

Original Article

Emotional distress, alcohol use, and peer violence among Mexican-American and European-American adolescents

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Abstract

Purpose: To examine the longitudinal relations among emotional distress, alcohol use, and peer-directed violence.

Methods: Interviews were conducted with 297 young adolescents, randomly selected from the membership lists of a large health maintenance organization. Participants were aged 12–15 years, 55% were male, and were either Mexican-American ($n = 147$) or European-American ($n = 150$). Adolescents reported on their emotional distress at baseline, and on their alcohol use at 6-month follow-up. At 12-month follow-up, they reported on their involvement in peer violence, including physical fights and weapons exposure. Data were analyzed using analysis of variance and multiple linear regression.

Results: Boys reported being in more physical fights than girls. Mexican-Americans reported more weapons exposure than European-Americans, but when controlling for socioeconomic status and age, these differences disappeared. For both ethnic groups, adolescents who experienced greater emotional distress later reported more alcohol use and more involvement in peer violence. For Mexican-American adolescents, alcohol use mediated the relations between emotional distress and both physical fights and weapons exposure. For European-Americans, alcohol use mediated the relations between emotional distress and physical fights, but only marginally mediated the relation between emotional distress and weapons exposure.

Conclusions: Adolescents who experience greater emotional distress are at heightened risk for using alcohol and, in turn, for becoming involved in peer violence. Mexican-American adolescents in particular may use alcohol as a means of coping with emotional distress, and alcohol use appears to facilitate involvement in peer violence. © 2005 Society for Adolescent Medicine. All rights reserved.

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Adolescent violence is of increasing concern nationally. From 1973 to 1992, rates of violent crime increased by 47% among those aged 10 to 14 years, and by 220% among those aged 15 to 19 years [1]. In recent years (1991 to 2001), nonfatal violence-related behaviors have decreased, but ab-

solute rates remain high [2]. For example, in 2001, 33% of high school students in a nationwide survey reported having been in a physical fight at least once during the past 12 months [2]. Overall, 17% of students had carried a weapon, such as a gun, knife, or club, within the past 30 days [2]. These high rates of violence among adolescents have spurred interest in understanding what factors place adolescents at risk for engaging in violent behavior. Involvement in violence is a multifactorial process that involves social-cognitive, family, peer, and environmental risk factors

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[3–5]. The focus of this research is on stress and coping factors that may predispose adolescents toward violence. Research on adolescents' behavior in other areas indicates that adolescents' emotional experiences and coping are important determinants of their behavior [6,7].

In this study, we applied Lazarus and Folkman's [8] theory of stress and coping to violence among adolescents. We examined the possibility that adolescents' emotional distress increases their risk of involvement in peer violence, with alcohol use as the explanatory factor. Lazarus and Folkman's theory suggests that adolescents may use alcohol and other substances as an escape-avoidance form of coping, to reduce negative emotional experiences such as anger or depression [8]. Consistent with this theory, adolescents who are more emotionally distressed are more likely to initiate substance use subsequently, compared with those who are less distressed [9]. One of the negative consequences of substance use, especially alcohol, is that it appears to facilitate aggression and violence [10,11], perhaps because alcohol use is disinhibiting, or because expectations that alcohol increases aggression provide users with an excuse for otherwise proscribed behavior [12]. Numerous studies have found that adolescents who use more alcohol or other substances are more likely to be involved in physical fights and to carry weapons, compared with adolescents reporting less substance use [11,13–18]. Little is known about the potential link between emotional distress and violent behavior. One cross-sectional study examining this issue found that African American adolescents who were more depressed or hopeless engaged in more violent behavior [19]. The possibility that alcohol use may act as a mediator between emotional distress and peer violence has not been examined in previous research.

The association between substance use and violence appears to vary by gender and ethnicity. For example, Grunbaum and associates [15], who examined substance use and violent behaviors among Mexican-American and non-Hispanic white adolescents, found that among Mexican-American males and females and non-Hispanic white males, those who used alcohol were more likely to carry a weapon and to have been involved in fighting, but this association was not found among non-Hispanic white females. In the current study, we examined whether the links among emotional distress, alcohol use, and peer violence differed for Mexican-American and European-American male and female adolescents.

The rates of violence-related behaviors also appear to differ by gender and ethnicity. Overall, male adolescents are more likely than female adolescents to have been in a physical fight or to have carried a weapon [2]. Several studies have reported that Hispanic students are more likely than white students to have been involved in these behaviors [20–22]. However, the most recent survey of youth risk behavior reported fewer ethnic differences [2]. Hispanic female students were more likely than white female students

to have been in physical fights, but there were no differences between Hispanic and non-Hispanic white males on either weapons-carrying or fights. Finally, fears of violence are higher among African-American and Latino adolescents than among European-American adolescents [2,23]. Although the reasons for ethnic differences in violent behavior have not been elucidated, it is possible that environmental factors related to poverty, such as family disruption, crowded housing, presence of firearms and drug networks, and neighborhood disorganization, are conducive to violent behavior [3,24]. These poverty-related conditions are more prevalent for African-Americans and Latinos than for European-Americans [25]. In the current research, we examined whether levels of violence differed by gender and ethnicity, and assessed whether any differences could be attributed to socioeconomic status.

We hypothesized that adolescents who experience more emotional distress would subsequently report more involvement in peer violence, and that alcohol use would mediate this relationship. Specifically, we expected that adolescents who experience greater emotional distress would subsequently engage in higher levels of alcohol use, and that those who engage in greater alcohol use would later report more involvement in peer violence. We further expected the hypothesized model to be supported for both genders and both ethnic groups. In addition, we expected that boys would engage in higher rates of peer violence compared with girls. Finally, we expected that Mexican-Americans would report higher rates of peer violence compared with European-Americans, but that ethnic differences would disappear when socioeconomic status was taken into account.

Methods

Procedure

As part of a study examining parental conflict and adolescent functioning, potential participants were randomly selected from the membership lists of a large health maintenance organization (HMO). The study protocol was approved by the Committee on Human Research of the University and by the Institutional Review Board of the HMO. Parents were sent letters introducing the research, then were telephoned, screened for eligibility, and asked to participate in the study. Adolescents and their parents were eligible to participate if the adolescent was between 12 and 15 years of age, if the family was intact, if all three family members were either Mexican-American or U.S.-born European-American, if the adolescent had no severe learning disability, and if all three family members (mother, father and adolescent) agreed to participate. Seventy-three percent of eligible families participated in the research, and participation rates did not differ by ethnicity.

At baseline, adolescents participated in individual, face-to-face interviews in the HMO clinic or the research offices.

At 6- and 12-month follow-ups, they participated in individual telephone interviews. Baseline interviews were conducted between November 1993 and September 1995; 12-month follow-up interviews were completed in September 1996.

Participants

The sample at baseline assessment consisted of 153 Mexican-American and 151 European-American adolescents (total $n = 304$). Seven adolescents were excluded from the analyses reported here, five because of missing data and two because they were lost to follow-up. This resulted in a final sample of 147 Mexican-American (MA) and 150 European-American (EA) adolescents (total $n = 297$). Adolescents' mean age at baseline was 14.0 years ($SD = 1.1$), their mean grade in school was eighth grade, and 55% were male. Most (78%) of the Mexican-American adolescents were born in the United States, although most of their parents (86%) had been born in Mexico and had moved to the United States as young adults. European-American parents had received more education than Mexican-American parents (M MA mothers/fathers = 7.8/7.9 years; M EA mothers/fathers = 15.6/15.9 years; $t = 18.12, 17.51$, respectively; $p < .001$). European-American parents also had higher occupational status than Mexican-American parents (1 = lowest status, 9 = highest status [26]; M MA mothers/fathers = 3.3/3.3; M EA mothers/fathers = 6.5/6.7; $t = 12.81, 16.11$, respectively; $p < .001$).

Measures

At baseline, adolescents reported on their emotional distress. At 6-month follow-up, they reported on their alcohol use, and at 12-month follow-up, they reported on their involvement in peer violence.

Emotional distress. At baseline, adolescents reported on three aspects of emotional distress: anxiety, anger, and depression. They completed the 20-item State Anxiety subscale of the State-Trait Anxiety Inventory, Form Y [27], which yields a score for current anxiety (α in our sample = .87 [MA], .91 [EA]). They also completed the 10-item State Anger subscale of the State-Trait Anger Expression Inventory [28], which obtains reports of current anger as an emotional state ($\alpha = .92$ [MA], .88 [EA]). Finally, adolescents completed the 21-item Beck Depression Inventory [29], which has good internal consistency (α in our sample = .77 [MA], .86 [EA]) and good construct validity. Because depression, anxiety and anger were highly correlated for both ethnic groups ($r_s = .51-.67$), we standardized and combined them to create a variable called emotional distress.

Alcohol use. At 6-month follow-up, adolescents reported on the frequency and quantity of their alcohol use, by completing 6 items from the Drinking Styles Questionnaire [30].

We standardized and combined these items into an alcohol use score ($\alpha = .92$ [MA], .95 [EA]).

Peer violence. We developed a 9-item scale to assess adolescents' involvement in peer violence at 12-month follow-up. Items included both victimization and perpetration of violence: (1) frequency of physical fights (1 = not at all, 8 = more than once/week); (2) how often the adolescent was jumped or attacked (1 = not at all, 8 = more than once/week); (3) how often the adolescent was part of a group that jumped somebody (1 = not at all, 8 = more than once/week); (4) how often another kid threatened to hit or hurt the adolescent (1 = not at all, 7 = every day or more often); (5) how often the adolescent threatened to hit or hurt another kid (1 = not at all, 7 = every day or more often); (6) how many friends sometimes carried a knife (1 = none of them, 5 = all of them); (7) how many friends sometimes carried a gun (1 = none of them, 5 = all of them); (8) whether someone ever pulled a knife on the adolescent (0 = no, 2 = yes, more than once); and (9) whether someone ever pulled a gun on the adolescent (0 = no, 2 = yes, more than once). Most items used a time frame of the past 12 months, except for threats of violence (items 4 and 5), which referred to the past month, and pulling a weapon (items 8 and 9), which referred to lifetime experience. We asked adolescents about their friends' weapon-carrying behavior rather than their own, because we thought adolescents might be uncomfortable reporting on their own behavior in a situation where they were known to the interviewer. Factor analysis using varimax rotation showed that items loaded on two factors that accounted for 37% and 14% of the variance, respectively. Items 1 through 5 loaded $> .40$ on Factor 1, and items 6 through 9 loaded $> .40$ on Factor 2. Items loading on the first factor were standardized and combined into a subscale labeled Physical Fights ($\alpha = .74$), and items loading on the second factor were standardized and combined into a subscale labeled Weapons Exposure ($\alpha = .66$).

Demographic information. Adolescents' gender, ethnicity, and age were obtained from the adolescents. Mothers' and fathers' years of education and current occupational status [26] were obtained from the parents. Parents' education and occupational status were standardized and combined to create an overall index of socioeconomic status (SES; $\alpha = .92$). The SES of European-American parents was significantly higher than that of Mexican-American parents (t [295] = 21.23, $p < .0001$).

Statistical analysis

Analysis of variance (ANOVA) was used to examine gender and ethnicity differences in peer violence. Pearson correlation was used to examine the relations among emotional distress, alcohol use, and peer violence. Multiple linear regression was used to predict alcohol use from emotional distress, and to predict peer violence from emotional

Table 1
Percentages of adolescents reporting peer violence during the past 12 months

| Variable | Mexican-Americans | | European-Americans | | Total (n=297) |
|---------------------------|-------------------|---------------------|--------------------|---------------------|------------------|
| | Males (n = 80) | Females (n = 67) | Males (n = 83) | Females (n = 67) | |
| Physical fights subscale | | | | | |
| Physical fights | 51 | 31 | 34 | 12 | 33 |
| Been jumped or attacked | 16 | 12 | 19 | 10 | 15 |
| Part of attacking group | 17 | 12 | 5 | 3 | 9 |
| Been threatened (last mo) | 34 | 21 | 40 | 25 | 31 |
| Threatened (last mo) | 37 | 21 | 29 | 18 | 27 |
| Weapons exposure subscale | | | | | |
| Friends carried a knife | 64 | 55 | 55 | 45 | 55 |
| Friends carried a gun | 32 | 28 | 10 | 15 | 21 |
| Knife pulled on you | 14 | 12 | 14 | 3 | 11 |
| Gun pulled on you | 14 | 6 | 7 | 1 | 7 |

distress and alcohol use, while controlling for demographic effects.

Results

Rates of peer violence

As shown in Table 1, 33% of participants had been in at least one physical fight during the past 12 months. Fifteen percent of participants reported being jumped or attacked by another adolescent or group of adolescents, and 9% reported being part of a group of adolescents that jumped someone. In addition, 31% of participants had been threatened by someone within the past month, and 27% had threatened another adolescent. More than half (55%) of participants had friends who had carried a knife in the past year, and 21% had friends who had carried a gun. Finally, 11% of participants had had a knife pulled on them, and 7% had had a gun pulled on them.

Gender and ethnicity differences in peer violence

We conducted ANOVAs to examine gender and ethnicity differences and possible gender-by-ethnicity interactions, on peer violence. There were gender differences on two peer violence items (Table 1). Boys had been involved in more physical fights during the past year than girls ($F [1,293] = 9.86, p < .002$). Boys also reported that someone had threatened to hit or hurt them within the past month more often than girls reported such occurrences ($F [1,293] = 10.05, p < .002$). Boys had higher scores than girls on the physical fights scale ($F [1,297] = 9.96, p < .002$), but there was no gender difference on weapons exposure ($F [1,296] = 2.44, ns$).

There were ethnicity differences on five peer violence items (Table 1). Mexican-American adolescents had been in more fights in the past year than European-Americans ($F [1,293] = 10.14, p < .002$). Mexican-American adolescents also reported being part of a group that jumped some-

one more often than European-Americans ($F [1,293] = 10.54, p < .001$). Additionally, Mexican-American adolescents reported that more of their friends sometimes had carried a knife or a gun in the past year ($F [1,293] = 8.16, p < .005$; $F [1,293] = 16.14, p < .001$), and that they had experienced having a gun pulled on them, compared with European-Americans ($F [1,293] = 5.25, p < .03$). Overall, Mexican-Americans reported higher levels of weapons exposure than European-Americans ($F [1,296] = 12.99, p < .001$), but there were no ethnic differences on the physical fights scale ($F [1,297] = 2.99, ns$).

There were no significant gender-by-ethnicity interactions for any peer violence item, or for the two scales.

We then calculated analyses of covariance (ANCOVAs) to examine whether the two gender and five ethnicity differences on peer violence items, reported above, were still significant when SES and adolescent age were included as covariates in the equations. All ethnicity effects became nonsignificant when controlling for SES and age. However, the gender differences were still significant. Compared with girls, boys reported being involved in more fights ($F [1,291] = 9.43, p < .002$), reported being threatened by someone more often ($F [1,291] = 10.29, p < .001$), and had higher physical fights scale scores ($F [1,291] = 10.25, p < .002$), when controlling for SES and age.

Emotional distress, alcohol use, and peer violence

To test the hypothesis that emotional distress predicted peer violence, mediated by alcohol use, we conducted a series of multiple regression analyses. In the first analysis, we predicted alcohol use from emotional distress, controlling for demographic effects (gender, age, and SES). In the second analysis, we predicted physical fights and weapons exposure from emotional distress and alcohol use, controlling for demographic effects. As shown in Table 3 and Figure 1, the hypothesized model was supported. Greater emotional distress was related to later involvement in fights

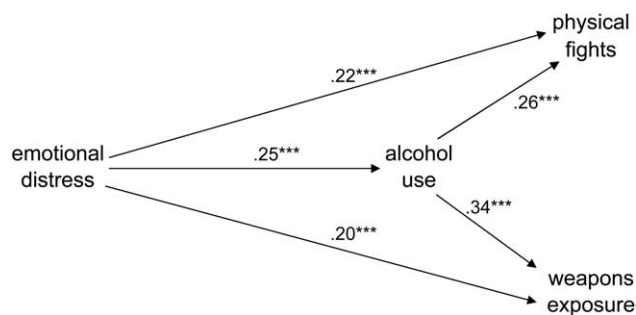


Fig. 1. Emotional distress and alcohol use as predictors of peer violence among all adolescents, showing standardized regression coefficients. * $p < .05$; ** $p < .01$; *** $p < .001$.

and with weapons, mediated to some degree by alcohol use. Adolescents experiencing greater emotional distress later reported more alcohol use ($\beta = .25, p < .0001$), and in turn, adolescents who used more alcohol were subsequently involved in more fights ($\beta = .26, p < .0001$) and exposed to more weapons ($\beta = .34, p < .0001$). In addition, greater emotional distress was directly related to more fighting ($\beta = .22, p < .0001$) and weapons exposure ($\beta = .20, p < .001$).

We also tested for possible interactions between ethnicity and emotional distress or alcohol use in a second step in the multiple regression analyses. There was a significant interaction between ethnicity and alcohol use for weapons exposure. Because of this interaction, and because of the difference in SES between the two ethnic groups, we conducted the same analyses as described above, separately for each ethnicity. The correlations among emotional distress, alcohol use, and peer violence are shown in Table 2, separately for Mexican-Americans and European-Americans. As shown in Table 3 and Figure 2, the hypothesized model was supported for Mexican-American adolescents. Greater emotional distress was related to later involvement in fights and with weapons, mediated to some degree by alcohol use. Mexican-American adolescents experiencing greater emotional distress later reported more alcohol use ($\beta = .25, p <$

.01), and in turn, adolescents who used more alcohol were subsequently involved in more fights ($\beta = .31, p < .001$) and exposed to more weapons ($\beta = .47, p < .001$). In addition, greater emotional distress was directly related to more fighting ($\beta = .26, p < .001$) and weapons exposure ($\beta = .17, p < .05$).

The hypothesized model was partially supported for European-American adolescents (Table 3). Coefficients for European-American adolescents are shown in parentheses in Fig. 2. The link between emotional distress and physical fights was mediated by alcohol use; however, the link between emotional distress and weapons exposure was only marginally mediated by alcohol use. Specifically, European-American adolescents who experienced greater emotional distress later used more alcohol ($\beta = .23, p < .01$), and subsequently became involved in more fights ($\beta = .18, p < .05$). Those who used more alcohol were slightly more exposed to weapons ($\beta = .17, p < .06$). Additionally, adolescents who reported more emotional distress were later exposed to more weapons ($\beta = .24, p < .01$).

We also examined the possibility that the effects of emotional distress and alcohol use varied by gender, by including two-way interactions between gender and emotional distress or alcohol use in a second step in the multiple regression analyses for each ethnicity. There were no significant interactions involving gender.

Discussion

Because violence among adolescents is of great concern nationally, it is important that investigators begin to identify its antecedents. In this study, we examined whether emotional distress and alcohol use predicted peer-directed violence, based on a theory of stress and coping [8] and on the notion that alcohol use facilitates violence [10,12]. Specifically, we assessed whether Mexican-American and European-American adolescents who experience more emotional distress subsequently use more alcohol, as a form of escape-avoidant coping, and whether adolescents who use more alcohol then report more involvement in peer violence, such

Table 2
Correlations and descriptive statistics for demographics, emotional distress, alcohol use, and peer violence among adolescents

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|----------------------------|------------|--------------|--------------|-------------|-------------|-------------|-------------|
| Gender | -- | .00 | .01 | .12 | .12 | -.20* | -.14 |
| Age | .03 | -- | .07 | .18* | .39*** | -.17* | .11 |
| SES | .07 | .07 | -- | -.28*** | -.11 | -.27*** | -.21** |
| Emotional distress | .27*** | .09 | -.11 | -- | .33*** | .15 | .31*** |
| Alcohol use | .17* | .30*** | .05 | .29*** | -- | .12 | .24** |
| Physical fights | -.18* | .00 | .13 | .24** | .30*** | -- | .46*** |
| Weapons exposure | -.09 | .13 | -.01 | .25** | .48*** | .47*** | -- |
| Mexican-Americans: M (SD) | 1.46 (.50) | 13.62 (1.04) | -2.86 (2.67) | .38 (2.82) | .16 (5.21) | .37 (3.97) | .60 (3.45) |
| European-Americans: M (SD) | 1.45 (.50) | 13.57 (1.14) | 2.75 (1.80) | -.46 (2.17) | -.12 (5.39) | -.38 (2.96) | -.60 (1.78) |

Correlations for Mexican-Americans ($n = 147$) are shown below the diagonal; for European-Americans ($n = 150$), above the diagonal.
* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 3
Standardized multiple linear regression coefficients for predictors of alcohol use and peer violence

| Predictor | Alcohol use | Physical fights | Weapons exposure |
|------------------------------|-------------|-----------------|------------------|
| Full sample (n = 297) | | | |
| Ethnicity | -.02 | .14 | .16*** |
| Gender | .09 | -.27*** | -.18*** |
| Age | .31*** | -.19*** | -.03 |
| SES | .00 | .09 | -.03 |
| Emotional distress | .25*** | .22*** | .20*** |
| Alcohol use | -- | .26*** | .34*** |
| R ² | .20*** | .12*** | .14*** |
| Mexican-Americans (n = 147) | | | |
| Gender | .09 | -.32*** | -.21** |
| Age | .27*** | -.11 | -.02 |
| SES | .05 | .17* | .00 |
| Emotional distress | .25*** | .26*** | .17* |
| Alcohol use | -- | .31*** | .47*** |
| R ² | .17*** | .24*** | .29*** |
| European Americans (n = 150) | | | |
| Gender | .09 | -.23** | -.18* |
| Age | .35*** | -.24** | .01 |
| SES | -.07 | -.21** | -.13 |
| Emotional distress | .23** | .10 | .24** |
| Alcohol use | -- | .18* | .17† |
| R ² | .23*** | .18*** | .17*** |

† $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.

as physical fights and exposure to weapons. This is the first study to examine the links among all these variables longitudinally, and to examine the role that alcohol use plays for adolescents who experience emotional distress and become involved in violence.

Our results provide support for the hypothesized links among emotional distress, alcohol use, and peer violence, particularly among Mexican-American adolescents. Adolescents in both ethnic groups who reported heightened emotional distress later used alcohol more frequently. In turn, adolescents who used more alcohol were involved in more physical fights, and among Mexican-American adolescents, those who used more alcohol were also exposed to more weapons. Adolescents who experience greater emotional distress appear to be at heightened risk for using alcohol and, in turn, for becoming involved in peer violence. Mexican-American adolescents, in particular, may use alcohol as a means of coping with emotional distress, and their alcohol use seems to facilitate involvement in peer violence. These findings are consistent with other research reporting that emotional distress is linked to alcohol use [9], that emotional distress is related to violent behavior [19], and that alcohol use is linked to peer aggression [11,13–17].

Alcohol use was a mediator of emotional distress to some degree, but emotional distress was still directly related to weapons exposure in both ethnic groups and to physical fights among Mexican-Americans. Other factors besides

alcohol use may also contribute to explaining the link between emotional distress and involvement in violence. For example, adolescents who experience heightened anger, depression or anxiety may have more difficulty regulating their emotions, or may be targets of other adolescents' aggressive behaviors. Such problems may place emotionally distressed adolescents at risk for becoming involved in peer violence. Future research could benefit from examining such factors, in addition to alcohol use, as possible explanations of the relationship between emotional distress and involvement in peer violence. Identification of the array of behavioral risk factors for involvement in peer violence would provide direction for future violence prevention interventions.

It is important to consider the negative family and community experiences that might cause adolescents emotional distress and lead to their involvement in violence. For example, children and adolescents who have been exposed to community violence often experience emotional trauma from the event [31,32] and young people who have been exposed to community violence are more likely to subsequently become involved in violent behaviors themselves [33,34]. Children who have been exposed to domestic violence or are victims of abuse themselves are often traumatized emotionally and are also at risk of becoming perpetrators or victims of violence later [35,36]. Preventive interventions that reduce community violence, domestic violence, or child victimization are also likely to reduce adolescents' own violent behavior that is directed toward peers.

This study also examined whether there were gender or ethnic differences in involvement in peer violence. Consistent with other studies [2,20–22], we found that boys were involved in more physical fights than girls. Although some studies have reported that Latino students are more likely than European-American students to be involved in peer violence [20–22], we found that initial differences between Mexican-American adolescents and European-American adolescents disappeared after we controlled for SES and age. These results indicate that SES and ethnicity were

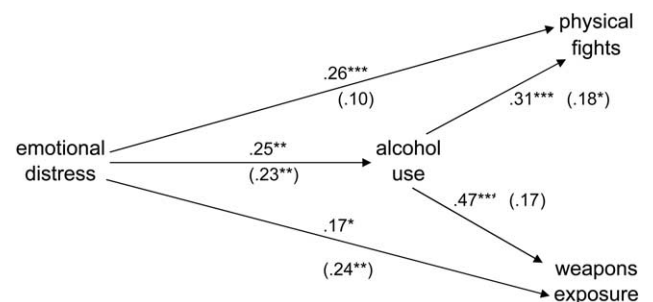


Fig. 2. Emotional distress and alcohol use as predictors of peer violence. Standardized regression coefficients for Mexican-American adolescents are shown without parentheses; those for European-American adolescents are in parentheses. * $p < .05$; ** $p < .01$; *** $p < .001$.

confounded with one another in this study. We had expected that recruiting participants from a large health maintenance organization would yield a sample with smaller SES differences between the two ethnic groups. However, the parents of most of the Mexican-American adolescents were immigrants and had received little formal education. The finding that SES and ethnicity were confounded is a reminder that, in general, reports of ethnic group differences in rates of violent behavior should be interpreted with caution. Future research on adolescent violence that compares ethnic groups would benefit from an examination of the environmental contexts related to SES that may lead to violent behavior, such as neighborhood disorganization, the presence of firearms, and exposure to community violence. Additionally, it is probably more informative to focus on predictors of violence within ethnic groups, rather than on comparing ethnic groups, particularly when ethnic groups differ on SES and other factors that may influence rates of violence. An additional issue that could be explored in future research stems from our finding that Mexican-American adolescents appeared to use alcohol as a means of coping with emotional distress. It would be informative to learn more about the processes that are involved for adolescents who use alcohol as a coping response to emotional distress; for example, why do they use alcohol instead of engaging in some other coping strategy?

This research has several additional limitations. Adolescents were from intact families, and were either Mexican-American or European-American, so caution should be used in generalizing beyond these groups. Also, in spite of the fact that this was a longitudinal study, the data were correlational, so that causal inferences cannot be made regarding the results. Emotional distress, alcohol use, and involvement in violence may very well have reciprocal effects [18]. For example, adolescents who are involved in violence may experience emotional distress as a result, and may subsequently use alcohol and other substances, in an attempt to cope with their emotional distress. Ideally, all three factors would have been assessed at multiple points in time. Better yet, prospective research that assessed young people before their initiation of either alcohol use or peer violence, and that included other potential predictors of violence, could begin to address the issue of causality.

The results of this research have both clinical and prevention implications. Because both emotional distress and alcohol use predicted involvement in violence, health care providers who screen and intervene with adolescents experiencing emotional distress and engaging in high levels of alcohol use may protect those adolescents from later violent behavior and victimization. The American Medical Association and other national consensus groups have developed guidelines recommending that primary care providers screen, educate, and counsel adolescent patients on issues such as alcohol use and violence [37]. However, screening and counseling rates occur at lower levels than recom-

mended [38]. Interventions focused on improving knowledge, self-efficacy, and skills have been effective in increasing providers' rates of screening and counseling [39]. Such interventions could be implemented in a variety of clinical settings.

Violence prevention programs might also benefit from the inclusion of components addressing emotional distress and alcohol use. Many school-based violence intervention programs have focused on increasing social competence, and a substantial portion of these have used cognitive-behavioral approaches [40]. Relatively few interventions focus on reducing emotional distress or alcohol use [40]. Programs that focus on cognitions and behaviors while ignoring emotional issues may leave some adolescents feeling troubled and unable to effectively change their behaviors. Additionally, because alcohol use is disinhibiting, adolescents may not use skills learned in prevention programs when they have been drinking. Accordingly, prevention programs could increase their effectiveness if they were to include therapeutic components that focus on reducing adolescents' emotional distress and address alcohol use.

In conclusion, this longitudinal study found that adolescents who experienced elevated emotional distress subsequently used alcohol more frequently, and that those who used more alcohol were later involved in more peer violence. Future research on violence among adolescents that included emotional distress and coping factors would add to our understanding of why adolescents become involved in violence. Such information would contribute to designing more effective clinical and programmatic interventions to reduce adolescents' risk for violence.

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