

THE CULTURAL CONTEXT OF ADOLESCENT DRINKING AND VIOLENCE IN 30 EUROPEAN COUNTRIES*

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Cross-national variation in the effect of alcohol on adolescent violence is examined with survey data from 30 European countries. The data are analyzed using a method that makes it possible to isolate the

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nonspurious portion of the alcohol–violence relationship in different countries. In addition, multilevel models are used to estimate the effects of region and contextual measures of adolescent drinking on the alcohol–violence relationship. The evidence suggests that drinking has a strong effect on adolescent violence in the Nordic and Eastern European countries but has little or no effect in the Mediterranean countries. In the Mediterranean countries, where adolescents drink frequently but in moderation, the relationship between alcohol use and violence is almost entirely spurious. Findings suggest that the observed pattern is due to regional differences in the tendency for adolescents and their peers to drink to intoxication, as well as in their tendency to become intoxicated in settings where adult guardianship is absent.

It is well known that people often are intoxicated when they commit violent offenses (Boles and Miotto, 2003; Fagan, 1990; Miczek et al., 1994; Pernanen, 1991; Roizen, 1997). However, most people in most situations do not become violent when they drink. Some scholars argue that the effects of alcohol depend on the social contexts in which drinking occurs (Fagan, 1990; Parker and Rebhun, 1995). For example, alcohol may facilitate violence when adolescents are drinking with friends in an unsupervised setting but not when they are in the company of adults (e.g., Rossow, 1996). Social contexts that facilitate alcohol effects are also likely to vary across cultures. In a classic book, *Drunken Comportment*, McAndrew and Edgerton (1969) identified tribal cultures in which alcohol did not seem to have any effect on violence or other misbehavior. In these societies, disinhibiting effects of alcohol were not observed, even during periods of extreme intoxication. Although sensorimotor function declined and sociability may have increased, the drunk's behavior did not "change for the worse" (McAndrew and Edgerton, 1969: 36). McAndrew and Edgerton claimed that the consequences of alcohol in a culture depend on social beliefs about its effects. It only leads to misbehavior in cultures where alcohol is viewed as a form of "time out," i.e., where the normal rules of interaction are relaxed. Drunken comportment is culturally constructed, not simply a function of psychopharmacology. Their book paved the way for the social sciences to study alcohol effects (Room, 2001).

In this research we examine whether differences in the alcohol–violence relationship exist among more economically developed countries, and whether these differences vary by region. We use a method that helps isolate the causal effect of alcohol in an attempt to determine whether the effect is stronger in some regions than in others. We also use multilevel models to examine regional variation. Finally, we examine various explanations for regional differences. Specifically, we attempt to determine whether regional differences occur because adolescents in some regions are more

likely to drink to intoxication, because they are more likely to drink in the company of intoxicated peers, because they drink in settings unsupervised by adults, or because of their expectations about the effects of alcohol.

DRINKING CULTURES

It is common in the alcohol literature to distinguish between “wet” and “dry” cultures (see, e.g., Room, 2001, 2007; Room and Mäkelä, 2000). In wet cultures, alcohol is consumed frequently, but in moderation, and the activity is integrated into the daily conduct of social life. For example, people drink a glass or two of wine with dinner at home. The Mediterranean countries of Southern Europe have been characterized as having this type of drinking pattern. In the dry cultures of Northern and Eastern European countries, on the other hand, people drink less frequently, but when they do, their purpose is to become intoxicated. They are likely to attend parties where people drink beer or liquor to excess. For adolescents, this is likely to involve drinking with friends rather than drinking at home with their parents. As a result of these drinking patterns, alcohol is more likely to be viewed as a social problem in dry countries and temperance movements have been more active historically (Levine, 1992). These countries also are likely to have more restrictive laws about teenage drinking. Note, however, that some scholars have challenged the distinction between wet and dry alcohol cultures arguing, for example, that the differences are overstated or are disappearing (for discussions, see Room and Bullock, 2002; Room and Mäkelä, 2000). However, our data will show that strong regional variation in drinking patterns exists that is consistent with this thesis.

When adolescents drink to excess, and when they do so in social settings without capable guardianship, alcohol may increase the likelihood of violence. One would therefore expect alcohol to be more strongly related to violence in the Nordic and Eastern European countries than in the Mediterranean countries. The literature examining the relationship between alcohol and violence in different countries is limited. The study closest to our own is a bivariate analysis of a subset of countries ($n = 13$) participating in the survey we use (Bye and Rossow, 2009). It found that respondents were more likely to report that they engaged in violence during a drinking occasion in northern than in southern countries (see also Room, 2007). Note that the relationship could be spurious because the study did not control for the fact that countries have different rates of drinking and different rates of violence. For example, if a country has a higher rate of drinking than other countries, then it will have a higher rate of drinking during all kinds of events, not just violent events. The other studies are aggregate analyses of time-series data. Lenke (1990) found a stronger association between alcohol sales and criminally violent behavior in Sweden than in France.

Norström (2001) found that the relationship between changes in per-capita alcohol consumption and changes in the homicide rate were strongest in Nordic countries (Finland, Sweden, and Norway) and weakest in southern countries (France, Italy, Portugal, and Spain). However, some findings were not consistent with the predicted pattern (Room, 1989; see also Norström, 1988).

THE QUESTION OF CAUSALITY

Studies performed mainly in the United States suggest that alcohol intoxication has a causal effect on violence. Experimental studies show that participants who have been provoked are more likely to engage in aggression if they have been given alcohol (for reviews, see Bushman and Cooper, 1990; Exum, 2006; Graham, Schmidt, and Gillis, 1996). Correlational studies based on within-subject designs also point to a causal relationship (see Leonard, 2005, for a review). These studies suggest that people are more likely to use violence during periods in which they engage in heavy drinking.

Alcohol may have a psychopharmacological effect because it decreases consideration of future costs, interferes with self-awareness, reduces anxiety about using violence, or increases arousal (e.g., Bushman, 1997; Critchlow, 1986; George and Dermen, 1988; Hull, 1981; Steele and Josephs, 1990). Psychopharmacological effects may also occur if the intoxication leads people to engage in provocative behaviors that lead to conflicts and create opportunities for violence. Thus, on the one hand, evidence suggests that alcohol increases the likelihood of victimization as well as offending (e.g., R. B. Felson and Burchfield, 2004). On the other hand, some scholars argue that the belief that alcohol leads to violence results in a self-fulfilling prophecy. People may engage in violence when intoxicated because they think it is expected or because these expectations provide them with an excuse (Exum, 2006; Goldman, Brown, and Christiansen, 1987; Graham, Schmidt, and Gillis, 1996; Hull and Bond, 1986; Paglia and Room, 1999). However, Room and Bullock (2002) did not find any support for the idea that differences in expectations about the effects of alcohol accounted for regional differences in drinking and violence (see also Lindman and Lang, 1994).

It is clear that some of the relationship between alcohol and violence is spurious, particularly among adolescents (e.g., Fagan, 1990; White, 1997). As drinking is illegal for adolescents in most developed countries, factors that lead to delinquency should affect both alcohol use and violent behavior. Differences in individual characteristics (e.g., self-control), participation in routine activities lacking capable guardianship, and peer group associations are likely to lead to both alcohol use and violence (e.g., Bjarnason, Sigurdardottir, and Thorlindsson, 1999; M. Felson, 1998; Gottfredson and

Hirschi, 1990; Moffitt et al., 2001). Thus, it is not surprising that alcohol use and violence among youth have shared risk factors (White, Brick, and Hansell, 1993; White, Hansell, and Brick, 1993; Zhang, Wiczorek, and Welte, 1997).

Two recent studies attempted to disentangle the causal and spurious portions of the relationship between adolescent drinking and violence (R. B. Felson, Teasdale, and Burchfield, 2008; R. B. Felson et al., 2008). The researchers first estimated the relationship between frequency of drinking and the tendency to engage in violence *while sober*. It was assumed that this relationship was entirely spurious. They then compared the coefficients from this equation with the coefficients from an equation estimating the relationship between frequency of drinking and total violence (sober or not). The latter revealed *the total relationship* between drinking and violence as a result of the causal effect of intoxication and the effects of common causes. A causal effect was suggested by the difference between the coefficients in the two equations. The results from these studies suggest that the relationship between frequency of drinking and violence is partially spurious and partly causal. However, additional findings suggested that the relationship is completely spurious for some nonviolent acts of delinquency, such as shoplifting (R. B. Felson et al., 2008).

CURRENT STUDY

In this study we use survey data from 30 European countries to examine the effect of alcohol on adolescent violence. Our study is the first to attempt to isolate the nonspurious portion of the relationship between frequency of drinking and violence and to relate it to region. It is also the first to use multilevel analysis, which is the best design for examining cross-level interactions between contextual measures involving region and individual drinking. Finally, we examine the role of regional differences in intoxication, expectation, and setting in an attempt to examine why the effects of alcohol might vary by region. Regional differences in intoxication rates have been studied but not as they relate to violence. We are aware of only one study of regional differences in setting (Room, 2007). It did not find much variation across regions in whether adolescents drank at home.

In the first set of analyses, we use the method developed by R. B. Felson and associates to isolate the nonspurious portion of the relationship between frequency of drinking and violence. This involves a comparison of the coefficients reflecting the relationship between drinking and sober violence with the coefficients reflecting the relationship between drinking and violence generally. We compute a difference score based on this comparison, which indicates the strength of the nonspurious effect of alcohol in each

country. We then use the difference scores in aggregate analyses to examine regional differences in the nonspurious relationship between alcohol and violence. Based on the distinction between wet and dry cultures, we hypothesize that the nonspurious effect is strongest in the Nordic countries and Eastern Europe and weakest in the Mediterranean, with Central Europe falling somewhere in between.

We also compute *rates of intoxication* and *moderate drinking* for each country. We confirm that adolescents from Nordic and Eastern European countries have high intoxication rates, whereas adolescents from Mediterranean countries have high rates of moderate drinking. Then we test whether the nonspurious effects of drinking and intoxication are stronger in countries with high intoxication rates and lower in countries with high rates of moderate drinking.

In some of our analyses we substitute an individual measure of frequency of intoxication for the individual measure of frequency of drinking (i.e., alcohol consumption of any amount). If the effects of drinking frequency vary across countries but the effects of intoxication do not, it will imply that cross-cultural variation is due to differences in the tendency to become intoxicated. In other words, the effects of drinking are stronger in some countries simply because youth in those countries are more likely to drink to intoxication. It will suggest that once youth are intoxicated, they behave similarly everywhere: They are more likely to use violence. However, if intoxication effects are stronger in some countries than in others, it will suggest that youth from different countries respond differently when they are intoxicated. It will suggest that the effects of drinking depend on some contextual factor, not just on the psychopharmacological effects on individuals who are drunk.

In our second set of analyses, we take a more conventional approach. We perform a multilevel analysis in which we predict the likelihood that youth have engaged in violence, ignoring whether they were drinking or sober at the time. We determine whether frequency of intoxication has different effects in different regions by examining statistical interactions between region and individual frequency of intoxication. If we find an interaction between region and intoxication, it will suggest that intoxication has different effects in different regions.

We also examine whether there are cross-level interactions between frequency of individual intoxication and a country's rate of intoxication. Interaction effects will imply that the presence of other intoxicated adolescents enhances the effect of drinking on individuals. In addition, we examine whether high intoxication rates can explain regional differences in the effects of alcohol on violence. We do similar analyses substituting rates of moderate drinking for rates of intoxication. We expect weaker effects of individual drinking in countries with high rates of moderate drinking.

Finally, we consider two additional factors that might help explain regional effects. First, we examine whether there are regional differences in *expectations* about the effects of alcohol on violence. It may be that alcohol effects are stronger in Nordic and Eastern European countries than in Mediterranean countries because beliefs in the alcohol–violence connection are stronger. Second, we consider the *setting* in which alcohol is consumed as a contextual factor that may help explain regional differences in the effects of alcohol on violence. We suggested that the effect of intoxication on violence depends on variation across countries in adult guardianship when youth are drunk. We do not have measures of adult guardianship, but we do have a measure of the settings where respondents most recently engaged in heavy drinking.

We will examine whether youth drank in their home, in other domestic settings (such as their friends' homes), in outdoor spaces (street, parks, etc.), or in commercial establishments (bars, pubs, etc.). We think it is reasonable to assume that when youth become intoxicated in the homes of others, they are unsupervised by adults. These situations are likely to involve parties or gatherings when parents are away. In contrast, commercial establishments are regulated environments that always have adult supervision. We therefore predict that Nordic and Eastern European youth are more likely than Mediterranean youth to drink in the home of others and that they are less likely to drink in commercial settings. The level of adult guardianship in the other settings is unclear, so we make no predictions about them. Unfortunately, we cannot include setting as a variable in our equations to test whether it acts as a mediating variable. The setting measure refers to the last time the respondent drank, whereas the measure of violence attributed to drinking is a lifetime measure.

METHODS

We use data from the 2003 wave of the European School Survey Project on Alcohol and Other Drugs (ESPAD; Hibell et al., 2004). The survey was administered in 35 countries, including three semi-independent countries (the Faroe Islands, Greenland, and the Isle of Man). Nationally representative samples were used, with the exception of Russia and Turkey, where the samples were drawn from populations living in cities. Our analyses are based on data from 30 countries because 5 countries did not include the variables we required. Depending on geographic characteristics, population size, and other logistic considerations, the samples in each country were drawn as either random samples of all school classes in each country, geographically stratified random samples of classes, or two-stage random

samples of schools and classes (Hibell et al., 2004).¹ The school class was the final sampling unit in all countries. Anonymous questionnaires were administered to all students born in 1987 who were present in class on the day of survey administration. The respondents were 15–16 years old at the time of the survey.

The surveys were administered in individual countries by research assistants, teachers, or other school employees, and students sealed them in blank envelopes after completion. A methodological study of these differences in mode of administration found they did not affect response rates or self-reported substance use (Bjarnason, 1995). Response rates varied between 80 percent and 98 percent, with the exception of Greenland, where the response rate was 68 percent (Hibell et al., 2004). The pooled cross-national sample includes a maximum of 84,070 respondents.

MEASUREMENTS

We use two measures of alcohol consumption. First, we examine the frequency of *drinking*, i.e., the frequency of any alcohol consumption. Respondents indicated how many times, in the past 30 days, they had an alcoholic beverage. Second, we examine the frequency of drinking to the point of *intoxication*. Respondents were asked to indicate the number of occasions, in the past 30 days, in which they had been “drunk from drinking alcoholic beverages.”

We use these items as measures of individual drinking, but we also use them to construct aggregate measures of the drinking context for each country. We compute an intoxication rate based on the percentage of respondents who had gotten drunk at least once during that month (*percent drunk*). We also compute the rate of moderate drinking for each country. This measure refers to the percentage of youth in each country drinking alcohol more than five times in the last month without getting drunk a single time. Note that the measure of intoxication frequency is not available for Austria. We use the mean value of other Central European nations to estimate the prevalence of adolescent drunkenness in Austria.

Our measures of *violence* are based on the following question: “Have you ever been involved in a scuffle or a fight?” Possible response categories were “never,” “yes because of my alcohol use,” “yes because of my drug

1. We may underestimate standard errors because our respondents were clustered within classrooms and schools. However, for the most part, increasing the standard errors by 20 percent did not alter decisions about statistical significance. The exceptions were the Eastern European effects and the analyses in which percent drunk and percent moderate drinkers were included in the same equation. These results are not central to our argument.

use,” and “yes for reasons other than alcohol or drug use.” Respondents could attribute their violence to more than one factor. We created three categories: those who were never violent; those who attributed their violence to alcohol, regardless of whether they also attributed their violence to some other factor; and those who attributed their violence to some other factor but not to alcohol. We treat the last category as “sober violence.” Note that a small number of respondents (.7 percent) in the sober violence category reported being “high” on drugs other than alcohol. However, the relationship between the frequency of their alcohol use and their sober violence should still be viewed as spurious. In our multilevel analyses, we ignored the information on the reasons for violence and coded the violence measure as either “yes” or “no.”

One potential problem in our analyses is that the questions about frequency of drinking referred to the previous month, whereas our measure of violence did not include a reference period. We focused on recent drinking because we thought that respondents would find it easier to estimate frequency and because many of these adolescents are just beginning to drink alcohol and, therefore, do not have stable long-term drinking patterns. In addition, our violence measure is strongly related to a measure of recent violence that was available for eight countries. Respondents identified as having committed violence using our measure are three times more likely to have “started a fight with another individual” in the past 12 months (40 percent vs. 13 percent). Finally, the consequences of measurement error are likely to be minor in our analyses. Measurement error should not affect the *relative* size of the coefficients for sober and total violence. Nor should it affect the cross-level interactions in our multilevel models. It is more likely to have implications for estimating the main effects of alcohol, but we are not interested in the main effects.

We treated *region* as a set of dummy variables representing five groups of countries: Nordic, Eastern European, Central European, Turkey, and Mediterranean (the reference category). The groupings are shown in table 2. We treat Turkey separately from the other Mediterranean countries because, as a Muslim nation bordering the Middle East, it is culturally distinct, especially in terms of drinking patterns. All other countries that border the Mediterranean Sea are coded as Mediterranean. Thus, we include both Croatia and Slovenia even though they also could be coded as Eastern European. It was difficult to decide where to draw the line between Eastern and Central Europe. We chose to treat Slovakia as Eastern European and the Czech Republic as Central European because of the patterns of alcohol consumption (Popova et al., 2007). The Czechs overwhelmingly drink beer, whereas the Slovaks are much more likely to drink vodka and other spirits. The Czechs’ drinking patterns are similar to the drinking patterns of the Germans and the British, whereas the Slovaks are more similar to the

Poles and other populations of Northeastern Europe. We realize that our coding decisions can be challenged as some countries fit into more than one regional category. To address this issue, we present results for each country and we perform our multivariate models with alternative classifications. It will turn out that these coding decisions do not affect our conclusions.

All of our models adjust for the influence of *gender* and *socioeconomic status*. Respondents were asked: "How well-off is your family compared to other families in your country?" Their answers were coded on a scale ranging from 1 for "less well off" to 4 for "much better off." This question was not asked in the Malta survey so we assigned each Maltese respondent the modal category (2 = "about the same"). We used listwise deletion to handle missing data on our other variables, resulting in the loss of 8.0 percent of the cases. Our measure of intoxication frequency had the most missing data (3.4 percent). Countries varied in the amount of missing data, but no discernable pattern was found across regions.

Our measure of the setting where heavy drinking occurs is based on a series of questions about the most recent drinking occasion. Respondents were asked what they were drinking, how much they were drinking, and where they were drinking. For example, respondents were asked: "The last time you had an alcoholic drink, did you drink any beer/lager/stout; and, if so, how much? (Do not include low alcohol beer)." Respondents were asked similar questions about wine, alcopop, spirits, and cider. Those who marked the largest amount listed on any of these questions were considered intoxicated. This included, for example, those who drank five or more regular bottles or cans of beer, and those respondents who drank a bottle or more of wine. In their answer to the question on location, respondents could mark all that applied from the following list: at home; at someone else's home; out on the street, in a park, beach, or other open area; at a bar or a pub; in a disco; in a restaurant; and other.

Finally our measure of expectations is based on a question in which respondents are asked: "Do you think that heavy drinking influences the following problems?" One problem listed was violent crime. Respondents could answer: "yes, considerably"; "yes, quite a lot"; "yes, to some extent"; "yes, but only a little"; and "no." The variable is highly skewed with 38 percent answering "yes, considerably" and only 6 percent answering "no." In our research, we combine the two highest categories ("considerably" and "quite a lot"), contrasting it with those with weaker beliefs about the causal link between alcohol and violence.

RESULTS

We present the descriptive statistics for our individual-level variables in table 1 and the country-level measures in table 2. Table 1 shows that

Table 1. Descriptive Statistics for Individual-Level Variables

| Variables | Percent | <i>n</i> |
|--|---------|----------|
| Gender (male) | 48.8 | 41,043 |
| Socioeconomic Status | | |
| 1 (lowest) | 10.8 | 8,886 |
| 2 | 53.3 | 43,983 |
| 3 | 22.9 | 18,908 |
| 4 (highest) | 13.0 | 10,768 |
| Drinking Frequency | | |
| None | 37.2 | 31,007 |
| 1–2 times | 28.1 | 23,417 |
| 3–5 times | 16.4 | 13,690 |
| 6 or more times | 18.3 | 15,241 |
| Intoxication Frequency ^a | | |
| None | 69.3 | 54,566 |
| 1–2 times | 20.1 | 15,870 |
| 3 or more times | 10.6 | 8,349 |
| Violence | | |
| None | 54.1 | 45,074 |
| Yes because of alcohol | 8.5 | 7,099 |
| Yes because of other | 37.3 | 31,102 |
| Alcohol Expectations (strong) | 64.9 | 54,579 |
| Settings of Heavy Drinking ^{a, b} | | |
| Own home | 15.0 | 1,717 |
| Other domestic | 40.0 | 4,568 |
| Outdoors | 23.2 | 2,642 |
| Commercial establishment | 34.2 | 3,901 |
| Other place | 16.8 | 1,918 |

NOTE: Percentages may not total 100 due to rounding.

^aNot available for Austria.

^bCategories not mutually exclusive. Limited to those whose latest drinking occasion meets the criteria for heavy drinking (*n* = 11,409).

62.8 percent of the respondents reported that they had at least one drink in the prior month, whereas 30.7 percent reported that they had been intoxicated. Approximately 46.0 percent of respondents had engaged in an act of violence, but only 8.5 percent had engaged in violence that they attributed to drinking. Respondents attributed approximately 19.0 percent of their violent incidents to drinking. Almost two thirds (64.9 percent) of the respondents believed alcohol plays a major role in violence. Finally, other people’s homes is the most popular place for European adolescents to engage in heavy drinking (40.0 percent), followed by a commercial establishment, such as a pub, bar, or club (34.2 percent).

ESTIMATING NONSPURIOUS EFFECTS

In the first analysis we use the method developed by R. B. Felson et al. (2008) to estimate the nonspurious component in the relationship between alcohol consumption and violence. The method involves two steps.

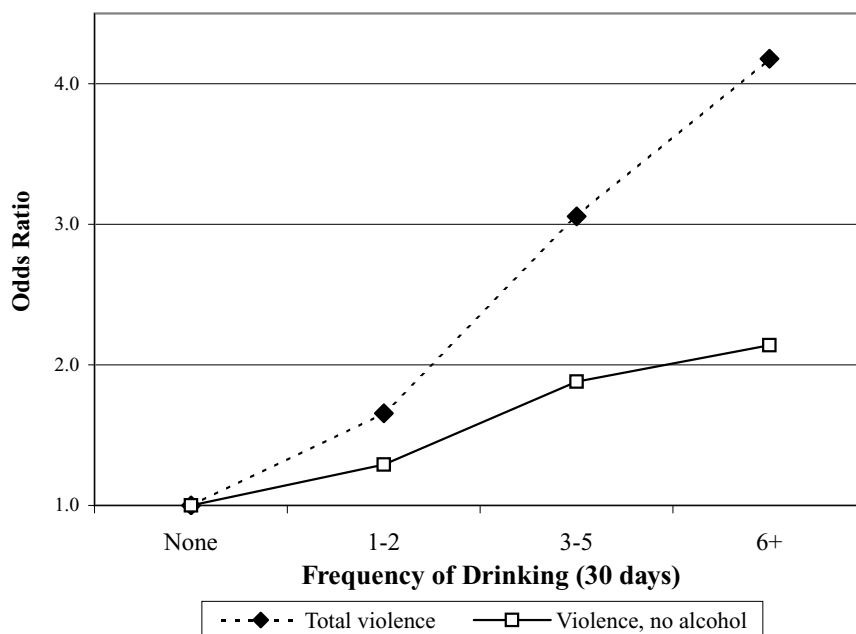
First we use logistic regression to estimate the effect of frequency of drinking on total violence. The outcome is a dichotomous variable that ignores whether violence was committed under the influence of alcohol. This effect reflects both a causal effect and the spurious relationship between alcohol consumption and violence. We then use a multinomial logistic equation to estimate the effects of frequency of drinking on a three-category variable coded as violence while drinking, violence while sober, or no violence (the reference category). We assume that the relationship between drinking and sober violence is spurious.² Our interest is in comparing the differences between the coefficients for sober violence and the coefficients for total violence. The differences reveal the “causal” (or nonspurious) association between drinking and violence. We calculated the size of the nonspurious association between drinking and violence as the difference between the two sets of coefficients: $\sum(\text{odds ratio } [OR]_{it} - OR_{iv})$, where t = total violence, v = violence with no alcohol, and i = category of drinking variable.

Note that we do not attempt to interpret the relationship between frequency of drinking and violence while drinking because there is a built-in relationship. Adolescents who never drink obviously do not engage in violence while drinking, and frequent drinkers are more likely than infrequent drinkers to engage in any activity while drinking.

As an illustration of the method, we present the results for Finland and Greece in figures 1 and 2, respectively. For Finland, we observe a strong positive association between drinking frequency and total violence. The odds of violence among the least frequent drinkers are somewhat higher than among those who did not drink at all ($OR = 1.65$), whereas the odds of violence among the most frequent drinkers are more than four times higher ($OR = 4.18$). To determine the size of the spurious component in this association, we compare these effects with the effects of drinking on sober violence. The latter effects are also positive and statistically significant, but they are not nearly as strong as the effects for total violence. Using the formula presented earlier, the difference score equals $3.58 [(1.65 - 1.29) + (3.06 - 1.88) + (4.18 - 2.14)]$. The results suggest that alcohol has a substantial causal effect on violence among Finnish youth. It is reassuring that this finding is consistent with previous research on adolescent drinking and violence among Finnish youth using the same method but different data and a different violence measure (R. B. Felson et al., 2008). The measure of

2. We can imagine an unlikely scenario where, strictly speaking, this relationship is not spurious. Suppose respondents are frequent drinkers and they associate with other frequent drinkers at times when respondents are sober but the others are drunk. If drunken peers provoke or instigate violence, then sober respondents could use violence in response. This could be considered an indirect causal effect *if* frequent drinking is viewed as a cause of the drinking of friends.

Figure 1. The Effect of Drinking Frequency on Total Violence and Sober Violence in Finland



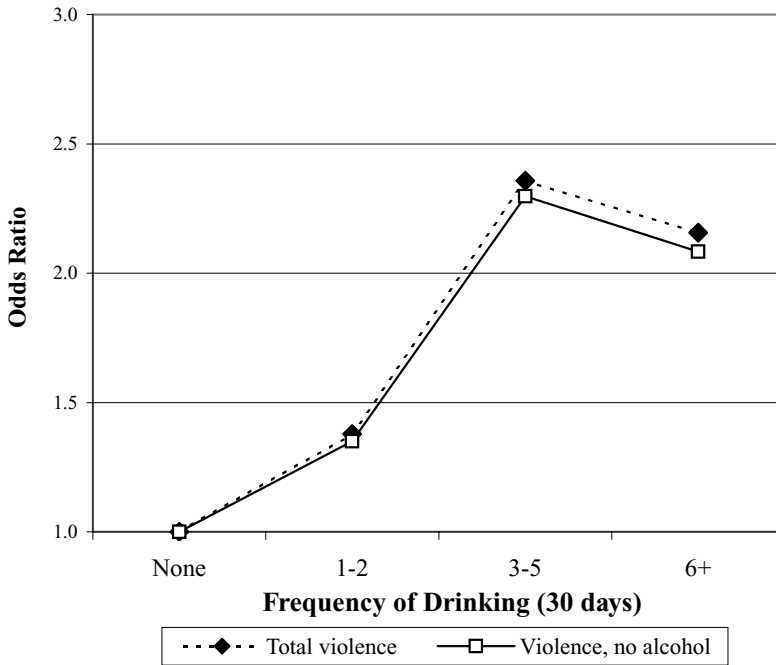
violence in the earlier study referred to behavior in the preceding year, and it asked respondents whether they were drinking, not whether alcohol was a causal factor. Apparently, time frame and question wording do not affect the results.

The pattern for Greek adolescents is very different from the Finnish pattern.³ The coefficients for total violence and sober violence are nearly identical (see figure 2). The difference score equals .16, which suggests that drinking has no causal effect on violence among Greek adolescents. We do find a positive relationship between drinking and violence, although the relationship is much smaller in Greece than in Finland. Our evidence suggests that the relationship between alcohol use and violence among Greek adolescents is entirely spurious.

The comparison of these two countries is consistent with our hypothesis about wet and dry cultures. However, before we can make any generalizations, we must repeat these analyses for the full set of nations. In addition,

3. Note that the odds ratios for Greece are on a more limited scale than the odds ratios for Finland. Otherwise, the distinction between the two lines for Greece is not visible.

Figure 2. The Effect of Drinking Frequency on Total Violence and Sober Violence in Greece



we have calculated the effect of frequency of *intoxication* on violence for each country. Perhaps getting drunk has similar effects on the likelihood of violence regardless of the national context. Perhaps drinking has no effect on violence in Greece and other wet countries because their adolescents rarely drink to the point of intoxication.

VARIATIONS ACROSS COUNTRIES

In table 2, we present the statistics for each country, grouped by region. The prevalence rates for drinking, intoxication, and moderate drinking are presented in the first three columns. The table shows that the highest rates of drinking are in the Central European countries (regional average = 76.8 percent). The Mediterranean countries have fairly high rates of drinking (67.1 percent) with the exception of Turkey, which has an extremely low rate (19.7 percent). The rates in Eastern Europe are slightly lower (61.9 percent). With the exception of Turkey, the lowest rates of alcohol consumption are in the Nordic countries (55.4 percent).

Table 2. Regional and Country-Specific Statistics on Drinking Patterns and Individual-Level Effects of Drinking and Intoxication on Violence

| Region/Country | Drinking Patterns | | | Effect Sizes ^a | | n |
|----------------------|-------------------|---------------|------------------|---------------------------|---------------------|--------|
| | Percent Alcohol | Percent Drunk | Percent Moderate | Alcohol Effect | Intoxication Effect | |
| Nordic | 55.4 | 41.6 | 1.0 | 2.24 | 1.57 | 17,283 |
| Denmark | 81.5 | 61.3 | 2.6 | 2.03 | 1.76 | 2,519 |
| Faroe Islands | 61.6 | 42.7 | 1.5 | .98 | .92 | 591 |
| Finland | 54.4 | 41.9 | .4 | 3.58 | 2.39 | 3,222 |
| Greenland | 50.9 | 48.8 | .7 | 2.93 | .94 | 554 |
| Iceland | 36.8 | 27.9 | .2 | 2.05 | 1.52 | 3,332 |
| Norway | 51.5 | 34.8 | .9 | 2.08 | 1.76 | 3,833 |
| Sweden | 51.0 | 33.7 | 1.0 | 2.01 | 1.73 | 3,232 |
| Central Europe | 76.8 | 35.8 | 9.4 | .58 | .85 | 20,416 |
| Austria ^b | 81.9 | 35.8 | 9.4 | .63 | N/A | 2,377 |
| Belgium | 72.7 | 26.6 | 13.8 | .25 | .45 | 2,320 |
| Czech Republic | 77.0 | 39.5 | 5.9 | .62 | .62 | 3,172 |
| Germany | 78.3 | 34.6 | 8.4 | .26 | .42 | 5,087 |
| Great Britain | 73.9 | 46.3 | 5.4 | 1.15 | 1.19 | 2,031 |
| Isle of Man | 78.9 | 48.9 | 5.5 | 1.25 | 1.64 | 721 |
| Netherlands | 76.1 | 26.9 | 18.1 | .12 | .93 | 2,095 |
| Switzerland | 75.4 | 27.9 | 8.4 | .33 | .69 | 2,613 |
| Eastern Europe | 61.9 | 31.3 | 4.1 | 1.60 | 1.46 | 28,967 |
| Bulgaria | 65.5 | 33.1 | 6.0 | .87 | 1.03 | 2,739 |
| Estonia | 61.2 | 40.8 | 1.5 | .98 | .65 | 2,463 |
| Hungary | 56.4 | 24.7 | 3.7 | .48 | .76 | 3,143 |
| Latvia | 60.9 | 29.5 | 2.7 | .89 | .99 | 2,841 |
| Lithuania | 77.2 | 36.9 | 4.9 | 5.99 | 3.94 | 5,036 |
| Romania | 53.7 | 15.5 | 5.6 | .54 | 1.46 | 4,371 |
| Russia ^c | 62.5 | 33.6 | 6.0 | 1.84 | 1.72 | 1,925 |
| Slovakia | 62.6 | 31.0 | 4.1 | .57 | 1.03 | 2,276 |
| Ukraine | 56.8 | 36.2 | 2.4 | 2.21 | 1.53 | 4,173 |
| Mediterranean | 67.1 | 20.7 | 12.2 | .44 | .61 | 13,227 |
| Croatia | 63.2 | 24.2 | 8.4 | .42 | .60 | 2,884 |
| Cyprus | 62.2 | 9.6 | 14.5 | .31 | .74 | 2,152 |
| Greece | 74.8 | 16.2 | 15.7 | .16 | .22 | 1,906 |
| Malta | 75.4 | 20.0 | 19.5 | .23 | .54 | 3,500 |
| Slovenia | 59.9 | 33.4 | 2.9 | 1.09 | .93 | 2,785 |
| Turkey ^c | 19.7 | 7.6 | 2.4 | .32 | .31 | 4,177 |
| Total | 63.8 | 32.3 | 6.1 | 1.24 | 1.15 | 84,070 |

^aBased on the difference score ($\sum(OR_{it} - OR_{iv})$), these measures indicate the size of the nonspurious component in the association between drinking and violence.

^bWe use the regional mean score for variables Percent Drunk and Percent Moderate in Austria.

^cThe Russian sample was drawn from Moscow. The Turkish sample was drawn from six cities.

When we examine the rates of intoxication and moderate drinking, we can see that these differences mask dramatically different drinking patterns in different regions. The results confirm the distinction between wet and dry cultures. The Nordic countries have the highest intoxication rates (regional mean = 41.6 percent), but they have the lowest rates of moderate drinking

(1.0 percent).⁴ The Mediterranean countries have the lowest intoxication rates (regional mean = 20.7 percent), and they have the highest rates of moderate drinking (12.2 percent). Eastern Europeans have higher intoxication rates than Mediterraneans but lower rates of moderate drinking. The rate of moderate drinking is twice as high in Central Europe as in Eastern Europe, but their intoxication rates are similar. Finally, Turkey is an exception to the general pattern: It has low rates of both moderate and heavy drinking.

We must acknowledge, however, significant variation within regions. For example, the prevalence of drunkenness in Denmark is twice as high as in Iceland. The two nations with the weakest ties to Mediterranean culture (Croatia and Slovenia) have the highest levels of drunkenness in that region and the lowest rates of moderate drinking. We could have just as easily classified these countries as Eastern European. Finally, youth from the British Isles (Great Britain and the Isle of Man) have higher rates of intoxication than youth from other countries of Central Europe.

In columns 5 and 6 of table 2, we present the nonspurious component in the individual-level association between alcohol consumption and violence. These were computed in the same way we computed the effects for Finland and Greece. The effect sizes for frequency of drinking are presented in column 5, whereas the effect sizes for frequency of intoxication are presented in column 6. The results show strong variation across regions, which we will discuss when we present our aggregate analyses. The results also show variation within region. First, among the Nordic countries, the effects of drinking and intoxication are particularly strong among Finnish youth. In Central Europe, the effects are strongest among youth from the British Isles. In Eastern Europe, the effects are strongest in Lithuania. Finally, in the Mediterranean regions, the effects are strongest in Slovenia.⁵

We use the effects in columns 5 and 6 as our dependent variable in the aggregate analyses presented in table 3. The left panel is based on equations involving the nonspurious effect of any alcohol consumption on violence, and the right panel is based on the nonspurious effects of intoxication. Note

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4. Adolescents in different regions tend to drink different beverages, as the literature on wet-dry cultures suggests. For example, 50.4 percent of adolescent drinkers from Mediterranean countries drank wine last time they drank compared with 23.9 percent of adolescent drinkers from Nordic countries. For beer, the corresponding percentages for these regions are 53.5 percent and 64.8 percent.
 5. It is not useful to compare effect sizes for alcohol and intoxication because the former includes the latter. In countries where there is not much drinking in moderation (e.g., the Nordic countries), most of the drinking involves drinking to intoxication (see column 3). Note also that the alcohol and intoxication measures are coded differently.

Table 3. Region and Drinking Context as Predictors of Cross-National Variation in the Effect of Drinking on Violence

| Panels | Effect Size of Alcohol (n = 30) | | | | Effect Size of Intoxication (n = 29) | | | |
|----------------------|------------------------------------|----------------------|-------|-------|---|----------------------|------|-------|
| | Zero-order | OLS regression model | | | Zero-order | OLS regression model | | |
| Panel A | <i>r</i> | <i>b</i> | SE | beta | <i>r</i> | <i>b</i> | SE | beta |
| Drinking context | | | | | | | | |
| Percent Drunk | .464** | .031† | .019 | .294 | .398* | .017† | .013 | .271 |
| Percent Moderate | -.496** | -.083* | .043 | -.356 | -.394* | -.036† | .028 | -.263 |
| R ² | | 31.3% | | | | 21.1% | | |
| Panel B | | OLS regression model | | | OLS regression model | | | |
| Region | | <i>b</i> | SE | beta | <i>b</i> | SE | beta | |
| Nordic | | 1.793** | .646 | .612 | .968** | .396 | .560 | |
| Eastern | | 1.153* | .615 | .427 | .851* | .377 | .532 | |
| Central | | .134 | .628 | .048 | .243 | .396 | .140 | |
| Turkey | | -.124 | 1.208 | -.018 | -.292 | .741 | .072 | |
| Mediterranean (ref.) | | | | | | | | |
| R ² | | 34.0% | | | 31.0% | | | |

ABBREVIATIONS: OLS = ordinary least squares; SE = standard error.
 †*p* < .10; **p* < .05; ***p* < .01 (one-tailed test).

that these analyses are akin to an analysis of statistical interactions because the dependent variable reflects the effect of the frequency of drinking or intoxication on violence. One can also think of the regional analyses as a meta-analysis of findings from 30 countries. We determine whether these replications produce variation in effect sizes. However, in this instance, the pooled effects are based on a shared set of measures, similar sampling procedures, and identical methods of estimation.

Before modeling regional differences, we examine the effects of a country’s drinking context (panel A of table 3). First, we present the zero-order correlations between the nonspurious effects of drinking and intoxication, on the one hand, and the rates of intoxication and moderate drinking, on the other. The results show that both effect sizes are positively related to intoxication rates and negatively related to rates of moderate drinking. In other words, the effects of alcohol and intoxication are stronger in countries that have high intoxication rates and weaker in countries that have high rates of moderate drinking.

We also attempted to disentangle the effects of intoxication rates from the effects of moderate drinking rates by estimating equations that included both. Note that we have limited statistical power because of the

small number of countries. In addition, a substantial negative correlation exists between the intoxication rate and the moderate drinking rate ($r = -.476$) resulting, in part, from the way they were constructed. Even with these constraints, we observe evidence that both intoxicated and moderate drinking contexts affect the alcohol–violence relationship. A comparison of the standardized coefficients reveals that the effects of moderate drinking are just as strong as the effects of intoxicated drinking. Three of the four effects in the multivariate equation, however, are of borderline statistical significance ($p < .10$; one-tailed test).

In panel B of table 3, we examine regional differences in the effect sizes for both drinking and intoxication. We observe strong support for the wet–dry hypothesis. Frequency of drinking and frequency of intoxication have much stronger effects on violence in Nordic and Eastern European countries than in Mediterranean countries. Alcohol effects are particularly strong in Nordic countries. Finally, Turkey and the Central European countries are not significantly different from the Mediterranean countries. The results support the idea that regional differences do not just reflect differences in the amount youth drink as even intoxicated youth in the Nordic and Eastern European countries behave differently than intoxicated youth in Mediterranean and Central European countries. It seems that regional variation in the effects of alcohol on violence depends on both the amount of adolescent drinking and other contextual factors.

Mindful of the exceptionally high effect sizes associated with Lithuania (see table 2), we reanalyzed the data without this potential outlier. In these analyses, the magnitude of the coefficients associated with Eastern Europe declined, but the overall pattern did not change. For example, without Lithuania, the value of the unstandardized coefficient for the region is reduced to .601 (alcohol effect) and .541 (intoxication effect). However, in each situation, the effects remain statistically significant. Excluding Lithuania, the difference between Nordic countries and Eastern European countries grows larger, and the variance explained by the regional dummies is significantly improved.

Finally, we examined whether there were regional differences in the *spurious* relationship between frequency of drinking (and intoxication) and sober violence. It may be that in some regions the types of youth who commit violence also tend to drink, whereas in other regions, the drinkers and the fighters are not as likely to be the same people. However, we found no evidence of regional differences in the size of the spurious component, for either alcohol consumption or intoxication (results not presented). Evidently, the effect of personal characteristics on drinking and violence are similar across regions.

Table 4. Multilevel Models of Total Violence: Logistic Regression Coefficients

| Predictors | Model 1 (b) | Model 2 (b) | Model 3 (b) | Model 4 (b) |
|------------------------------------|----------------|----------------|----------------|----------------|
| Individual-level (n = 75,093) | | | | |
| Sex (male) | .892*** | .892*** | .894*** | .893*** |
| Socioeconomic status | -.063*** | -.063*** | -.063*** | -.063*** |
| Intoxication frequency | .483*** | .460*** | .475*** | .477*** |
| Nation-level (n = 29) ^a | | | | |
| Intercept | -.177* | -.185* | -.185* | -.181* |
| Region | | | | |
| Nordic | -.610** | -.598* | -.369 | -.507 |
| Central | -.234 | -.214 | -.052 | -.198 |
| Eastern | -.494* | -.481* | -.362 | -.412 |
| Turkey | .991* | .849 | .816 | 1.096* |
| Mediterranean (ref.) | | | | |
| Percent Drunk | | | -.012 | |
| Percent Moderate | | | | .009 |
| Cross-level | | | | |
| Intoxication × Nordic | | .101** | | |
| Intoxication × Eastern | | .181*** | | |
| Intoxication × Turkey | | -.376*** | | |
| Intoxication × Percent Drunk | | | .004** | |
| Intoxication × Percent Moderate | | | | -.007** |

^aAustria is not included as the measure of intoxication was not available.

*p < .05; **p < .01; ***p < .001.

MULTILEVEL MODELS

The results from our hierarchical linear modeling (HLM) analyses of total violence are presented in table 4. To avoid repetition, we report findings from the models featuring *intoxication* frequency as the individual-level measure of alcohol consumption. The key findings, including all statistical interactions, are nearly identical when we substitute the frequency of drinking for intoxication frequency as our individual-level measure (results available from the authors).

Model 1 in table 4 is an additive model, model 2 includes statistical interactions between individual intoxication and region, and models 3 and 4 include interactions between intoxication and the two contextual measures of drinking—the intoxication rate (model 3) and the rate of moderate drinking (model 4).

The additive model (model 1) in table 4 reveals the main effects of region. Youth from the Mediterranean countries (the reference category) are more likely to engage in violence than youth from Nordic and Eastern regions. Youth from Turkey have particularly high rates of violence (b = .991). The results also suggest that boys, frequent drinkers, and youth from a lower socioeconomic status are more likely to engage in

violence. The frequency of individual intoxication is more strongly related to violence than the measure of frequency of individual drinking.⁶ These relationships are expected and increase confidence in the validity of the data.

The results from model 2 show the predicted statistical interactions between frequency of intoxication and region. The relationship between intoxication and violence is stronger among Nordic and Eastern European youth than among Mediterranean youth. We also find that the relationship between intoxication and violence is weaker among Turkish youth than among Mediterranean youth. Again, the results suggest that excess drinking is not the only explanation for regional differences in alcohol effects on violence.

Models 3 and 4 include cross-level interactions between frequency of individual intoxication and drinking contexts. The results confirm the results presented in table 3. The relationship between individual intoxication and violence is stronger in countries with high intoxication rates and lower in countries with high rates of moderate drinking.

REGIONAL DIFFERENCE IN EXPECTATIONS AND SETTINGS

In table 5 we examine regional differences in expectations and in the settings where adolescents become intoxicated. Regional differences in expectations are presented in the first column. They reveal the percentage of respondents who answered “yes, considerably” or “yes, quite a lot” to the question about the effects of alcohol on violent crime. These findings do not support the hypothesis that Nordic and Eastern European countries have stronger expectations about the relationship between alcohol and violence than Mediterranean countries. The percentage of youth who see a strong connection between alcohol and violence is almost identical in the Nordic and Mediterranean countries. The lowest percentage is observed in Eastern Europe, whereas the highest percentage is observed in Turkey.

The analysis of setting is limited to respondents who indicated that they consumed a large amount of alcohol during their most recent drinking occasion. Recall that respondents could identify more than one location. The results show that Nordic youth are much more likely to have been intoxicated at someone else’s home than Mediterranean youth (69.5 percent vs. 19.0 percent; $\chi^2 = 149.1$; $p = .000$). However, they are much less likely to have become intoxicated in a commercial establishment, such as a pub, club, or restaurant (21.7 percent vs. 75.3 percent; $\chi^2 = 804.7$; $p = .000$). Eastern and Central Europeans fall somewhere in between. These

6. Whether this relationship is causal or spurious, it should be stronger for frequency of intoxication than for frequency of drinking.

Table 5. Regional Differences in Alcohol–Violence Expectations and Settings of Heavy Drinking

| Region | Strong Alcohol–Violence Expectations | | Settings of Heavy Drinking (%) ^a | | | | | n |
|----------------------|--------------------------------------|--------|---|--------------|----------|--------------------------|-------------|-------|
| | Percent | n | Own Home | Others' Home | Outdoors | Commercial Establishment | Other Place | |
| Nordic | 72.0 | 15,341 | 17.3 | 69.5 | 23.7 | 21.7 | 20.3 | 3,842 |
| Eastern | 62.0 | 28,535 | 14.5 | 34.8 | 27.4 | 57.1 | 16.3 | 2,481 |
| Central ^b | 64.1 | 20,222 | 18.0 | 32.6 | 25.2 | 60.6 | 18.7 | 3,323 |
| Mediterranean | 72.6 | 13,071 | 14.1 | 19.0 | 26.7 | 75.3 | 17.2 | 1,631 |
| Turkey | 86.9 | 3,904 | 15.7 | 21.3 | 29.9 | 29.1 | 14.2 | 132 |

^a Percentages do not add up to 100 as response categories are not mutually exclusive.

^b Central region does not include Austria.

results support the hypothesis that youth in Nordic and Eastern European countries are more likely than Mediterranean youth to become intoxicated in settings unsupervised by adults. Finally, Turkish youth are just as unlikely as Mediterranean youth to drink in the homes of others. They are more likely to become intoxicated in outdoor locations than other youth, and they are relatively unlikely to drink at commercial establishments.

DISCUSSION

This research addresses a conundrum in the alcohol literature. On the one hand, intoxication seems to have a psychopharmacological effect. Participants in experiments who are given alcohol tend to be more aggressive, and violent offenders often are intoxicated. On the other hand, ethnographic work suggests that social context is critical and that alcohol effects are culturally determined. In this research, we addressed both the causality issue and the contextual issue.

To address the causality issue, we used a relatively new approach to separate the spurious and the nonspurious aspect of the alcohol–violence relationship. The method is useful for examining the effects of situational variables on behavior when one suspects that spuriousness is an important factor. Consistent with previous research using the same method, we find evidence supporting the idea that alcohol has a causal effect on violence, at least in most countries.

Of course, we must be cautious in our use of causal language, given the cross-sectional nature of our data. However, confidence in causal inference is strengthened given the experimental research showing that alcohol *can* have a causal effect on violent behavior. Our results allow us to evaluate the external validity of these experiments by determining whether the experimental results are generalizable to different social contexts. Our results suggest that the effect of alcohol in real-life settings depends on the country and its drinking context.

Our predictions were based on the well-known distinction between wet and dry cultures, i.e., between cultures where people drink in moderation during conventional social activities and cultures in which they drink to intoxication in party atmospheres. We first established regional variation in drinking patterns. We found that adolescents in the Nordic countries were much more likely to get intoxicated than adolescents in Mediterranean countries but were much less likely to drink in moderation. Eastern Europeans have higher intoxication rates than Mediterraneans do but lower rates of moderate drinking. Turkish youth do not drink much at all.

We predicted that alcohol effects would be stronger in the dry cultures because adolescents in those cultures are more likely to drink

to excess and because the social contexts were more likely to be conducive to violence. We used two different methods, and the methods yielded the same conclusions. Our evidence suggests that individual drinking has different effects in countries with different drinking patterns. In the Nordic and, to a lesser extent, the Eastern European countries, drinking has a strong effect on adolescent violence. However, in the Mediterranean countries, including Turkey, alcohol has little or no effect on violence. In these countries the relationship between alcohol and violence is largely and, in some cases, completely spurious.⁷

We considered a variety of explanations for regional differences. First, we examined whether it was simply the amount of alcohol that youth consume when they drink. Our evidence suggested that one reason that alcohol is more strongly related to violence in Nordic and Eastern European countries than in Mediterranean countries is that youth are more likely to become intoxicated when they drink. Mediterranean youth drink more frequently, but they drink in moderation. However, our evidence on intoxication effects suggested that variation in heavy drinking is not the only reason for regional differences. Intoxication has little or no effect on Mediterranean or Turkish youth. That is, even when Mediterranean youth do get intoxicated, they do not tend to become violent. It seems that other factors must help explain regional differences.

An alternative explanation of the regional differences in intoxication effects is that they reflect regional differences in reporting drunkenness. For example, perhaps Mediterranean youth are less likely than Nordic youth to admit being drunk. We addressed this possibility in an analysis of whether there were regional differences in how many drinks respondents thought were necessary to get them drunk. Youth from Mediterranean, Nordic, and other regions responded similarly (analyses not presented). Note that the survey also included a question in which respondents were asked how many times they consumed five drinks in a row or more. We did not find much regional variation in this measure, however (see also Room, 2007). In addition, we do not think this measure is appropriate for testing the theory of wet and dry cultures. The theory suggests that in wet countries, those who consume five drinks are more likely to drink slowly and more likely to consume food along with the alcohol. Future research should use a measure that takes into account time period, consumption of food, and quantity greater than five drinks.

7. Some college presidents in the United States have proposed that the minimum drinking age be lowered so as to create a drinking context more similar to that found in the Mediterranean countries (<http://www.amethystinitiative.org/>). Research, however suggests that lowering the drinking age is associated with increases in criminal behavior (e.g., Parker and Rebhun, 1995).

We examined three other explanations for the regional effects: expectations about alcohol effects, the presence of intoxicated peers, and the settings in which youth get drunk. We found no support for the idea that regional differences can be attributed to differences in expectations. Consistent with Room and Bullock's (2002) research, we did not observe the predicted regional variation in beliefs about the effects of alcohol. Regional differences do not seem to be due to a self-fulfilling prophecy. It is possible, however, that we would find different results if we had measured the respondents' expectations about their own behavior. People are apparently more likely to believe alcohol has an effect on others than on themselves (Paglia and Room, 1999), but we see no reason why this should vary by country.

The failure to find regional differences in expectations also counters the argument that our findings on effect sizes stem from regional biases in the tendency to believe violence results from drinking. In addition, the fact that we get similar results in our multilevel analyses where we do not rely on the respondent's causal attributions suggests that we are measuring the actual effects of alcohol, not just beliefs about its effect.

We did find support for the hypothesis that youth who are under the influence are more likely to engage in violence when their peers also are intoxicated. Adolescent drinking was more likely to lead to violence in countries with high intoxication rates, whereas its effect was weaker in countries with high rates of moderate drinking. We assume that these rates are reflected in the condition of peers who are present during situations where violence is a possible response. Violence requires an adversary (or victim), and when that adversary also is intoxicated, conflicts may be more likely to escalate. In other words, the potential for violence is greater when both adversaries are intoxicated. In addition, because youth usually drink in groups, third parties are likely to be influential (Tedeschi and R. B. Felson, 1994). In countries with high intoxication rates, third parties are more likely to be intoxicated. Intoxicated third parties may be more likely to instigate or encourage violent encounters and less likely to act as mediators. We recognize that these assertions are speculative because we have not directly measured the drinking or behavior of adversaries and third parties. Future research should measure these variables and examine these issues more thoroughly.

We also found evidence suggesting that setting plays an important role in understanding regional differences. We observed dramatic regional differences in the settings in which youth engage in heavy drinking. Nordic youth are much more likely to consume large amounts of alcohol in the homes of others than Mediterranean youth, while they are much less likely to do

so in pubs, clubs, and restaurants.⁸ We observe similar patterns when we compare Eastern and Central Europeans with Mediterranean youth, but the differences are smaller. Finally, Turkish youth are just as unlikely as Mediterranean youth to drink in the homes of others.

These findings are consistent with the argument that regional differences in capable guardianship affect whether intoxication leads to violence. It is reasonable to assume that adult supervision is low when youth become intoxicated in the homes of their peers. They choose times when parents are away from home. On the other hand, adult guardianship is relatively high in commercial establishments.⁹ We could not, however, examine whether setting mediated regional differences in the effects of alcohol because our setting and violence measures were based on different time periods. Our conclusions regarding setting and guardianship must therefore be tentative. Future research should measure adult guardianship directly and examine whether it is a mediating variable. Future research should also examine the role of access to homes where parents are away as a risk factor for drinking and delinquency generally.

In sum, alcohol has strong effects on violent behavior in some countries but not in others. Its effects are conditioned by the social context in which drinking occurs. It seems that alcohol effects are stronger when youth drink to excess, when their peers do as well, and when they drink in settings with low levels of guardianship. Alcohol is an important causal factor in violence, but its effects are not automatic, and they are not observed everywhere.

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8. For our central purposes, it does not matter whether these drinking patterns are affected by national variation in laws regulating adolescent drinking. The issue is only relevant in judging whether the spurious relationship between alcohol and violence is stronger in countries where the legal drinking age is higher. In countries with higher minimum drinking ages, our respondents are committing a crime when they drink. However, we found no evidence of regional differences in the size of the spurious component. For that matter, we found no evidence of regional differences in minimum drinking age. Note, also, that it is difficult to assign a minimum drinking age to a country because the laws are not uniform across jurisdictions within countries and because they vary depending on the type of alcohol and the setting.
 9. Perhaps this is not true in large bars or clubs that cater strictly to youth.

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