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Influence of Grade-Level Drinking Norms on Individual Drinking Behavior

Lisa M. Yarnell, PhD [Postdoctoral Research Associate],
University of Southern California, Department of Psychology, Los Angeles, CA

H. Shelton Brown III, PhD [Associate Professor],
University of Texas School of Public Health, Division of Management, Policy, and Community Health, Austin, TX

Keryn E. Pasch, PhD, MPH [Assistant Professor],
Department of Kinesiology and Health Education, University of Texas at Austin, Austin, TX

Cheryl L. Perry, PhD [Professor and Regional Dean], and
University of Texas School of Public Health, Austin Regional Campus, Austin, TX

Kelli A. Komro, PhD, MPH [Professor]
Department of Epidemiology and Health Policy, College of Medicine, University of Florida, Gainesville, FL

Abstract

Objective—To investigate which points of the middle-school drinking distribution are the most influential in the social contagion of drinking across the middle-school years, in order to identify potential social multipliers.

Methods—We measured drinking intentions and behaviors by gender, school, and grade among urban middle-school students who participated in Project Northland Chicago in a longitudinal cohort design.

Results—Individual drinking behaviors were consistently influenced by extreme (80th percentile) drinking intentions and behaviors. This effect was mediated through normal or average levels of drinking, over time.

Conclusions—Interventions can target extreme drinkers as the influential persons in middle-school grades.

Keywords

social norms; drinking; middle school; gender; mediation

Many school-based interventions have been aimed at alcohol use prevention among youth, but with limited effectiveness.[1,2] One potential avenue for making school-based drinking interventions more effective is through the use of social multipliers. A social-multiplier effect is produced when policies take advantage of the tendency of individual behaviors to vary with the behavior of the reference group.[3] For example, recent research in the area of obesity suggests that young people's social networks may be used as social multipliers, so that the benefits of obesity prevention activities can be extended beyond the direct target of the intervention.[4,5] This approach of targeting social networks is likely to be cost-effective

Correspondence: Dr. Brown; h.shelton.brown@uth.tmc.edu.

because scarce resources could be spent on reaching influential persons and changing their behaviors, rather than spreading efforts more thinly across all students. For example, a given funding level may be sufficient if it fully involves only 10% of students, whereas it might be insufficient if spread over 100% of students. In the former case, there might be a smaller number of influential -dents (eg, peer leaders) that could diffuse prevention messages and norms.[6,7] However, identifying influential students is key to this strategy.

In this paper, we start with the assumption that identifying overlapping friendship networks is too complex and time-consuming to be used as part of a broadly implemented intervention. Instead, we focus on the distribution of drinking behavior within grade levels at schools. Our primary goal is to address the questions: Which points in the drinking distribution, within school and grade, are important in the "contagion" of drinking over time? Are students who are extreme in drinking behavior more influential who are average or normal with regard to drinking more influential?

Alcohol use, the focus of our investigation, is an important problem to address at younger ages because early-onset drinking is associated with problem drinking behaviors later in life. It is a well-replicated finding that the younger a person starts drinking, the greater the risk for alcohol-related problems.[8,9] These problems include impaired brain development and intellect, alcohol-related cirrhosis, and alcohol dependence.[5,9,10] Alcohol use also has immediate consequences for adolescents, including increased risk for traffic crashes, crime, unintentional injury, disease, risky sexual behavior, academic problems, depression, homicide, and suicide.[11,12]

Drinking is also a social behavior. Although some reasons to drink are intrapersonal, such as personality type and social skills,[11] many influences to drink are social, including prevalence of drinking in the home, in the community, and among peers.[12] Major social influences among adolescents are family members, peers, school colleagues and personnel, and media models.[13–15] Adolescents are thought to observe, bond to, and in turn model the social behaviors of those who are influential. Peers are thought to be the most significant social-risk factor in adolescent experimentation with alcohol and drugs—more important than the influence from parents.[13,16] For example, Keefe[17] documented that as youths age, parental influence on sub -stance use decreases, but peer influence remains strong and consistent.

Peer influence on substance use is thought to occur through several avenues. In terms of socialization, adolescents may adjust their behaviors based on attitudes and behaviors of others in the surrounding environment.[18] There is also evidence for a *false consensus effect* among adolescents in which adolescents overestimate peer acceptance for drugs or alcohol as a social norm,[19,20] with some studies showing that perceived use among peers is more influential for behavior than actual use.[21] Finally, in terms of self-selection, adolescents may choose to associate with peers who are similar to them and who readily have drugs or alcohol available.[22] Fortunately, focusing on the distribution of drinking behavior among grades within schools not only sidesteps the effort needed to identify peer networks, but also allows us to avoid selection problems because grade-level peers are assigned rather than selected.

Our research questions were as follow. First, who has more influence on the alcohol consumption of classmates: students who are extreme for drinking, or students who are average or normal with regard to drinking? Second, do these effects differ by gender, or according to whether peers' cognitions (intentions) versus actual behaviors are used as the marker of drinking? Last, is there evidence that either extreme or average drinking behaviors or intentions actually change the distribution of drinking behaviors in this age-group over

time, highlighting their role as social multipliers for drinking? One hypothesis is that students in a grade or in a school gauge their behavior against that of higher-risk students, with the idea that anything up to that level is "okay." On the other hand, students may gauge their behavior on the grade average. If the former hypothesis is true, scarce resources could be concentrated on the extreme students, which would lead to a social-multiplier effect because everyone else will be influenced.

METHODS

Participants

We analyzed data from Project Northland Chicago (PNC), a longitudinal, group-randomized controlled trial of alcohol use prevention among students in grades 6 through 8. We obtained IRB approval for use of these data from the UT-SPH Committee for the Protection of Human Subjects. The data were collected in the fall of 2002, spring of 2003, spring of 2004, and spring of 2005.[11,23,24] Participating students were from 61 public schools that were selected from a list of all Chicago Public Schools (CPS) that included grades 5 through 8, had low mobility rates (less than 25% changed schools), and were larger in size (at least 30 students per grade). Students completed self-report questionnaires, with response rates ranging from 91% to 96% each year. In the current study, we used student data from 3 time points (end of sixth grade, end of seventh grade, and end of eighth grade).

Our sample consisted of 5812 middle-school students, though not all students had available data at all time points (N=4234 at grade 6, N=3776 at grade 7, N=3803 at grade 8). The sample was 49.4% female and 50.6% male. The sample was ethnically diverse, being 46.3% African American, 29.8% Latino, 13.4% white, 5.3% Asian, and 10.5% Other. In the sixth grade, 14.6% of the sample reported speaking Spanish at home, and 5.8% reported speaking another language at home. In the sixth grade, 66.3% of the sample was eligible for free or reduced lunch.

Measures

Drinking intentions—Intentions to drink alcohol were assessed with 3 items at each grade: "Would you drink alcohol if your best friend offered it to you?" "Do you think you will be drinking alcohol in the next month?" "Do you think you will be drinking alcohol when you are a senior in high school?" In the original scale for the items, response options ranged from 1 to 3 (no, not sure, yes). Cronbach alpha reliabilities were $\alpha = .76$ at grade 6, $\alpha = .81$ at grade 7, and $\alpha = .83$ at grade 8. For use in this paper, responses of "no" and "not sure" were coded with a "0," and responses of "yes" were coded with a "1." This was done such that a positive score indicated conviction to drink rather than uncertainty. Responses were then averaged for each participant across the 3 items, creating an average drinking intentions score for each participant at each grade.

Drinking behaviors—Alcohol use was assessed with 4 items at each grade: "During the last 12 months on how many occasions, or times, have you had alcoholic beverages to drink?" "During the last 30 days, on how many occasions, or times, have you had alcoholic beverages to drink?" "During the last 7 days, on how many occasions, or times, have you had alcoholic beverages to drink?" "Think back over the last 2 weeks. How many times have you had 5 or more alcoholic drinks in a row?" In the original scale for the items, response options ranged from 1 (0 occasions) to 7 (40 or more occasions). Cronbach alpha reliabilities for these 5 items were $\alpha = .85$ at grade 6, $\alpha = .87$ at grade 7, and $\alpha = .87$ at grade 8. Responses were averaged across the 4 items for each participant, creating an average drinking behaviors score for each participant at each grade. Although the binge-drinking item (5 drinks in a row) marks extreme behavior, particularly among middle-school

students, note that this item was endorsed by both genders, with over 10% of boys and over 8% of girls reporting engaging in binge drinking by the eighth grade. These items have also shown good psychometric properties in previous work.[25,26]

Demographic variables—Language spoken at home was measured with a variable marking whether English, Spanish, or another language was the language typically spoken at home. Note that language spoken at home may not be entirely time invariant over these grades, especially for immigrant families. We also used markers of ethnicity and gender. These allowed us to describe our sample and to calculate drinking norms in each school and grade separately by gender, as well as run regression models separately by gender. Specifically, a (0/1) variable indicated which middle students were male (0) or female (1). Also, we created 2 dichotomous (0/1) dummy variables from a PNC race variable with 6 original race categories in order to identify those students who were either black or Hispanic (the 2 largest ethnic groups in the PNC data) and enter these dummy variables into our regression models.

Dummy variables were also created for seventh and eighth grades (0/1), marking membership in each of these grades (with sixth grade as the omitted variable). These variables were used as predictors in 6 longitudinal fixed-effects regression models that were run in Stata using the xtreg command.

Analysis

First, we determined the 50th and 80th percentile drinking intentions and behaviors (separately) by school, grade, and gender. These reflected average and extreme drinking intentions and behaviors for each school and grade, by gender, respectively. We also created 20th percentile drinking intentions and behaviors variables to capture scores by school, grade, and gender that bookended extremity to the 80th percentile scores, as control variables for our models. In calculating the percentile scores by school, grade, and gender, we omitted each individual's drinking intentions or behaviors in order to mitigate the *reflection problem*, which occurs when aggregate data measures are influenced by the individual in question.[27,28]

Next, we estimated longitudinal fixed-effects regression models predicting the middle school students' individual drinking-behavior scores from the 50th and 80th percentiles and from individual characteristics of the participants that varied over time. We also ran additional models with the control variable, 20th percentile scores, added in order to be sure that any effect of 80th percentile scores held even when controlling for scores at a parallel point in the distribution. The form of our fixed effects regression model was as follows:

$$Y_{it}=\beta_1 X_{it}+\ldots+\beta_j X_{it}+\alpha_i+u_{it}$$

where (α_i = 1 to n) is the unknown intercept for each individual, Y_{it} is the dependent drinking behavior variable where i = individual and t = time, X_{it} represents one independent variable, β_1 and β_j are coefficients for the first through j^{th} independent variables, and u_{it} is the error term.[29] One disadvantage of fixed-effects models is that the model is limited to time-varying independent variables; however, the advantage of fixed-effects modeling is that time-invariant differences across students that are difficult to observe, such as tendencies to succumb to peer pressure or poor parental support from home, are "differenced out."[30,31] The key point is "If the unobserved variable does not change over time, then any changes in the dependent variable must be due to influences other than these fixed characteristics."[32] Given these rules, we included as predictors in our models only student characteristics that vary over time: speaking Spanish at home (1 = yes, 0 = no), speaking

another language at home (1 = yes, 0 = no), being in grade 7 (1 = yes, 0 = no), and being in grade 8 (1 = yes, 0 = no). We did not include in the model those student characteristics that generally do not vary over time: race and gender. By default, Stata assumes missing at random and deletes observations with one or more missing values.

Finally, we conducted mediation analyses according to the rules of Baron and Kenny[33] to see whether any effect of extreme (80th percentile) drinking norms on individual drinking outcomes occurred by (or was mediated through) a shift in what is average or normal (50th percentile) drinking, across time. This would shed light on whether extreme drinkers are social multipliers for drinking in a middle-school context—a smaller portion of the middle-school population on whom intervention dollars could be concentrated, rather than spreading intervention funds more thinly across an entire middle-school population, because of the carryover effects on larger portions of this population.

It is true that effects could also occur in the opposite direction, with extreme drinkers becoming even more extreme, over time, as a result of increases in what is considered normal drinking in that grade and school. In order to strengthen our proposed mediation model, we used sixth-grade extreme (80th percentile) drinking scores as the predictor, eighth-grade average (50th percentile) drinking scores as the mediator, and eighth-grade individual drinking scores as the outcome. The temporal ordering of the predictor *prior* to the mediator and the outcome adds some strength to the proposition that extreme drinking behaviors/intentions early in the middle-school years have their effect on individual drinking outcomes by shifting what is considered to be average drinking, over time, as causality cannot operate backward in time.[34,35]

RESULTS

Average Drinking Intentions and Behaviors

Drinking intentions and behaviors increased across the middle-school years for both boys and girls (see Table 1), and boys typically had higher drinking intention and behavior scores than those of girls. Note, however, that variability existed across individuals at each time point and that variability increased with age, reflecting a wide range of drinking intentions among the participants by the eighth grade. For instance, only 6% of boys and 5% of girls intended to drink in the sixth grade, but by the eighth grade, however, these percentages had risen to 18% of boys and 16% of girls. Similarly, on average, drinking behaviors in the sample were relatively low (though not at zero) for each time point, but variability existed at each time point, more so for boys. Thus, although means were low, some students—particularly boys—had stronger intentions to drink and reported more frequent drinking behaviors.

Regression Models

Results of fixed-effects (Stata xtreg) models supported the finding that drinking behaviors in -creased across the middle-school years for both boys and girls (Table 2). This was evident from the positive, significant impact of the seventh and eighth (grade) dummy variables for both genders in all models, all $p < .001$. Results particular to the models with drinking intentions vs drinking behaviors as predictors are as follow.

Models with intentions as predictors—In the models predicting individual behaviors from peers' intentions, average (50th percentile) drinking intentions did *not* significantly impact individual behaviors for boys, $b = -.26$, $p = .24$, or for girls, $b = .03$, $p = .88$; but extreme (80th percentile) drinking intentions did for both genders, $b = .21$ for boys, $b = .24$ for girls, both $p < .001$ (Table 2). For both boys and girls, higher extreme (80th percentile)

intentions in the school were associated with higher individual-level drinking behaviors, demonstrating a link between extreme peers' cognitions (intentions) about drinking and the actual behaviors of individual students. In this model, the predictors together explained 6.0% of within-person variance in drinking behaviors among boys and 8.1% among girls; .4% of between-person variance among boys and .8% among girls; and 1.9% of overall variance among boys and 2.7% among girls. These percentages can be compared against the rules of thumb that 1% of variance explained represents a small effect, 10% represents a medium effect, and 25% represents a large effect.[35] Note that the models consistently explained more variance in girls' drinking behaviors than boys'.

When 20th percentile intentions were added as control variables in these models, it was multicol-linear with the 50th percentile variable, the latter of which was suggested for omission. In a third model in which we did omit the 50th percentile variable, note that the positive effect of 80th percentile intentions on the outcome variables remained positive and significant Comparing the magnitude of the unstandardized betas for the 80th percentile term using the formula below also revealed that in no case did adding the 20th percentile term decrease the magnitude of the effect of extreme drinking intentions on the behaviors of individual students, $z = .00$, p = 1.00 for boys, for girls, and for the overall sample. Nor were 20th percentile intentions significant model.

$$z = \frac{(b_1 - b_2)}{\sqrt{(SE_{b1}{}^2 + SE_{b2}{}^2)}}$$

Models with behaviors as predictors—Results were similar in the models predicting individual behaviors from peer behaviors in that the 80th percentile term had a consistent, positive effect on the behaviors of individual boys and girls, $b = .13$ for boys and $b = .21$ for girls, $p < .01$ and $p < .001$, respectively (Table 2). In these models, average (50th percentile) drinking behaviors in the school were again unrelated to individual behaviors, $b = .01$ for boys and $b = -.11$ for girls, p = .93 and p = .19, respectively. In these models, the predictors together explained 5.9% of within-person variance in drinking behaviors among boys and 8.3% among girls; .3% of between-person variance among boys and 1.2% among girls; and 1.7% of overall variance among boys and 3.2% among girls. Note again that proportions of variance accounted for by the predictors were higher for all 3 types of variance for girls than for boys, though percentages were consistently small to medium in size for both genders.

In no case did adding 20th percentile drinking behaviors as a control variable, with or without 50th percentile drinking behaviors in the model, remove the significance of the positive effect of 80th percentile drinking behaviors on individual drinking behaviors. Nor did the 20th percentile term reduce the magnitude of the positive effect of 80th percentile drinking behaviors on individual drinking behaviors, $z = .18$, p = 0.86 for boys; $z = .00$, p = 1.00 for girls; z = .00, p = 1.00 for the whole sample. Note that in the models predicting individual behaviors from peer behaviors, 20th percentile behaviors were not collinear with 50th percentile behaviors. Nor in any of the models were 20th percentile behaviors a significant predictor.

Mediation Models

To further understand the effect of extreme (80th percentile) drinking on the diffusion of drinking in schools, we considered whether extreme drinking intentions and behaviors have their effects on individual drinking behaviors by shifting the distribution of drinking scores over time. In the longitudinal fixed-effects models, 80th percentile intentions and behaviors consistently predicted individual drinking scores for both boys and girls, whereas 50th

percentile intentions and behaviors did not, even when controlling for 20th percentile intentions/behaviors. Thus, it is extreme and not average drinkers who seem to have a powerful effect in the diffusion of drinking in this population, which is potentially important from an intervention standpoint because they represent a smaller portion of the overall drinking distribution on whom resources could be concentrated. Therefore, we moved the regression models into a mediation context, considering sixth-grade 80th percentile drinking scores as the independent variable, eighth-grade 50th percentile drinking scores as the mediator, and eighth-grade individual drinking scores as the outcome (Figure 1). Significant mediation found in these models would suggest that part of the strong effect of 80th percentile drinking intentions/behaviors on individual-level drinking behaviors occurs through a shift in what is considered to be an average or normal level of drinking among middle-school students over time.

Results of the mediation models are shown in Table 3. All models, for both genders, met the first of Baron and Kenny's[33] rules for mediation: the independent variable significantly predicts the mediator. Three models also met the second rule for mediation: the independent variable significantly predicts the criterion or outcome measure; these were the models with peer intentions predicting behaviors among boys, and peer behaviors predicting behaviors among boys and among girls. Finally, these 3 models also met the final rule for mediation: when the independent variable and the mediator are simultaneously entered into the regression, the mediator significantly predicts the outcome, and the effect of the independent variable drops significantly.

All mediation was full mediation because in these 3 models, the effect of 80th percentile norms dropped to zero when the mediator was simultaneously entered into the model. These results demonstrate that nearly *all* of the effect of 80th percentile norms on individual behaviors occurs through their influence on average drinking norms, given the credibility of the theoretical model. In other words, for both genders, sixth-grade higher-risk 80th percentile drinking scores have a substantial effect on what is considered to be normal or average drinking in a middle-school population over time, which in turn influences individual drinking behaviors.

DISCUSSION

In this paper, we highlighted the role of extreme middle-school drinkers as social multipliers for drinking based on gender-specific distributions of drinking behaviors and intentions. In a series of longitudinal regression models, we showed that middle-school students with high self-reported drinking intentions and behaviors consistently affected the drinking behaviors of their peers. These effects held for both boys and girls, even when controlling for a parallel point in the distributions of scores for drinking intentions and behaviors. This was *not* true for average drinkers—middle-school students at the middle of the distribution for drinking intentions and behaviors. Our longitudinal regression models showed that average drinking intentions and behaviors, in fact, had no effect on the drinking behaviors of individual middle-school students when both average and extreme values were entered into the model.

Moreover, we demonstrated that the effect of extreme drinking intentions and behaviors on individual drinking intentions and behaviors occurs through a mediated pathway. The effect of extreme drinking behaviors and cognitions on individuals' actual behaviors occurs more or less entirely through a shift in the distribution of drinking behaviors over time—that is, by changing what is considered to be an average level of drinking—the level of drinking at the middle of the distribution. This implies that targeting early risk factors for extreme drinking intentions and behaviors could be an effective intervention strategy for preventing drinking among middle-school students because of the strong impact of these extreme drinkers on the

distribution itself. Of course, the validity of this interpretation depends on the soundness of our theoretical model, and other mediators could have been chosen. The temporal ordering of extreme sixth-grade intention/behaviors predictors, average eighth-grade behavioral mediators, and individual eighth–grade behavioral outcomes lent credence to our current interpretation—though a theoretical model with average sixth-grade drinking intention/behavior predictors and extreme eighth-grade behavioral mediators would lend to an alternative explanation. However, note that this alternative conceptualization was not supported by the data, as in our data 50th percentile intentions/behaviors did *not* affect individual drinking behavior, such that the second of Baron and Kenny's rules would not have been met had we hypothesized this alternative model.

To our knowledge, this study is the first that has considered which point in drinking distribution is the most influential, as well as *how* these social effects on drinking occur in terms of shifts in the drinking distribution. To date, several studies have demonstrated that peers have a significant in individual drinking among youth. Lundborg[36] found that moving a teenager from a school with 0% drinking to a school with 25% drinkers results in a 16% increase in probability of a teenager to drink, even when accounting for school-level attributes using fixed-effects modeling. Clark and Loheac[37] also demonstrated endogenous social effects for drinking using lagged peer-drinking decisions to address the problem of simultaneity of group and individual-level decisions. Importantly, Fletcher[3] has demonstrated that findings of peer effects on drinking are robust to a number of statistical concerns, including tests of various instruments and the question of whether to use lagged $t-1$ or $t+1$ school norms in investigating peer effects on drinking. Given that the finding of peer effects on drinking appears to be robust, the present study adds to the peer-influence literature by identifying which portions of the drinking distribution among peers account for this effect. This paper thus makes an important link between studies of peer effects on drinking and studies on drinking interventions among youth, by highlighting the most important and possibly most cost-effective targets for drinking intervention.

The implication of our findings is that alcohol interventions in early adolescence should consider concentrating extra resources on high-risk students in order to leverage social multipliers, given that these students with extreme drinking intentions and behaviors are responsible for what is considered normative drinking behavior among middle-school boys and girls. This normative drinking behavior then has a strong impact on individual drinking behaviors. Screening, brief intervention, and referral to treatment (SBIRT) is one intervention approach that could be used to intervene with extreme drinkers. School-based brief interventions have typically included brief one-on-one standardized health consultations for adolescents provided once a year by trained school nurses.[38–40] These counseling sessions typically include advice, motivational interviewing, norm-setting messages, and referral for follow-up support or specialty treatment, including a brief follow-up session for those referred.[41–44] There is evidence that these counseling sessions are successful, with reductions in frequency and quantity of alcohol and tobacco use reported among adolescents with current substance use.[38,39]

Strengths of the current study included its large sample size and its longitudinal design. In particular, in our mediation models, we used sixth-grade 80th percentile drinking norms as the independent variable, eighth-grade 50th percentile drinking norms as the mediator, and eighth-grade individual drinking behaviors as the outcome. The temporal ordering of these variables strengthens our claim that 80th percentile or extreme intentions and behaviors had their effect on individual outcomes by influencing the middle of the distribution, over time, compared to if all variables were at the same time point. One limitation of our study was that drinking intentions and behaviors were self-reported. Hesitancy of middle-school students to report intending to drink or actually engaging in drinking could mean that intention and

behavior scores are even higher than reported here, though our prior work does suggest that these self-reports are reliable and valid.[45] A second limitation is that our sample was drawn from a primarily low-SES, urban school setting, such that results may not be generalizable to other school contexts such as upper-class or rural schools.

Implications and Contribution

Lowering the drinking intentions and behaviors at the right end of the middle-school distribution should have a consistent and strong effect on individual drinking behaviors. This effect should occur by shifting downward average or typical levels of drinking, which in turn, lowers individual drinking behaviors. Our findings do not imply that average drinkers are not of concern, but that concentrating interventions on risk factors for early onset extreme drinking may provide a cost-effective solution for the prevention of drinking among youth.

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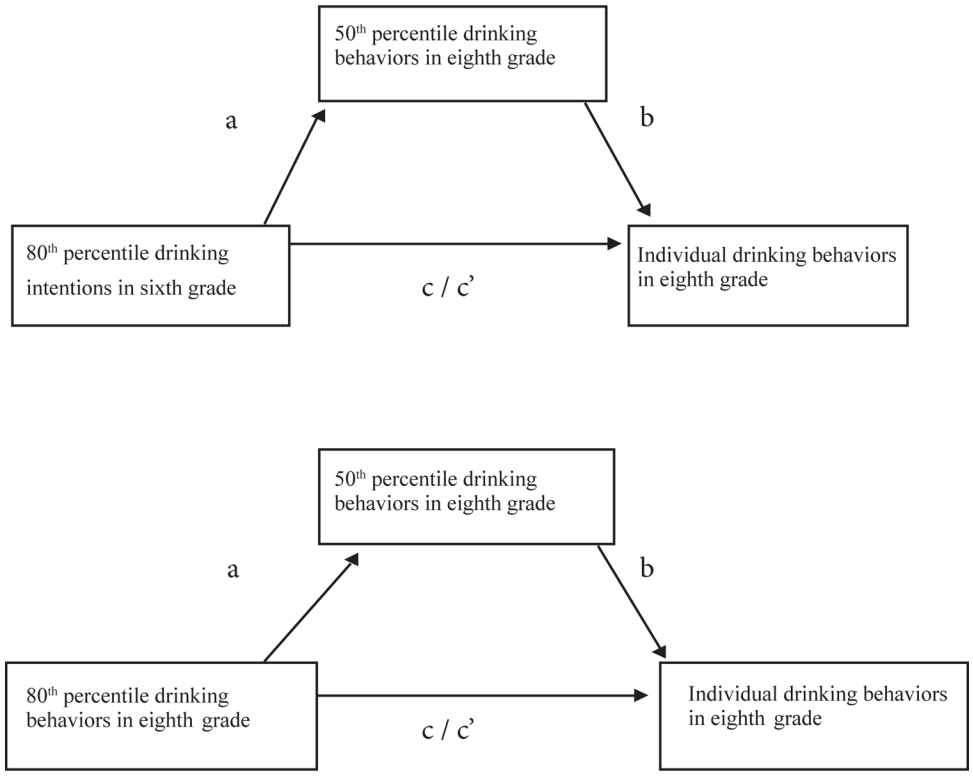

Figure 1.

Mediation Models of Grade-level Drinking Norms on Individual Drinking Behavior

Note.

Predictors are sixth-grade extreme (80th Percentile) grade-level drinking intentions/ behaviors. Mediators are eighth-grade average (50th Percentile) grade-level drinking behaviors. Outcomes are eighth-grade individual-level drinking behaviors. Paths correspond to estimates provided in Table 3.

Table 1

Mean Drinking Behavior and Intention Scores From Sixth Through Eighth Grade (N=5812)

	Sixth (N=4234) Grade		Seventh Grade (N=3776)		Eighth (N=3803) Grade	
	Boys M (SD)	Girls M (SD)	Boys M (SD)	Girls M (SD)	Boys M (SD)	Girls M (SD)
Drinking Intentions	.06 (.18)	.05 (.16)	.11 (.24)	.11 (.24)	.18 (.31)	.16 (.29)
Drinking Behaviors	1.20 (.54)	1.16 (.40)	1.30 (.71)	1.27 (.55)	1.44 (.87)	1.35 (.61)

Table 2

Results of xtreg Models Regressing Drinking Intentions/Behaviors on School-Level Norms and Time-Variant Individual Characteristics

	Boys (N=2782)			Girls (N=2705)			Both Genders (N=5487)		
	b (SE)	b (SE)	b (SE)	b (SE)	b (SE)	b (SE)	b (SE)	b (SE)	b (SE)
Peer Intentions Predicting Individual Behaviors									
Spanish language (1=yes, 0=no)	−.05 (.06)		−.05 (.06)	−.04 (.04)		−.04 (.04)	−.05 (.04)		−.05 (.04)
Other language (1=yes, 0=no)	.22**(.07)		.22**(.07)	.06 (.06)		.06 (.06)	.15***(.05)		.15***(.05)
20th percentile alcohol intentions	-		−.26 (.22)	-		.03 (.17)	-		−.13 (.14)
50th percentile alcohol intentions	−.26 (.22)	Omit	-	.03 (.17)	Omit	-	−.13 (.14)	Omit	-
80th percentile alcohol intentions	.21***(.06)		.21***(.06)	.24***(.05)		.24***(.05)	.22***(.04)		.22***(.04)
Seventh grade	.10***(.02)		.10***(.02)	.10***(.02)		.10***(.02)	.10***(.01)		.10***(.01)
Eighth grade	.21***(.03)		.21***(.03)	.15***(.02)		.15***(.02)	.18***(.02)		.18***(.02)
Constant	1.15***(.02)		1.15***(.02)	1.14***(.01)		1.14***(.01)	1.14***(.01)		1.14***(.01)
Within-person R^2	.060	-	.060	.081	-	.081	.065	-	.065
Between-person R^2	.004	-	.004	.008	-	.008	.005	-	.005
Overall R^2	.019	-	.019	.027	-	.027	.022	-	.022
Peer Behaviors Predicting Individual Behaviors									
Spanish language (1=yes, 0=no)	−.06 (.06)	−.06 (.06)	−.06 (.06)	−.03 (.04)	−.03 (.04)	−.03 (.04)	−.04 (.04)	−.05 (.04)	−.04 (.04)
Other language (1=yes, 0=no)	.22**(.07)	.22**(.07)	.22**(.07)	.08 (.06)	.08 (.06)	.08 (.06)	.16***(.05)	.16***(.05)	.16***(.05)
20th percentile alcohol use	-	−.46 (.82)	−.43 (.80)	-	.04 (.48)	−.08 (.47)	-	−.11 (.45)	−.16 (.44)
50th percentile alcohol use	.01 (.10)	.02 (.11)	-	−.11 (.08)	−.11 (.08)	-	−.04 (.07)	−.03 (.07)	-
80th percentile alcohol use	.13**(.04)	.12**(.04)	.13***(.04)	.21***(.04)	.21***(.04)	.18***(.03)	.16***(.03)	.16***(.03)	.15***(.03)
Seventh grade	.10***(.02)	.10***(.02)	.10***(.02)	.08***(.02)	.08***(.02)	.08***(.02)	.09***(.01)	.09***(.01)	.09***(.01)
Eighth grade	.21***(.03)	.21***(.03)	.21***(.03)	.14***(.02)	.14***(.02)	.14***(.02)	.18***(.02)	.18***(.02)	.18***(.02)
Constant	1.00***(.10)	1.45†(.81)	1.43†(.80)	1.00***(.07)	.96*(.47)	1.00*(.47)	.99***(.06)	1.10*(.44)	1.12*(.44)
Within-person R^2	.059	.059	.059	.083	.083	.083	.066	.066	.066
Between-person R^2	.003	.003	.003	.012	.012	.012	.006	.006	.006
Overall R^2	.017	.017	.017	.032	.032	.032	.022	.022	.023

†p < .10

*$p < .05$

**$p < .01$

***$p < .001$

Note.

Omit = predictor suggested for omission because of multicollinearity

Table 3

Mediation Models of Effect of 80th Percentile Norms on Individual Intentions Behaviors Through 50th Percentile Norms

	Step 1: IV is a Significant Predictor of Mediator (path a)		Step 2: IV is a Significant Predictor of Criterion (path c)		Step 3: Mediator is a Significant Predictor of Criterion and Significance of Predictor on Criterion Drops (paths b and c')	
	b (SE)		b (SE)		b (SE)	
Variable	**Boys**	**Girls**	**Boys**	**Girls**	**Boys**	**Girls**
			Eighth-grade Intentions Mediator, Eighth-grade Behaviors Criterion			
Constant	1.05*** (.00)	1.10*** (.00)	1.39*** (.03)	1.36*** (.02)	.73*** (.19)	1.05*** (.11)
Sixth-grade 80th Percentile Intentions (predictor)	.79*** (.02)	.13** (.05)	.62*** (.16)	−.25 (.20)	.18 (.20)	− .30 (.20)
Eighth-grade 50th Percentile Behaviors (mediator)	-	-	-	-	.63*** (.18)	.28** (.10)
			Eighth-grade Behaviors Mediator, Eighth-grade Behaviors Criterion			
Constant	.56*** (.02)	.68*** (.03)	1.04*** (.13)	1.07*** (.13)	.60*** (.16)	.92*** (.14)
Sixth-grade 80th Percentile Behaviors (predictor)	.44*** (.01)	.35*** (.02)	.32*** (.10)	.23* (.10)	.07 (.11)	.16 (.11)
Eighth-grade 50th Percentile Behaviors (mediator)	-	-	-	-	.68*** (.16)	.23* (.10)

* p < . 05

** p < .01

*** p < .001

Note.

IV = Independent Variable. Path labels correspond to those in Figure 1. Shaded cells highlight full mediation.