined the impact of parent-child and peer interactions on adolescents' patterns of drinking.

## *Attachment to Conventional Society*

Both of the latter domains reflect what control theorists define as attachment. Attachment refers to the extent to which people are bonded to individuals, groups, and institutions within society that support conventional values and norms and is hypothesized to be an important deterrent of alcohol use and other forms of delinquency (Hirschi, 1969). Consistent with this assumption, positive child-parent relations have been associated with low levels of drinking (Marcos, Bahr & Johnson, 1986; Sokol-Katz, Dunham & Zimmerman, 1987), while affiliation with peers who support alcohol use and/or drink regularly (unconventional activities) has been linked to frequent alcohol consumption (Agnew, 1991; Bahr, Marcos & Maughan, 1995; Barnes & Welte, 1986a;

Flannery, Vazsonyi, Torquati & Fridrich, 1994; Marcos et al., 1986; Reifman, Barnes, Dintchef, Farrell & Uhteg, 1998; Wills & Vaughan, 1989; Yarnold, 1998).

Along with research suggesting that females are more likely than males to drink for escapist than social reasons (Brown, Goldman, Inn & Anderson, 1980; Wechsler & Rohman, 1981), there is some evidence that the latter type of peer influence is a more important determinant of alcohol use among males than among females (Barber, Bolitho & Bertrand, 1998; Chassin, Tetzloff & Hershey, 1985). Conversely, quality child-parent relations appear to have a stronger negative effect on alcohol use among female than among male adolescents (Thompson & Wilsnack, 1987).

*Opportunities for Delinquency*

Opportunity is a second sphere of influence rooted in both parental and peer relationships of potential relevance to alcohol use and abuse among adolescents. According to control theory, delinquency among adolescents (including alcohol use) is related to involvement in unconventional activities. Presumably, individuals who engage in shared activities with their parents and whose interactions with peers are rooted in conventional institutions (e.g., school or church) have less free time within which to engage in deviant behavior. On the other hand, adolescents who spend less time with adults and in structured interactions with peers have ample opportunities to participate in non-normative activities, such as drinking (Hirschi, 1969).

Despite the positive association between frequency of peer interaction and delinquency (Agnew, 1991; Agnew & Petersen, 1989; Lotz & Lee, 1999; Riley, 1987; Wallace & Bachman, 1991; Warr, 1993), control theorists have tended to downplay the impact of involvement on alcohol use and other forms of delinquency (Hawdon, 1996). Moreover, those studies that have examined the relationship between involvement and delinquency have employed measures that focused primarily on participation in structured extra-curricular activities (see, e.g., Kempf, 1993 for a review of this literature) or on composite measures of sociability that included activities varying in both structure and visibility (e.g., Hundleby, 1987; Lotz & Lee, 1999; Wallace and Bachman, 1991; Warr, 1993).

Hawdon (1996; 1999) has recently extended these analyses by examining the relationship between substance use and routine activities, a concept previously used to explain patterns of criminal victimization (see Cohen & Felson, 1979; Felson, 1994). Drawing on Cohen and Felson (1979), Hawdon defines routine activities as relatively stable behaviors that characterize individuals' daily routines and encompass unstructured, as well as structured, interactions with others. He further suggests that routine activities that readily go unobserved by agents of social control (e.g., parents and teachers) and lack a specific focus should facilitate behaviors such as drug use by providing a social context conducive to deviance. Consistent with his predictions, frequent participation in unstructured, recreational activities, low in both instrumentality and visibility, was associated with high levels of marijuana use among high-school students (Hawdon, 1996).

Hawdon (1999) found a comparable association between unstructured social activities low in visibility and multiple drug use (including alcohol, marijuana, cocaine, and heroin) among college undergraduates. Similarly, in their analysis of routine activities and multiple forms of deviance, Osgood and associates (1999) established a link between routine participation in unstructured interactions with peers that are un- supervised and alcohol consumption, as well as the use of other drugs, among young adults ranging in age from eighteen to the mid-twenties.

Taken together, these studies suggest that opportunity is an important determinant of alcohol use and other forms of delinquency. They are, however, limited in scope in that they have employed measures of routine interactions that focus primarily on peer activities, while excluding other potentially relevant factors, such as frequency of parent-child interaction and parental monitoring of and control over their children's behaviors.

A related literature focusing on parenting style and deviance specifically addresses these issues. These studies suggest that adolescents who spend substantial amounts of time with their parents drink less than individuals who participate in activities with their parents less regularly (Adlaf & Ivis, 1996; Flannery, Williams & Vazsonyi, 1999; Vazsonyi & Flannery, 1997). It may be that children who frequently interact with their parents simply have fewer chances to engage in deviant behaviors like drinking (Hirschi, 1969).

While parental monitoring of children's behaviors also appears to reduce their use of alcohol and other substances by limiting their opportunities for engaging in these types of activities (Bahr, Hawks & Wang, 1993; Hundleby & Mercer, 1987; Jackson, Henriksen & Dickinson, 1999; Reifman et al., 1998; Thomas, Reifman, Barnes & Farrell, 2000;Vazsoni & Flannery, 1997), the effects of parental control on adolescent drinking appear to be less consistent. When parental control over children's decision-making is perceived as being excessive and results in child-parent conflicts it may actually increase adolescents' drinking by causing them to rebel against their parents (Alexander, 1967). In their analysis of parental influence on children's drinking, Thompson and Wilsnack (1987) found that early rejection of parental authority initiated patterns of alcohol use that escalated as respondents progressed through adolescence. Other studies have, on the other hand, found an inverse effect of more direct measures of parental regulation of children's behaviors and drinking (Barnes & Windel, 1987; Prendergast & Schaefer, 1974; Shucksmith, Glendinning & Hendry, 1997; Stice, Barrera & Chassin, 1993) or no relationship between these variables (Barnes, Farrel & Cairns, 1986; Mercer & Kohn, 1980).

Perhaps these incongruent findings may reflect a curvilinear relationship between parental control and drinking, where both low and high levels of parental regulation increase and moderate levels of parental regulation reduce adolescents' alcohol consumption (Foxcroft & Lowe, 1991; Seydlitz, 1993). Insofar as this is the case, Foxcroft and Lowe (1991) suggest that varying and restricted ranges on measures of parental control across studies might explain the lack of consistent findings within this domain.

## *Extension of Literature*

In this paper, we focus on the link between parenting style (including indicators of parental control, parental monitoring, and frequency of parent-child interaction), as well as on more direct measures of opportunity rooted in patterns of peer interaction, and adolescent drinking. While Hawdon's (1996; 1999) research suggests an association between unstructured peer interactions low in visibility and drug use among both high-school and college students, given his theoretical orientation (routine activities theory), he did not investigate the relative effects of parenting style on adolescents' opportunities for delinquency. Moreover, the latter studies are cross-sectional in nature, making it difficult to determine the causal ordering of the relationships in question. The purpose of this study is to extend prior research on opportunity and delinquency by examining the effects of child-parent relations (including parental control, parental monitoring, and frequency of child-parent interaction), as well as the context and structure of peer interactions, on adolescent drinking using panel data. By including measures of attachment (quality of parent-child relations and affiliation with friends who value alcohol use) in our analysis, we will also examine the effects of those additional dimensions of peer and parental relations specified by control theory.

## *Method*

### *Sample*

The data used in this study are from the second and third waves of the National Education Longitudinal Survey (NELS). The NELS data were collected by the National Center for Education Statistics (NCES) in an effort to extend two earlier longitudinal studies (The National Longitudinal Study of the High School Class of 1972 and High School and Beyond). Unlike the latter two studies, data were collected from students before they began high school. The first wave of the study was conducted in 1988, when respondents were in eighth grade, with follow-up surveys administered in 1990, 1992, and 1994 (two years post high school). This comprehensive database includes demographic variables, academic and social-psychological indicators collected from students and their parents, as well as information from teachers and administrators about student and school characteristics.

Members of the 1988 eighth-grade cohort were selected for participation using a probability sampling strategy involving the selection of schools and then students from the schools included within the sampling frame. Each of the follow-up surveys included this group of core respondents, as well as some more recently eligible students (e.g., 1990 high school sophomores who did not attend eighth grade in the U.S. in 1988), selected for participation using similar probability sampling techniques. In each case, students of Asian and Latino descent were over-sampled so that a sufficient number of minorities were included in the sample for researchers to make comparisons across racial and ethnic groups. Population weights based upon racial/ethnic background are provided by NCES for use by individuals interested in obtaining a representative sample of students from which they can make generalizations to the overall U.S. student population (NCES, 1996).

In this study, we combined student data from the sophomore cohort (the earliest wave of data that included questions on alcohol use) with data from the second follow-up, when students were seniors in high school ($n$ = 18,116). We adjusted for the survey's complex, stratified cluster design by using the panel weights and design effects provided by NCES. While the panel weights adjust for the disproportionate number of racial and ethnic minorities included in the 1990-1992 sample, the design effects correct for the increase in sampling error associated with the two-stage cluster design of the survey, resulting in more conservative tests of statistical significance (NCES, 1994).

*Measures*

**Attachment.** An index of the quality of child-parent relations, constructed by adding respondents' scores on six items focusing on how well they liked and got along with their parents (e.g., "I get along well with my parents, my parents understand me."), served as our measure of parental attachment (range = 6 to 36). Responses to each of these six indicators included the following categories: 1 = false, 2 = mostly false, 3 = more false than true, 4 = more true than false, 5 = mostly true, and 6 = true, and were coded so that high scores reflected positive child-parent relations (Alpha = .84).

The extent to which individuals' peers supported alcohol use were measured using students' responses to a question asking them to indicate how important it was to be "willing to party or get wild" among their friends. Responses to this item were used as an indicator of the extent to which respondents' affiliated with unconventional peers. Scores on this variable ranged from 1 ("not important") to 3 ("very important").

**Opportunity.** Respondents' opportunities for alcohol use and heavy drinking were measured using five indexes: participation in unstructured peer interaction, participation in structured (extra-curricular) activities, time spent with parents, parental monitoring, and parental control. The measure of students' participation in unstructured peer interactions was constructed by summing respondents' answers to two questions concerning the frequency with which they visited with friends at the "local hangout" and drove around with friends in a motor vehicle ($r$ = .41). Each of these questions was coded using a scale of 1 to 5, where 1 = "0 to 10 hours per week" and 5 = "40 or more hours per week," yielding possible scores ranging from 2 to 10 on the unstructured interaction variable.[1] Time spent participating in extra-curricular activities was coded in a similar fashion using a scale ranging from 1 ("none") to 5 ("20 hours or more"), and participation in shared activities with parents was scored using a five-point scale ranging from 1 ("rarely never") to 5 ("every day or nearly every day").

The two other, less direct measures of opportunity—parental monitoring and parental control—were constructed in the following manner. Parental monitoring was measured by summing students' responses to five items assessing the extent to which they felt that their parents checked up on them (e.g., "My parents try to find out what I do with my free time."), with composite scores ranging from 5 to 20 (Alpha = .82). Similarly, a measure of parental control was

constructed by adding respondents' answers to 13 items that reflected the degree to which they felt that their parents actually regulated their behaviors (e.g., "Who decides which friends you spend time with."). Responses to each of these questions were coded using the following categories: 1 = respondents only, 2 = respondents and their parents, and 3 = parents only. Scores on this measure ranged from 13 to 65 (Alpha = .77).

**Control Variables.** In addition to the latter measures of attachment and opportunity, indicators of gender, race, and socioeconomic background were included in all higher-order analyses as statistical controls. Gender was measured as the dummy variable, female, where females received scores of 1 and males received scores of 0. Race was measured as a series of four 0/1 dummy variables (Asian, Black, Hispanic, and Native-American), with White students serving as the reference category.

Socioeconomic background was measured using the composite index of socioeconomic status provided by NCES. This variable included parental education and income, as well as a range of indicators of cultural capital (e.g., owning a home computer). Scores on this measure were standardized yielding a sample mean of approximately 0, a standard deviation of approximately 1, and a range of 22.24 to 2.01.

Measures of alcohol use completed when students' were sophomores in high school were also included as statistical controls when predicting seniors' drinking. Alcohol use among the sophomore cohort was measured as the number of times individuals had consumed alcohol throughout their lifetime and the number of times they had consumed five or more drinks in one sitting during the previous two weeks, a standard measure of binge drinking.

**Dependent Variables.** The same two questions about students' drinking behaviors, measured at time-2 (during the senior year) served as the key dependent variable in this analysis. In addition to this, two dichotomous indicators of senior drinking were computed for students who had never used alcohol as sophomores. The first of these variables indicated whether sophomore abstainers had used alcohol by their senior year in high school (0 = no, 1 = yes). The second measure reflected whether sophomore abstainers had consumed five or more drinks in a row within the two weeks prior to their completion of the survey during their senior year (0 = no, 1 = yes).

## *Results*

### *Descriptive Statistics*

Means and standard deviations on the demographic variables and on measures of time-1 attachment and opportunity, as well as on time-1 and time-2 alcohol use and binge drinking, are presented in Table 1. As shown here, as sophomores, the students surveyed reported relatively frequent participation in unstructured peer interactions (mean = 5.3 out of 8). Participation in extra-curricular activities was, on the other hand, somewhat less common (mean = 1.6 on a 5-point scale) indicating that, on average, students spent between 2 and 4 hours per week engaging in these types of behaviors. The mean of 2.9 on our indicator of child-parent interaction suggests

**Table 1.** Means and Standard Deviations for Key Variables ($n$ = 2,506, weighted)

| | M | SD | Range |
|---|---|---|---|
| Demographic characteristics | | | |
| Female | .53 | .50 | 0-1 |
| Socioeconomic Status | .10 | .74 | -2.24 - 2.01 |
| Race | | | |
| Asian | .04 | .19 | 0-1 |
| Black | .10 | .30 | 0-1 |
| Latino | .08 | .27 | 0-1 |
| Native-American | .01 | .09 | 0-1 |
| White | .77 | .42 | 0-1 |
| Time-1 Attachment | | | |
| Quality Parent-Child Relations | 29.21 | 5.79 | 6-36 |
| Support for Alcohol Use Among Peers | 1.98 | .74 | 1-3 |
| Time-1 Opportunity | | | |
| Unstructured Peer Interaction | 5.25 | 1.70 | 2-8 |
| Extracurricular Activities | 1.58 | 1.48 | 0-5 |
| Time with Parents | 2.88 | .97 | 1-4 |
| Parental Monitoring | 14.87 | 3.71 | 5-20 |
| Parental Control | 29.54 | 7.58 | 13-65 |
| Time-1 Drinking | | | |
| Proportion Drinkers—Sophomore | .83 | .38 | 0-1 |
| Drinks Lifetime—Sophomore | 1.67 | 1.02 | 0-3 |
| Proportion Binge Drinkers—Sophomore | .22 | .41 | 0-1 |
| Binge Drink/Past 2 Weeks—Sophomore | .43 | .98 | 0-5 |
| Time-2 Drinking | | | |
| Proportion Drinkers—Senior | .92 | .27 | 0-1 |
| Drinks Lifetime—Senior | 2.10 | .94 | 0-3 |
| Proportion Binge Drinkers—Senior | .28 | .45 | 0-1 |
| Binge Drink/Past 2 Weeks—Senior | .60 | 1.16 | 0-5 |

that the average high-school sophomore participated in activities with his or her parents between one and two times per week.

Despite their relatively high levels of participation in unstructured peer interactions, the individuals surveyed reported high levels of parental monitoring of their activities (mean = 14.9 out of 20). However, adjusting mean levels of parental monitoring and parental control to both reflect a 50 point scale revealed that respondents felt that parents were more likely to monitor their activities than to actually exert control over their behaviors (with a mean parental monitoring score of 37.2 versus a mean parental control score of 23.7, on a scale of 50). Levels of parental attachment were substantially higher (mean = 40.6 on an adjusted 50-point scale). Overall, students felt that there was a moderate degree of support for alcohol use among their friends when they were sophomores in high school.

Regarding our key dependent measures, alcohol use and binge drinking, 83% of the sophomores surveyed reported that they had used alcohol at least once in their lifetime. Two years later, when they were seniors, the proportion of drinkers was approximately 92%, an increase strong enough to reach statistical significance ($t$ = 15.88, df 2,504, $p < .001$). While less than a quarter of the students reported binge drinking as sophomores (22%), by the time they were seniors, 28% of

the sample indicated that they had consumed five or more alcoholic beverages in a row within the two weeks before completing this follow-up survey ($t$ = 6.10, df 2,504, $p$ < .001). These findings are consistent with the results of other national surveys of alcohol use and abuse among high school students in this country (O'Malley, Johnston & Bachman, 1998).

*Main Effects of Time-1 Parent and Peer Relations on Time-2 Drinking*

OLS regressions were run in order to assess the extent to which the various indicators of attachment and opportunity measured during the sophomore year in high school influenced seniors' levels of lifetime alcohol use and binge drinking, controlling for demographic factors and time-1 drinking. In each case, the independent variables (including students' background characteristics, measures of attachment and opportunity, and indicators of earlier drinking) were simultaneously entered into the regression model. The results of these analyses are presented in Table 2 (columns 1 and 3, respectively).

As shown in columns 1 and 3 of Table 2, peer support for alcohol use during the sophomore year was significantly associated with both lifetime alcohol use and abuse among high-school seniors. Although relatively minor effects were strong enough to reach statistical significance due to the large number of student in 1992-94 cohort sample, the effect of this measure of time-1 peer attachment on binge drinking was substantial (with a beta coefficient almost as large as the standardized effect of gender).

The effects of unstructured peer interaction on both lifetime alcohol use and binge drinking were also sizable (with beta coefficients of .10 and .11, respectively). Moreover, unstructured peer interaction was a better predictor of lifetime alcohol use among seniors than peer support for this form of delinquency during the sophomore year. While early parental attachment and participation in extra-curricular activities (a common measure of Hirschi's concept of involvement), as well as parental monitoring of and control over children's behaviors, had no effect on students' subsequent drinking behaviors, sophomores who spent substantial amounts of time with their parents drank significantly less than other students when they were seniors.[2]

*Higher-Order Effects*

Background variables such as gender, class, and race may influence the relationship between parental and peer relations and alcohol use among youth (McGee, 1992; Thompson & Wilsnack, 1987; Wallace & Bachman, 1991). A second set of OLS regressions was used to assess the extent to which these demographic characteristics serve as conditioning variables. In these analyses, cross-product interaction terms be- tween students' background characteristics (i.e., gender, race, and social class) and each of the various indicators of attachment and opportunity were added to the regressions shown in columns 1 and 3 of Table 2.

In particular, prior analyses suggest that gender moderates the effects of attachment on adolescent drinking. The effect of time-1 parent-child relations on time-2 lifetime alcohol use or binge drinking did not significantly vary across gender or across either of the other two background factors (i.e., class or race). While the effect of peer support on lifetime alcohol use

**Table 2.** Estimated Effects of Time-1 Parental and Peer Variables on Time-2 Drinking ($n$ = 2,506, weighted)

| Dependent Variable | Number of Drinks in Lifetime | | | | Times Binge Drink/Past 2 Weeks | | | |
|---|---|---|---|---|---|---|---|---|
| | Column 1 | | Column 2 | | Column 3 | | Column 4 | |
| | B | Beta | B | Beta | B | Beta | B | Beta |
| Constant | .99*** | | .83*** | | .26 | | .04 | |
| Female | -.11*** | -.06 | .22 | .11 | -.28*** | -.12 | .15 | .06 |
| SES | .04 | .03 | .04 | .03 | -.01 | -.01 | -.01 | .00 |
| Race | | | | | | | | |
| Asian | -.11 | -.02 | -.11 | -.02 | -.14 | -.02 | -.15 | -.02 |
| Black | -.16** | -.05 | -.16** | -.05 | .19** | -.05 | -.19** | -.05 |
| Hispanic | .03 | .01 | .04 | .01 | .07 | .02 | .07 | .01 |
| Native-American | .02 | .00 | .02 | .00 | -.03 | .00 | -.02 | .00 |
| Attachment | | | | | | | | |
| Quality C-P Relations | .00 | -.02 | .00 | -.02 | -.01 | -.04 | -.01 | -.04 |
| Peer Affiliation | .06** | .04 | .06** | .04 | .16*** | .10 | .28*** | .18 |
| Opportunity | | | | | | | | |
| Unstructured Peer Int | .06*** | .10 | .06*** | .10 | .07*** | .11 | .08*** | .11 |
| Extracurricular Acts | .00 | .00 | -.01 | -.01 | .00 | .01 | .00 | .00 |
| Time Parents | -.03* | -.04 | -.03* | -.04 | -.02 | -.01 | -.03 | -.02 |
| Parental Monitoring | .00 | .01 | .00 | .01 | -.01 | -.03 | -.01 | -.03 |
| Parental Control | .00 | -.01 | .00 | .04 | .00 | .01 | .00 | .01 |
| Time-1 Drink | .56*** | .60 | .56*** | .60 | | | | |
| Time-1 Binge Drink | | | | | .35*** | .30 | .35*** | .29 |
| Female*Control | | | -.01** | -.19 | | | | |
| Female*Attitudes | | | | | | | -.21*** | -.20 |

Note: Dependent variable = drank lifetime, $R^2$ additive model = .472, $R^2$ interactive model = .474; dependent variable = binge drank past 2 weeks, $R^2$ additive model = .197, $R^2$ interactive model = .202

*$p < .05$

**$p < .01$

***$p < .01$

was constant across gender, the cross-product of gender and friends' attitudes towards alcohol use had a significant effect on the measure of binge drinking and is, therefore, included in column 4 of Table 2.

The nature of this effect was estimated using the procedure for interpreting cross-product interaction terms outlined by Ross, Mirowsky, and Huber (1983). First, the direction of the relationship between peer support for alcohol use and respondents' binge drinking was determined separately for males and for females using the unstandardized regression equation from column 4 of Table 2. Peer support for alcohol use was then varied from one standard deviation below to one standard deviation above the sample mean, while all other model variables were held constant at their sample means (from Table 1).

The predicted drinking scores computed using this method are presented in Figure 1. As shown here, strong peer support for alcohol use during the sophomore year in high school was associated with more frequent binge drinking among males than among females two years later when they were seniors.

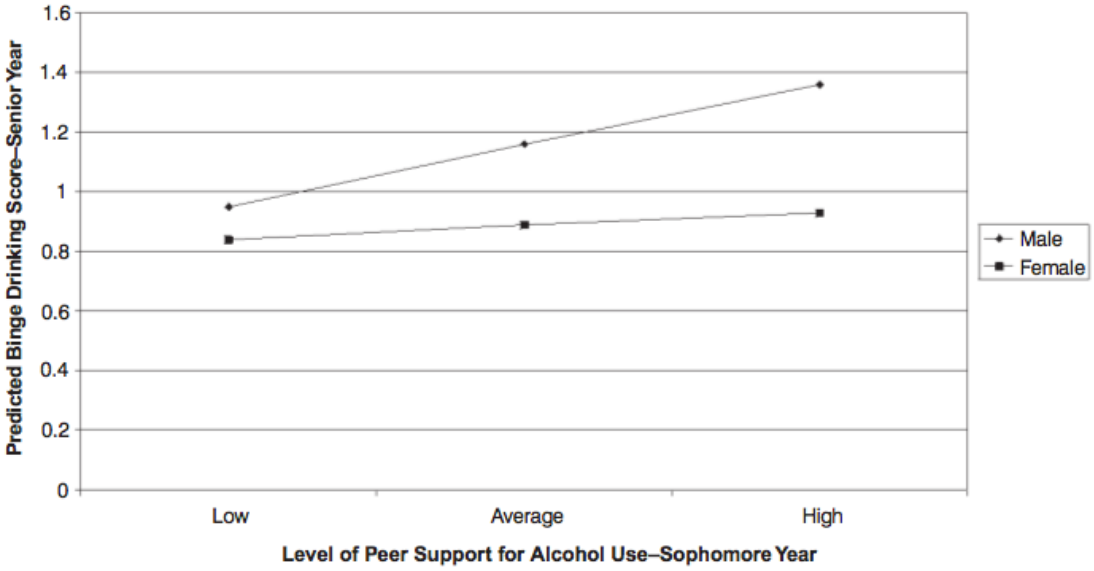



**Figure 1.** Effects of Time-1 Peer Support on Time-2 Binge Drinking by Gender ($n$ = 2,506)

Although there was little evidence of a curvilinear relationship between parental control and drinking (as previously suggested), there was a significant interaction between gender, parental control, and lifetime alcohol use. This interaction term has been included in column 2 of Table 2. There was not a comparable relationship between gender, parental control, and binge drinking. Moreover, no other significant interactions between students' demographic characteristics and lifetime alcohol use or binge drinking were evident.

A procedure similar to the one described above was used to assess the moderating effect of gender on the relationship between parental control and lifetime alcohol use using the unstandardized regression equation from column 2 of Table 2. In this case, predicted drinking scores were computed for males and for females with low, average, and high levels of perceived parental control. As shown in Figure 2, high levels of parental control during the sophomore year in high school reduced lifetime alcohol use among females, but increased levels of lifetime drinking among males, by the time they were seniors.

*Effects of Time-1 Parent and Peer Relations on the Onset of Time-2 Alcohol Use and Binge Drinking*

The extent to which parental control, as well as our other measures of parent and peer relations, predicted the onset of alcohol use and binge drinking among non-drinking sophomores was assessed using logistic regressions ($n$ = 426). In this case, the two dichotomous indicators of respondents' time-2 drinking status (non-drinker/drinker and non-binge drinker/binge drinker) were regressed on measures of attachment and opportunity, as well as the three demographic control variables (gender, socioeconomic background, and race). Cross-product interaction terms

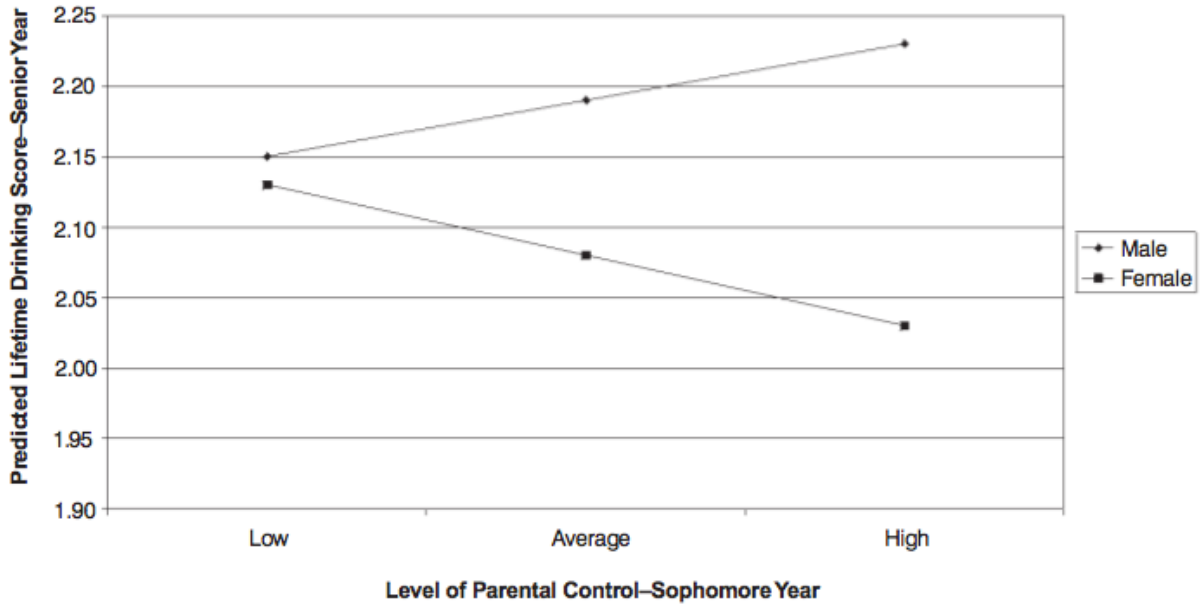



**Figure 2.** Effects of Time-1 Parental Control on Time-2 Alcohol Use by Gender ($n$ = 2,506, weighted)

between respondents' demographic characteristics and measures of opportunity, as well as attachment, were not statistically significant and were excluded from the final regressions. The results of these analyses are presented in Table 3.

The logit coefficients presented in columns 1 and 3 of Table 3 represent the additive effects of a unit change in each of the independent variables, net of all other variables in the model, on a student's logodds of being a drinker (column 1) and of drinking heavily (column 3). These coefficients can be interpreted in two ways, in terms of odds or in terms of probabilities. The effect of a change in a particular variable on a student's odds of becoming a drinker, holding constant all other independent variables in the model, has an interpretation similar to the slope coefficient in an OLS regression. The effects of model variables on sophomore abstainers' odds of becoming alcohol users and binge drinkers by the time they are seniors are presented in columns 2 and 4 of Table 3.

As shown here, affiliation with friends who supported alcohol use during the sophomore year in high school did not significantly predict which students became drinkers by the time they were seniors. In fact, frequency of unstructured peer interaction during the sophomore year in high school was the only significant predictor of which students made this transition by the time they were seniors (with a one-unit increase in unstructured peer interaction increasing sophomore abstainers' odds of becoming a drinker by their senior year by a factor of 1.2).

As shown in columns 3 and 4 of Table 3, non-drinkers who frequently participated in unstructured interactions with friends during their sophomore year were also significantly more likely than other individuals to become binge drinkers by the time they were seniors (with a one-

**Table 3.** Estimated Effects of Time-1 Parental and Peer Variables on the Onset of Alcohol Use and Binge Drinking Among Sophomore Abstainers ($n$ = 426, weighted)

| Dependent Variable | Drinker—Senior Year | | Binge Drinker—Senior Year | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| | B | exp(B) | B | exp(B) |
| Constant | -.1264 | | -1.3280 | |
| Female | -.0586 | .9431 | -.7884* | .4546 |
| SES | .0540 | 1.0555 | -.0030 | .9970 |
| Race | | | | |
| Asian | -.3048 | .7373 | -.0272 | .9731 |
| Black | .0917 | 1.0960 | .1851 | 1.2033 |
| Hispanic | .5427 | 1.7206 | .1017 | 1.1070 |
| Native-American | .1557 | 1.1684 | 2.6178 | 13.7051 |
| Attachment | | | | |
| Quality C-P Relations | -.0072 | .9928 | -.0872* | .9165 |
| Peer Affiliation | .2536 | 1.2886 | .2065 | 1.2293 |
| Opportunity | | | | |
| Unstructured Peer Interaction | .1831** | 1.2010 | .4105*** | 1.5076 |
| Extracurricular Activities | .0087 | 1.0087 | -.0476 | .9535 |
| Time Parents | -.0586 | .9431 | .0484 | 1.0496 |
| Parental Monitoring | -.0120 | .9880 | -.0060 | .9940 |
| Parental Control | -.0120 | .9880 | -.0163 | .9838 |

Note: Dependent variable = drink lifetime, pseudo $R^2$ = .047; dependent variable = binge drink, pseudo $R^2$ =.081.
*p<.05
**p<.01
***p<.01

unit increase in unstructured peer interactions increasing a sophomore abstainer's odds of becoming a drinker by a factor of 1.5). Level of child-parent attachment was the only other significant predictor of the onset of binge drinking among sophomore abstainers.

While interpreting the magnitude of the latter effects in terms of non-drinking sophomores' odds of converting to alcohol users and heavy drinkers is relatively straight forward, these coefficients do not provide a meaningful baseline value of alcohol use, or binge drinking, with which changes associated with specific predictors can be com- pared. For this reason, we converted the odds coefficients into probabilities using equations from Table 3.

Using the equation from column 1 of Table 3, we estimated the predicted effect of frequency of unstructured peers interaction on sophomore abstainers' probabilities of becoming drinkers by the time they were seniors by varying scores on this measure while holding all other model variables constant at their sample mean (Table 1). For every standard deviation increase in time spent participating in unstructured interactions with peers, a non-drinking sophomore's chances of becoming a drinker by the time he or she was a senior increased by between 7 to 8%.

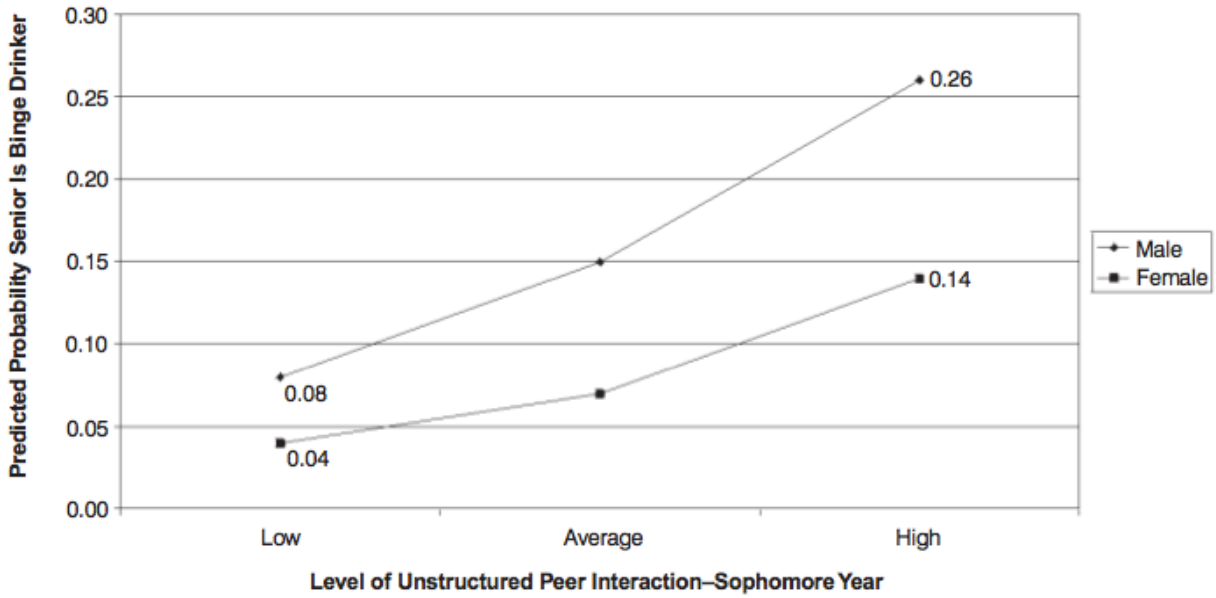
Sophomore abstainers' predicted probabilities of becoming binge drinkers by the time they were seniors were computed in a similar fashion using the equation from column 3 of Table 3. Overall, unstructured peer interaction had a stronger effect on the onset of binge drinking behavior than parental attachment. A non-drinking sophomore who exhibited a low level of parental attachment (i.e., had an attachment score one standard deviation below the sample mean) had a 10% greater probability of becoming a binge drinker by the time s/he was a senior than a sophomore abstainer who was strongly attached to his/her parents (i.e., had an attachment score on standard deviation above the sample mean), while a comparable increase in participation in unstructured peer interaction (from one standard deviation below to one standard deviation above the sample mean for this variable) increased a sophomore abstainer's probability of becoming a binge drinker within the next two years by about 13%.

Since the effect of a particular independent variable on nondrinkers' probabilities of becoming alcohol users and binge drinkers are non-additive and vary across levels of other significant predictors, we estimated the effect of time-1 unstructured peer interaction on sophomore abstainers' probabilities of becoming binge drinkers across both gender and parental attachment using the procedure described above. The results of these calculations are displayed in Figures 3 and 4, respectively.

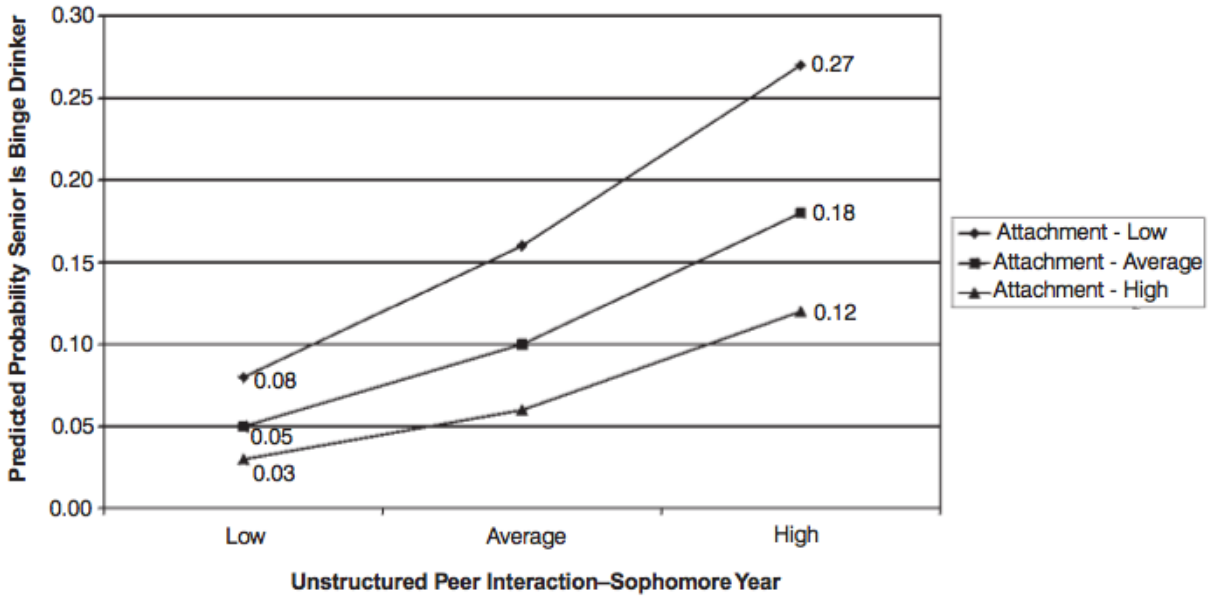
As shown in Figure 3, among sophomore abstainers, participation in unstructured peer activities increased males' risks for becoming binge drinkers more than their female counterparts. Similarly, as shown in Figure 4, participation in unstructured peer interactions increased the probability of making the transition from abstainer to binge drinker most among students with low levels of parental attachment. Although gender did not influence the effect of parental attachment on levels of alcohol use or binge drinking (Table 2), parent-child conflict had a greater influence on whether non-drinking sophomore males than non-drinking sophomore females became binge drinkers by the time they were seniors (Figure 5). Thus, while the pseudo $R^2$ statistics are somewhat low in both models (less than .10), the effects of opportunity on alcohol use and binge drinking were notable for certain groups of students (i.e., individuals with low levels of parental attachment, students who reported high levels of parent-child conflict, and males).

*Summary*

Overall, our findings pertaining to the impact of peers on adolescent drinking are comparable to the results of prior analyses. Support for alcohol use among friends during the sophomore year in high school had a strong positive effect on seniors' use of alcohol and binge drinking. Moreover, consistent with the notion that adolescent males may be more susceptible than their female counterparts to peer influence, affiliation with peers who supported alcohol use was a stronger determinant of binge drinking among the males than among the females in our longitudinal sample.




The effect of participation in unstructured peer interactions on heavy drinking also varied across gender, exerting a greater influence on the onset of binge drinking among males than among females who were time-1 nondrinkers. Furthermore, unstructured peer activities was related to high




levels of alcohol use and binge drinking among the unrestricted sample in the predicted fashion.

**Figure 3.** Effects of Unstructured Peer Interactions on the Onset of Binge Drinking by Gender ($n$ = 426, weighted)

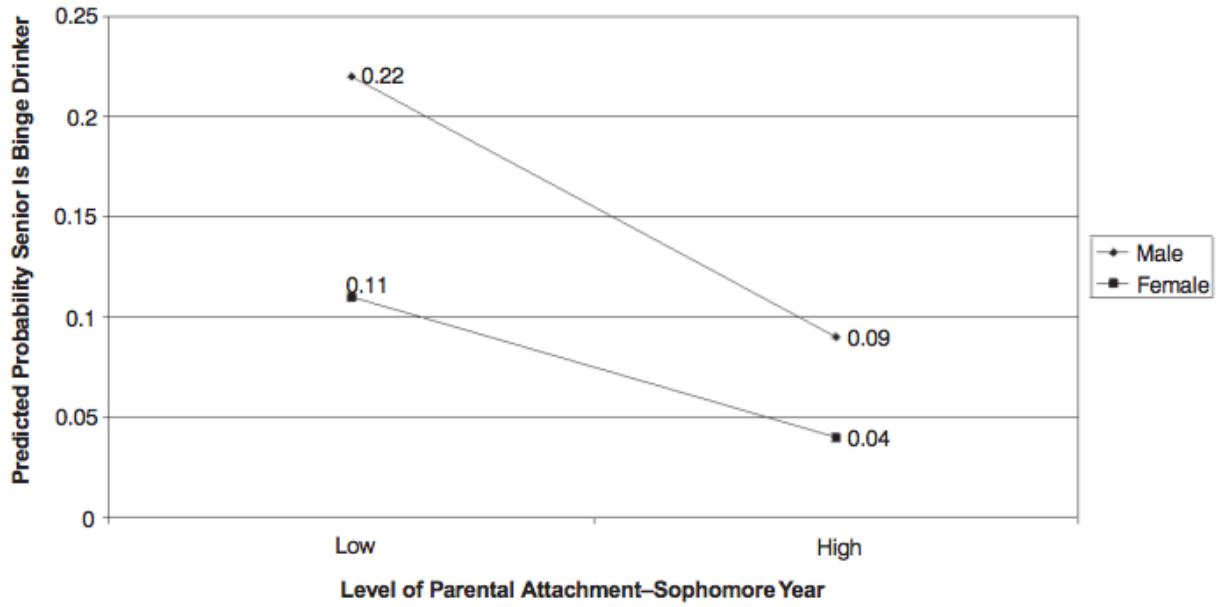



**Figure 4.** Effects of Participation in Unstructured Peer Interactions on the Onset of Binge Drinking by Level of Parental Attachment ($n$ = 426, weighted)

**Figure 5.** Effects of Parental Attachment on the Onset of Binge Drinking by Gender ($n$ = 426, weighted)

Of particular interest are the relative magnitudes of these latter effects. Early participation in unstructured peer interactions had the largest impact on both lifetime alcohol use and binge drinking among high-school seniors, substantially larger than the other measures of opportunity examined, including time spent with parents and participation in extra-curricular activities–the measure of involvement employed in most earlier studies. Moreover, it was the only predictor of the onset of alcohol use among sophomore abstainers strong enough to reach statistical significance. While parental attachment reduced the onset of binge drinking among the latter group of individuals, its influence was the greatest among those individuals who frequently participated in un- structured peer interactions.

It is regarding the impact of parental attachment and gender on adolescent drinking that our findings further diverge from those in the existing literature. Thompson and Wilsnack (1987) found a stronger effect of parent-child conflict on the decision to use alcohol among female than among male adolescents. However, in this analysis, parental attachment had a greater influence on the onset of binge drinking among males than among females.

Perhaps this discrepancy is rooted in methodological differences across studies. Thompson and Wilsnack (1987) measured parent-child conflict using items that reflected the extent to which

children felt that it was important to respect their parents' wishes (e.g., "How wrong is it to stay out all night without parental permission."). Our measure of parental attachment focused more directly on the perceived quality of respondents' relations with their parents. Boys may be more likely than girls to react to perceived parental rejection by engaging in delinquent activities like drinking, while girls may be more responsive than boys to internalized mechanisms of social control based upon parental values (Palmer & Hollin, 1996). Adolescent males do appear more prone than adolescent females to drink alcohol as a form of rebellion (Robins & Smith, 1980), a finding consistent with the latter effect, as well as the positive impact of parental control on alcohol use among the males in our sample. While this interpretation is consistent with the literature on gender differences in patterns of socialization and their consequences for behavioral self-regulation (see, e.g., Gilligan, 1982), this issue is beyond the scope of this analysis and is in need of further investigation.

A second notable inconsistency between our results and earlier research in need of further examination pertains more specifically to the effects of parenting style on adolescent drinking. In opposition to the results of previous analyses (Bahr, Hawks & Wang, 1993; Jackson, Henriksen & Dickinson, 1999; Reifman et al., 1998; Thomas et al., 2000; Vazsony & Flannery, 1997), we found no evidence that low levels of parental monitoring increased adolescents' subsequent use of alcohol or binge drinking.

This discrepancy may also be the result of methodological issues. Many of the studies showing an inverse relationship between parental monitoring and alcohol use are cross-sectional in nature (e.g., Bahr et al., 1993; Hundleby & Mercer, 1987; Vazsoni & Flannery, 1997). It is possible that parents become increasingly tolerant of adolescents' drinking once it is initiated and that parental monitoring is of minimal causal significance. It may also be that parental monitoring has a short-term effect on drinking that becomes increasingly smaller as children move through adolescence, at which point it is readily overshadowed by more direct measures of opportunity based upon peer activities. Although other parental factors—child-parent interaction and parental control—influenced adolescents' later patterns of drinking, these effects were relatively small in magnitude and lacked consistency across the dependent variables examined.

### *Conclusions*

Taken together, these findings point to three general patterns. First, they indicate that peer-related factors are more important determinants of adolescents' drinking behaviors than parent-based variables, such as attachment and parental monitoring. While numerous authors have reached a similar conclusion, this study extends the literature on the relative impact of parents versus peers on adolescent drinking by emphasizing the importance of opportunity as a causal agent. Regarding this, our findings suggest that parental attempts to monitor and control their children's behaviors may be less influential than providing concrete activities that minimize behaviors like alcohol use through their focus and visibility.

Programs designed to decrease opportunities for alcohol use and other forms of delinquency by providing youth with structured (and supervised) activities attests to practitioners' awareness of this phenomenon. Researchers working from within an ecological framework (Bronfenbrenner, 1992) have also addressed this issue by providing models of substance use and other forms of delinquency that stress both the importance of contextual factors and the interaction between individuals and their broader social environments as behavioral determinants (see, e.g., Silbereisen & Todt, 1994). This research offers further support for the utility of the ecological approach, as well as highlighting the potential effectiveness of programs designed to reduce youths' opportunities for delinquency. The fact that unstructured peer interaction was a stronger determinant of the onset of heavy drinking among males than among females suggests that interventions providing youth with structured activities high in visibility may be especially effective in decreasing alcohol use among adolescent males, individuals with a higher overall risk for alcohol abuse and related problems than their female counterparts (Barnes & Welte, 1986b).

Concerning other measures of opportunity, our findings suggest that the effects of parenting style, as well as the impact of unstructured peer interaction, on adolescent drinking vary across gender and that excessive parental control may increase alcohol use among adolescent males in particular. There is considerable evidence that boys are socialized to anticipate higher degrees of autonomy than girls (Gilligan, 1982). Perhaps parental behaviors in opposition to these expectations elicit the onset of rebellion. It may prove useful to assess the relationship between these variables within the context of information about adolescents' beliefs about desirable and/ or normative parenting strategies. A more extensive examination of the differential effects of parental control across gender may also account for some of the inconsistencies within the existing literature.

Beyond this, a final implication of our study results pertains to more theoretical issues. Consistent with the predictions of control theory, we found an inverse relationship between parental attachment and the on- set of binge drinking. It was, however, measures derived from Hirschi's (1969) concept of involvement that were the most consistent and sizable predictors of alcohol use and abuse among high-school students. While people may readily encompass the idea that bonds to society, such as attachment reduce delinquency for ideological reasons (Greenberg, 1999), our analysis suggests that it is control theory's more pragmatic aspects that have the most validity.

Despite this fact, as noted by Hawdon (1996), Hirschi's concept of involvement is one of the least well-defined components of control theory, with critics charging that participation in extra-curricular activities measures commitment to conventional institutions (e.g., school), as well as adolescents' opportunities for participation in deviant activities. In this study, it was the more direct indicators of opportunity (primarily participation in unstructured peer interactions) that best predicted later patterns of drinking, while participation in extra-curricular activities was unrelated to this form of delinquency.

Future research might focus on identifying both structural variables (e.g., gender, class, and race) and relational characteristics (e.g., parental monitoring of and control over their children's behaviors) that influence drinking and other deviant behaviors by shaping the context and structure of adolescents' peer interactions. Neighborhood disadvantage, a variable associated with social class in particular, has been found to enhance adolescents' opportunities for the use of drugs by increasing their access to these substances (Crum, Lillie-Blanton & Anthony, 1996). The intersection between neighborhood characteristics as well as other environmental factors (e.g., school characteristics) and patterns of peer interaction, and their effects on adolescents' use of alcohol and other drugs, is another area in need of further investigation.

*Notes*

1. Although this variable encompasses activities low in both instrumentality and visibility (Hawdon, 1996), we will refer to it as simply a measure of unstructured peer interaction for ease of presentation.
2. While alcohol use and binge drinking (measured during the sophomore year) were strongly related to seniors' drinking behaviors (Table 2), regressions excluding these indicators of prior drinking behavior showed moderate predictive validity, with $R^2$ statistics of .19 for alcohol use (versus .04 when only student background characteristics were included as predictors) and .12 for binge drinking (versus .04 for the model with background variables only) among high-school seniors (data not shown).

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