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## Early Risk Factors for Violence in Colombian Adolescents

**David W. Brook, M.D., Judith S. Brook, Ed.D., Zohn Rosen, M.S., Mario De la Rosa, Ph.D., Ivan D. Montoya, M.D., M.P.H., and Martin Whiteman, Ph.D.**

From the Department of Community and Preventive Medicine, Mount Sinai School of Medicine; the School of Social Work, Boston University, Boston; and the Department of Community and Preventive Medicine, University of Antioquia, Medellin, Colombia. Address reprint requests to Dr. David W. Brook, Department of Community and Preventive Medicine, Mount Sinai School of Medicine, Box 1044A, One Gustave L. Levy Place, New York, NY, 10029-6574; david.brook@mssm.edu (e-mail)

### Abstract

**Objective**—Violence and homicide are more prevalent in Colombia, South America, than in the United States, but the role of psychosocial factors in the violent behavior of Colombian adolescents remains unclear. The objective of the study was to identify personality, familial, peer, and ecological variables associated with violence in Colombian adolescents.

**Method**—A survey of adolescents was conducted in 1995-1996. A standard self-report measure was adapted to ensure linguistic and cultural relevance. A total of 2,837 adolescents ages 12-17 years from various self-reported ethnic groups were randomly selected from the community in three Colombian cities: Bogota, Medellin, and Barranquilla. Eighty percent of eligible adolescents agreed to participate. Data were collected concerning the adolescent's personality attributes, family characteristics, peer characteristics, and ecological/cultural factors, including the availability of illicit drugs and the prevalence of violence in the community. The dependent variable was the adolescent's self-reported frequency of violent behavior.

**Results**—Violence directed at the adolescent and the adolescent's own drug use were both more highly correlated with the adolescent's violent behavior than were other risk factors. Significant risk factors of less importance included tolerance of deviance, peer drug use, peer deviance, and exposure to violence on television.

**Conclusions**—The results supported a model in which violent behavior was correlated independently with a number of risk factors from several domains. The findings point to the use of specific intervention procedures for adolescents to prevent their own subsequent acts of violent behavior.

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Adolescents who commit violent acts have become an increasing concern to public health professionals (1,2), clinicians, policy makers, educators, and the general public (3-5). As seen in the wave of violent acts by adolescents over recent years, adolescent violence is a public health concern with far-reaching effects on families, schools, and communities. Management strategies to reduce violence by adolescents at risk are often used without the support of solid research, which includes identifying the specific and interactive effects of major risk factors for adolescent violent behavior. The majority of studies of adolescent violence have focused on the effects of child maltreatment (6-10) or drug abuse (11-19), and many are based on circumscribed groups of adolescent subjects, e.g., gang members, homeless youths, those in centers for juvenile delinquents, and those under the care of protective agencies. Few

investigations are based on data from adolescents living in communities with high rates of violence and drug availability (20-22).

The present study examines intrapersonal and interpersonal risk factors related to the violent behavior of adolescents. Although studies of violent behavior in community-based samples in the United States have been conducted (14), few have included all of the psychosocial domains considered in this study. To our knowledge, there have been no large-scale community studies that both are set in a country where violence is endemic and examine the relationship of personality, family, peer, and ecological factors with violent behavior. Findings from previous studies have shown that delinquent behavior in adolescents is linked with violent actions and criminal activity (23,24). In light of these findings, our literature review will cover aspects of both delinquency and adolescent violence (25).

Numerous risk factors operate in the development of delinquency and violent behavior (12), and such risk factors involve both individual personality attributes and social environmental characteristics (2,26). Individual personality and attitudinal risk factors found to be related to violent behavior include tolerance of deviance and low sensitivity toward others (17,27). Furthermore, adolescent drug abusers are more likely to commit acts of violence than youths who are not drug abusers (11-19). Child abuse, parental drug use, peer drug use, and peer violence are also all associated with violent behavior in youths (20-22). Community and social influences that affect delinquency and violent behavior include drug availability, neighborhood victimization, violence directed toward the subject, and a preference for viewing violence on television (5,6,11,28). Studies performed in England and in the United States have found that beyond engaging in delinquent behavior, being a victim of violence is the most powerful predictor of adolescent violent behavior (23). Youths who have been exposed to violent acts, either directly or through observation (co-victimization), have been found to show significantly more psychological and behavioral symptoms and to be more likely to use violence in potential interpersonal confrontations, compared with youths who have not been exposed to violence (29,30). Such symptoms can be the effect of posttraumatic stress disorder, and they have been shown to lead to an increased level of aggression (31,32).

We chose Colombia, South America, as the location for our study because of widespread violence there, including homicide (approximately 10 times the rate of the United States) and the relative ease of access to illegal drugs (33-35). The country has been troubled both economically and politically for several years, and the availability of social services has recently diminished. Although Colombia has been a democracy for several decades, conflict between political factions has resulted in more than 50 years of civil unrest, continually destabilizing the social structure. The ongoing violent conflict is characterized by shifting political territories, resulting in large numbers of displaced people, as well as frequent assassinations of political officials. Further, much of the funding for this conflict comes from the drug trade, with the cultivation of coca plants financing the conflict, resulting in a proliferation of illicit substance use throughout the country. Because this violent conflict has continued for such an extended period of time, Colombian adolescents grow up in an environment where there is an expectation that violence, kidnappings, displacement, and murder will occur frequently.

Education for children in Colombia is free and legally compulsory since the 1920s, but many children, especially in rural areas, have never attended school. In an environment where the contextual risk factors for violent and delinquent behavior are so prevalent, the relative strength of each of the personality, family, and peer domains can be examined to see their influences above and beyond the ubiquitous external risks. Although adolescent cohorts from high-risk neighborhoods have been studied previously (36,37), to our knowledge, no previous studies

have included community samples of subjects drawn from areas with so high a sustained level of contextual violence.

The occurrence of violent behavior is dependent on influences at many levels. They include the individual's personality, attitudes, and behavior; his or her close interpersonal relations (e.g., family and peers); and the social setting (e.g., the immediate community). Based on previous research (38), we tested three alternative models (independent, mediational, and interdependent) of the interrelationships of the domains of personality, family, peer, and ecological factors with adolescent violent behavior.

To test which of these models best describes the data, a hierarchical regression analysis was performed to determine each domain's relationship with adolescent violent behavior (39). This technique is a modified version of path modeling that employs domains of multiple measures instead of single variables. If an independent model is supported, then each domain is significantly predictive of adolescent violent behavior above and beyond the influence of all of the other domains combined. This finding would indicate that each domain directly affects violent behavior, even when the variables in the other domains are controlled. In the case of a mediational model, the influence of one or more of the domains is mediated by another domain (38). For example, risk factors in the family, peer, and ecological domains might be related to the personality domain (the mediator), which, in turn, would be related to violent behavior. Finally, if no single domain is significantly predictive of adolescent violent behavior alone, but a combination of domains is predictive, then an interdependent model is indicated. In this case, no single domain can be said to be independently associated with violent behavior but instead a combination of domains is required to effectively predict violent behavior in adolescents.

Identification of specific risk factors for adolescent violence is a prerequisite to designing more effective prevention and treatment programs. Colombia presents a unique setting for the study of these intrapersonal, interpersonal, and ecological factors. To our knowledge, this is the first study to examine the interrelations of these intrapersonal, interpersonal, and ecological factors in relation to violent behavior in adolescents.

## Method

### Participants

The participants were adolescents living in Colombia, South America (N=2,837) during the period from January 1995 to December 1996. The selected areas were in urban and rural communities representative of three metropolitan areas—Bogota, Medellin, and Barranquilla. Bogota was chosen because it has a population that is diverse in socioeconomic status, large concentrations of adolescents living in communities at various levels of urbanization, and one of the highest rates of homicide in Colombia, 162 per 100,000 per year, as reported by the Colombian government in 1995 (40). Medellin was selected because it is the second-largest city in Colombia and a major commercial and industrial center. Medellin has one of the highest rates of homicide in the world, 355 per 100,000 per year (40). Barranquilla is one of the largest cities in Colombia and, in contrast to Bogota and Medellin, represents the *costeño* (Caribbean-like) culture. Barranquilla also has a much lower homicide rate, 99 per 100,000 per year (40). Drug use is prevalent in all three cities.

Within each city, the study sample was randomly selected from census data. Data from the most recent census were reviewed, and households were selected by using computerized algorithms. From these households, we identified eligible individuals while attempting to preserve the random sampling procedures. Households with at least one child between the ages of 12 and 17 years were “qualified” for this study. Our success rate in interviewing subjects

was greater than 80%. Subjects received incentives to participate, which included American sports apparel and the opportunity to be part of a research study.

The mean age of the participants was 15.2 years ( $SD=1.7$ ). Self-reported ethnic identification included Mestizo (i.e., a mixture of Spanish, Indian, and African Colombian) (58%), Spanish (34%), African Colombian (3%), Indian (2%), and other (3%). Although the ethnic composition of the samples varied by city of origin, approximately equal numbers of males and females participated in all three cities, and age did not vary significantly with location. Overall, 53% of the sample was male, and 66% of the sample was living with both parents. The median education level was between the seventh and eighth grades.

## Procedure

A 2-hour, structured interview was administered to the adolescent (at home and in private, if possible) by a Colombian interviewer. To participate in the study, the adolescent and his or her mother had to sign consent forms. All adolescents were informed that they could refuse to participate or discontinue at any time. The research staff followed a standardized protocol in giving instructions to participants and answering questions about individual items. The interviewers read questions from structured interview schedules, and the subjects recorded their own answers on their questionnaires for the questions about drugs. The interviewers recorded the subjects' answers for the remainder of the questions. To maintain confidentiality, interview schedules were identified only with a code number; participants were instructed that they should not write their names on the survey forms and that their answers were strictly confidential. All protocols had been approved by the institutional review board of the Mount Sinai School of Medicine.

## Measures

The scales in this research were based on item intercorrelations and reliabilities determined by using Cronbach alphas (a measure of internal consistency) and were grouped into four domains of risk factors: 1) the adolescent's personality and behavioral attributes, such as drug use and tolerance of deviance; 2) family characteristics, such as parental and sibling drug use and parent-child conflict; 3) peer factors, such as peer drug use and peer deviance; and 4) ecological factors, which included the availability of drugs and the prevalence of violence in the community. The dependent variable was the frequency of the youth's violent behavior, which was determined with a self-report measure based on the work of Chavez et al. (41). Previous analyses with various samples have supported the validity of self-reports of violent behavior (33,42,43). The items assessed the frequency of the subjects' violent acts, such as hitting someone with a weapon or cutting someone with a knife. Data on incidents of violence were measured on a 5-point scale that ranged from 1 (never) to 5 (five or more times). In total, five types of violent behavior were addressed, including threatening someone with a weapon, armed assault with a gun or knife, and robbery. In the Colombian sample, responses on the violence scale ranged from 5 to 25, with the mean reported frequency of violent activity of 8.15 ( $SD=3.29$ ) and a Cronbach alpha coefficient of 0.74. In all, 29% of the adolescents had committed two or more violent acts; 74.4% of these youths were male, and 25.6% were female. The percentages of adolescents who reported having engaged in various acts of violence are shown in Table 1.

All of the scales used in this study had been previously used to predict drug use, violence, and psychopathology in white, African American, and Puerto Rican adolescents in studies conducted in the United States (44-49). Scale selection was based on prior research and known correlates of adolescent violent activity. Although other measures were considered, we chose those that both had a strong relationship with violence and were consistent with our conceptual model. With one exception (i.e., for the measure of drug availability), the Cronbach alphas for

these scales were 0.72 or higher, indicating acceptable reliability. Many of the scales regarding drug use were based on a single question and thus do not have an associated alpha statistic. To ensure that these scales had acceptable reliability, we correlated the responses with those to other drug measures associated with the variable in question. For example, the self-reported marijuana use scale from the personality domain was highly correlated with both a measure of recent marijuana use ( $r=0.85$ ,  $N=2,837$ ,  $p<0.001$ ) and a measure of positive attitudes toward marijuana use ( $r=0.51$ ,  $N=2,837$ ,  $p<0.001$ ). It should be noted that the reported rates of use of other illicit drugs were extremely low in this sample and thus were not included in the analysis.

Researchers conversant with both English and Colombian Spanish translated the scales from English to Colombian Spanish. The scales were then back-translated to English. Several questions were modified to ensure linguistic and cultural relevance. Two pilot studies were conducted to make certain the psychometric properties of the translated scales were equivalent to those used in the United States. The domains and risk factors measured by the scales, sample scale items, and reliability measures are shown in Table 2.

The Cronbach alphas obtained in this study were similar to those obtained in investigations in the United States (46). In addition, in a longitudinal study in the United States, many of these scales were correlated over a 2-year period, suggesting considerable test-retest reliability (52).

## Data Analysis

Pearson correlation coefficients were calculated to examine the association between each risk factor and violent behavior for the male and female subjects. Regression analyses were conducted to explore the interaction of gender with the individual risk factors for violence. Less than 5% of the interactions of gender with the individual risk factors were statistically significant, and no discernible pattern emerged. We also examined the interaction of data from each city with the independent variables, with the adolescents' violent behavior as the dependent variable. Less than 5% of these interactions were significant. Consequently, the interactions that did emerge were probably due to chance, and, when corrections for multiple comparisons were applied, no significant interactions remained. Therefore, hierarchical regression analyses were calculated by using data from the entire sample to examine the interrelation of the domains (personality, family, peer, and ecology) and the adolescents' violent behavior.

The regression analyses were performed while controlling adolescents' age, gender, ethnicity, and parental education (as an index of socioeconomic status). This adjustment was needed because evidence from this sample and previous studies of adolescent violence suggested that violent behavior tends to increase with age during adolescence (4) and that rates of violent activity are consistently higher for males than for females (30,53). Also, socioeconomic status has been shown to be inversely related to violent behavior, and studies in the United States have reported differential rates of violent activity in certain ethnic groups such as African Americans (5,54,55).

## Results

Correlation coefficients were computed to examine the relationship between the psychosocial variables and the adolescents' violent behavior. As shown in Table 3, adolescents who used drugs more often and who were tolerant of deviant behavior demonstrated more frequent violent behavior. Within the family domain, family drug use and sibling drug use, in particular, were associated with more frequent violent behavior in the adolescent. In the peer domain, associating with friends who were deviant and friends who used drugs were related to the adolescent's violence. Finally, within the ecological domain, having been a victim of violence

was highly related to the adolescent's violent behavior. Indeed, this was the highest of all correlations obtained. This finding remained even when tests comparing correlated correlations were performed (56,57), showing that violence toward the subject was significantly more highly related to violent behavior in the subject than any other predictor considered. The factors related to the adolescents' violent behavior were similar for both male and female subjects, with a few exceptions. It should be noted that although all of the correlations were statistically significant, several were small in magnitude (e.g., less than 0.10) and thus may have limited clinical importance.

A second set of analyses using regression analysis was performed to observe the influence of each of the psychosocial variables on the adolescents' violent behavior. Table 4 shows the regression coefficient and significance level for each measure, with the subject's age, ethnicity, and socioeconomic status controlled. As the table shows, most of the measures were highly predictive of violent behavior, with a few exceptions. Also, differences between the male and female subjects were observed in two of the measures: mother's illicit drug use and fear of neighborhood victimization.

Finally, hierarchical regression analyses were done to examine the interrelation of sets of personality, family, peer, and ecological factors with the adolescents' violent behavior. All variables were placed into the regression analysis by using forced entry; therefore, all independent variables were automatically included in the analysis. Since the factors related to violent behavior were similar for males and females, the regression analyses are presented for the combined sample only.

As noted in Table 5, each of the domains, when examined singly and without any other domain controlled, was highly related to the adolescents' violent behavior. We then analyzed each domain independently, with the three remaining domains controlled. Table 5 shows the difference in  $R^2$  and the F statistic when the remaining domains were controlled. Again, the findings indicated that each domain was significantly related to the adolescents' violent behavior. In other words, each domain had an effect on violent behavior independent of the three remaining domains. Thus, the findings supported an independent model, with the greatest proportion of the variance contributed by the ecological domain. It should be noted that the mediational and interdependent models were not supported by these findings because no domain lost predictive significance when a second domain was controlled. Within the ecological domain, violence toward the subject appeared to be the most powerful predictor of adolescent violent behavior ( $\beta=0.73$ ,  $F=695.72$ ,  $df=4, 2,834$ ,  $p<0.001$ ). Finally, the combined domains accounted for 75% of the variance in the adolescents' violent behavior.

## Discussion

To our knowledge, this is the first research project to examine risk factors for adolescents' violence in a large, diverse community sample in Colombia, South America. Our study extends the literature by examining the interrelationship of domains of personality/attitudinal/behavioral, family, peer, and ecological/cultural variables with the violent behavior of adolescents in Colombia.

Our results support an independent model of violent behavior. Risk factors from each domain were sufficient for predicting adolescent violence despite possible benign or protective attributes in all other domains. Family risk factors, for example, were related to violent behavior, even when the adolescent did not have a violence-prone personality, did not associate with deviant friends, and lived in a low-risk setting relative to other areas of Colombia. Thus, a diversity of developmental progressions may eventuate in the final result of violent behavior in adolescents.

The literature has established that adolescent violence is related to multiple biopsychosocial factors, including personality, family, peer, and ecological attributes. Prior research on personality/attitudinal/behavioral factors found that adolescent substance use and tolerance of deviance were highly related to delinquency and violence (58). Consistent with these findings, youths' drug use and tolerance of deviance were associated with self-reported violence in our study.

Relationships with parents and siblings, as well as with peers, provide opportunities for children to either acquire or resist the propensity to future violent behavior. The parental role is generally to promulgate nonviolent behavior and problem-solving skills (59). If a conflictual atmosphere exists at home, however, the child learns aggressive behaviors and solutions to problems (2, 60). Indeed, family conflict in Colombia was related to adolescent violence.

In the United States, family drug use (including drug use by parents and siblings), peer drug use, peer deviance, and drug availability have been associated with violent behavior in youths (11,15,17). It is not surprising that these same risk factors were related to violence by adolescents in Colombia, especially given the accessibility of illegal drugs there. Drug use at every level of the environment (family, peer, and ecology) was a predictor of violence in Colombian youth.

Adolescents with deviant friends were more likely to engage in violent behaviors, consistent with the findings of other investigators, who found that the peer group greatly influences adolescent behavior (2,61). Deviant peers may reinforce and model antisocial attitudes and behaviors, pressuring group members into increased deviance (62,63). Several investigators have reported, for example, that carrying weapons to school by adolescents was highly related to peer group modeling (i.e., their friends had weapons) and that youths who feared victimization carried weapons for protection (64-66). However, the association between violence and the peer group may result from the tendency of adolescents with deviant traits to choose delinquent peers (58-64). It is also possible that the adolescent's deviance and violent behavior both precedes and is reinforced by the peer group. Finally, the perpetration of violent actions often involves the actions of a group or gang, and adolescents with deviant or violent peers are more likely to become involved in situations of group or gang violence.

A major cultural similarity between the United States and Colombia is the effect that being a victim of violence has on adolescent behavior; the strongest predictor of adolescent violent behavior was having been a victim of violence ( $r=0.70$ ). The main theoretical question surrounding findings of this type is whether this relationship stems from environmental risk (e.g., lifestyles and routine activities) (67-69) or whether exposure to violence influences the adolescent's personality in a manner that makes the adolescent more likely to respond to certain situations with the use of violence. Threats of violence stemming from the individual's environment (neighborhood risk) were associated with violent behavior, but to a far lesser degree than actual acts of violence directed against the adolescent. It is possible that in an environment where neighborhood victimization is commonplace, adolescents grow up with a generalized fear of victimization that is related to their subsequent violent behavior. The high correlation between violence directed toward adolescents and adolescents' own violent behaviors may also result from aspects of the adolescent personality, which can predispose adolescents to violence. For example, adolescents who have a low sensitivity toward others and who are more tolerant of deviance may provoke violent behavior or place themselves in harmful situations. However, the relationship between violence directed toward adolescents and their own violent behavior was highly significant even when the adolescents' sensitivity to others and tolerance of deviance were controlled ( $r=0.69$  and  $0.68$ , respectively,  $N=2,837$ ,  $p<0.001$ ). Nevertheless, although more than half of the participants in our study reported having been victims of violence, only approximately one-third had themselves engaged in violent

behavior. It would seem that in a dangerous setting such as Colombia where acts of extreme violence take place on a daily basis, many adolescents learn in a disturbingly personal manner that violence is an acceptable and appropriate response to many situations. This lesson appears to take hold even in adolescents whose personalities are not particularly violence-prone.

Several U.S. investigators have noted that youths who live in a violent community or witness violent acts are more likely to engage in violent behavior (14,60,70,71). Repetitive exposure to excessive violence on television may also result in cognitive scripts that emphasize aggressive solutions to problems (72). One mechanism that might explain the connection between environmental risk factors and violent behavior is modeling (73). Adolescents who observe violence or are treated violently are more likely to imitate violent behavior or feel that violence is a viable solution to problems (37). Exposure to drug use and violent behavior by external sources may lower the threshold for emotional dysregulation or affective instability and stimulate anger in the adolescent, who consequently engages in violent acts. Parenting that involves the expression of high levels of anger is associated with higher levels of both childhood anger and stress-related hormones (74). Future longitudinal research may demonstrate how violent stimuli from the environment induce a dysphoric affective state and corresponding neurobiological changes leading to violent behavior.

Comparisons between male and female subjects generally showed consistent results with a few notable exceptions. The influence of maternal drug use had a profound effect on violent activities in female subjects, whereas its effect on violent activity in male subjects was statistically negligible. This difference may be due to the influence of traditional gender roles in Colombia, where male adolescents are expected to learn appropriate behaviors from male role models such as the father, and female adolescents are expected to learn behaviors from female roles models such as the mother. Also, fear of victimization within the neighborhood had a significant influence on violent activity in female but not in male subjects. This difference is most likely due to the effects of Colombian gender roles as well. Female adolescents are traditionally kept separated and protected within the household, while male adolescents have unfettered access to the neighborhood around them. Women who are less protected in this manner are more cognizant of the external risks and, in addition to being more exposed to the dangers present within the neighborhood, are freer to engage in violent acts. Another notable difference can be seen within the personality domain in which tolerance of deviance had a more profound influence on male than on female subjects. Again, social roles allow for little deviance or violence in female adolescents, and the data support reduced variance in this measure in the female portion of the sample.

Unfortunately, the results of this correlational study do not clarify the direction of effects and transactional processes. The direction of effect may not always be from the interpersonal (family and peer) and ecological setting to the adolescent; violent adolescents may provoke violence from others. Although causality cannot be determined on the basis of our cross-sectional data, this study may lead to further research involving these Colombian adolescents. Two further caveats are that 1) the data were based on self-reports obtained from adolescents and 2) the concepts derived from research in the United States may not reflect some unique aspects of Colombian culture, which therefore may not have been assessed.

Another limitation of this study was the lack of multiple measures of violent activity and other scales with known associations to juvenile violence. The lack of multiple measures was related to the fact that the Colombian study was funded by a grant that mainly examined the etiology of drug use and was not specifically focused on adolescent violence.

Despite these limitations, the results obtained from the Colombian sample are similar to findings in the United States, suggesting the existence of “cultural universals” with respect to



adolescent violence. This parity may not, however, be maintained in all cultures or ethnic groups.

As noted by Webster (75) and others (76), education in the prevention of violence is most effective when performed with children and preadolescents. Nevertheless, even during the hormonal and psychosocial changes of adolescence, interventions may still be effective if they are targeted toward the appropriate areas.

The personality/attitudinal/behavioral, family, peer, and ecological domains are potential foci for prevention and intervention, since all were found to have a direct effect on adolescent violence. Knowledge of the specific risk factors involved should assist professionals in identifying and intervening with at-risk youth before they commit violent acts or are victimized by others' violence, preventing noxious effects on families, peers, and communities.

Data from the ecological domain might be of particular benefit for intervention in areas where drug use and violence are endemic, such as Colombia, South America. Adolescents must feel safe and secure to mitigate factors associated with violent behavior (e.g., fear of victimization). The "adult protective shield" must be maintained to increase this sense of safety (1). In the United States, several programs that focus on community safety and family structure have reported positive results for reducing rates of adolescent violence. These programs include state-mandated actions such as proactive policing and parenting skills training programs in both the community (77,78) and in the home (79). Such programs have been found to be effective for both the short-term and the long-term prevention of violence among youths.

The school environment offers an opportunity for training adolescents to deal with feelings of anger, develop cognitive skills, learn self-control, and resolve conflicts without the use of violence. Well-adjusted peers may serve as role models for high-risk youths and as nonviolent mediators of conflict. Examples of programs that have been successfully used within the school system in the United States include the Interpersonal Cognitive Problem Solving program, the Seattle Social Development Project, and the Providing Alternative Thinking Strategies program (76). Because many risk factors are shared between Colombian and U.S. adolescents, such programs are likely to be effective in Colombia.

In conclusion, our research suggests that key risk factors for violent behavior in adolescents are common to Colombia and the United States. Prevention and treatment programs developed in the United States may have relevance for Colombia, and findings from Colombia may elucidate the understanding of violence by adolescents in the United States, especially in areas where adolescents live with extreme levels of environmental risk.

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TABLE 1  
 Frequency of Violent Behaviors in a Community Sample of Adolescents in Three Cities in Colombia<sup>a</sup>

Behavior	Never		Once		Twice		Three or Four Times		Five or More Times	
	N	%	N	%	N	%	N	%	N	%
Held a weapon like a club, gun, or knife to someone (N=2,835)	2,441	86.1	209	7.4	65	2.3	55	1.9	65	2.3
Hit someone with a weapon or shot someone (N=2,835)	2,663	93.9	85	3.0	40	1.4	19	0.7	28	1.0
Cut someone with a knife (N=2,833)	2,642	93.3	112	4.0	33	1.2	24	0.8	22	0.8
Beat someone or threw something at them (N=2,832)	2,078	73.4	314	11.1	177	6.3	127	4.5	136	4.8
Hit an instructor or supervisor (N=2,836)	2,668	94.1	118	4.2	31	1.1	11	0.4	8	0.3
Had a serious fight at school or work (N=2,831) <sup>b</sup>	1,457	51.5	561	19.8	382	13.5	237	8.4	194	6.8

<sup>a</sup>Data are from 2,837 adolescents ages 12-17 years from randomly selected households in Bogota, Medellin, and Barranquilla.

<sup>b</sup>Based on subjects' perceptions of the seriousness of the fight.

TABLE 2

Characteristics of Measures Used to Assess Four Domains of Psychosocial Risk Factors for Violent Behavior in a Community Sample of Adolescents in Three Cities in Colombia

Domain and Risk Factor	Number of Items in Measure	Sample Item in Measure <sup>a</sup>	Source	Cronbach's Alpha <sup>b</sup>
Adolescent's personality				
Tolerance of deviance	10	How wrong do you think it is to take credit for someone else's work?	Schaefer et al. (49)	0.72
Sensitivity	10	You are tender.	Bezirganian et al. (44)	0.81
Marijuana use	1	How often have you used marijuana?	Rosenblatt and Furlong (43)	—
Family				
Mother's illicit drug use	1	What was the most she ever used drugs (i.e., marijuana, basuco, cocaine)?	Developed by the authors	—
Father's illicit drug use	1	What was the most he ever used drugs (i.e., marijuana, basuco, cocaine)?	Developed by the authors	—
Siblings' illicit drug use	1	How often does your sibling use drugs (i.e., marijuana, basuco, cocaine)?	Developed by the authors	—
Parent-child conflict	3	How often do you have differences of opinion with your parent?	Bem (45)	0.76
Peers				
Deviance	5	How many of your friends have skipped school?	Brook et al (46)	0.76
Liquor use	1	How many of your friends have used hard liquor?	Developed by the authors	—
Marijuana use	1	How many of your friends have used marijuana?	Developed by the authors	—
Use of other illegal drugs	1	How many of your friends have used other illegal drugs?	Developed by the authors	—
Ecological/cultural				
Drug availability	2	How difficult is it to get marijuana?	Jessor et al. (50)	0.58
Violence toward the subject	5	Have you experienced someone cutting you with a knife?	Johnston et al. (51)	0.73
Watching violent television	2	Aside from the news, the television shows you prefer to watch have a lot of violence.	Developed by the authors	0.85
Neighborhood victimization	5	How safe do you feel in your neighborhood about being ripped off?	Developed by the authors	0.93

<sup>a</sup>Some sample items have been paraphrased.

<sup>b</sup>Dashes denote single items for which an alpha cannot be calculated.

**TABLE 3**

Correlation of Psychosocial Risk Factors in Four Domains With Violent Behavior in a Community Sample of Adolescents in Three Cities in Colombia

Domain and Risk Factor	Correlation With Violent Behavior (r) <sup>a</sup>		
	All Subjects (N=2,837)	Female Subjects (N=1,335)	Male Subjects (N=1,502)
Adolescent's personality			
Tolerance of deviance	0.28 ***	0.27 ***	0.28 ***
Sensitivity	-0.18 ***	-0.15 ***	-0.20 ***
Marijuana use	0.48 ***	0.46 ***	0.49 ***
Family			
Mother's illicit drug use	0.07 ***	0.08 **	0.06 *
Father's illicit drug use	0.10 ***	0.09 **	0.11 ***
Siblings' illicit drug use	0.21 ***	0.22 ***	0.21 ***
Parent-child conflict	0.07 ***	0.07 **	0.07 ***
Peers			
Deviance	0.38 ***	0.36 ***	0.39 ***
Use of marijuana and illicit drugs other than marijuana	0.37 ***	0.36 ***	0.38 ***
Ecological/cultural			
Drug availability	0.18 ***	0.16 ***	0.18 ***
Violence toward the subject	0.70 ***	0.69 ***	0.70 ***
Watching violent television	0.28 ***	0.25 ***	0.31 ***
Neighborhood victimization	0.07 *	0.07 *	0.08 **

<sup>a</sup> Violent behavior was defined as the number of instances of the behaviors listed in Table 1.

\* p<0.05.

\*\* p<0.01.

\*\*\* p<0.001.



**TABLE 4**

Regression Coefficients Showing Relationship of Psychosocial Risk Factors in Four Domains With Violent Behavior in a Community Sample of Adolescents in Three Cities in Colombia<sup>a</sup>

Domain and Risk Factor	Coefficient for Relationship With Violent Behavior <sup>b</sup>		
	All Subjects (N=2,837)	Female Subjects (N=1,335)	Male Subjects (N=1,502)
Adolescent's personality			
Tolerance of deviance	0.15 <sup>***</sup>	0.03 <sup>*</sup>	0.22 <sup>***</sup>
Sensitivity	-0.10 <sup>***</sup>	-0.05 <sup>***</sup>	-0.09 <sup>***</sup>
Marijuana use	0.59 <sup>***</sup>	0.48 <sup>***</sup>	0.59 <sup>***</sup>
Family			
Mother's illicit drug use	0.22 <sup>*</sup>	0.61 <sup>***</sup>	0.16
Father's illicit drug use	0.39 <sup>***</sup>	0.47 <sup>***</sup>	0.31 <sup>**</sup>
Siblings' illicit drug use	1.46 <sup>***</sup>	1.03 <sup>***</sup>	1.82 <sup>***</sup>
Parent-child conflict	0.10 <sup>***</sup>	0.04 <sup>***</sup>	0.12 <sup>***</sup>
Peers			
Deviance	0.30 <sup>***</sup>	0.16 <sup>***</sup>	0.38 <sup>***</sup>
Use of marijuana and illicit drugs other than marijuana	0.47 <sup>***</sup>	0.30 <sup>***</sup>	0.57 <sup>***</sup>
Ecological/cultural			
Drug availability	0.16 <sup>***</sup>	0.10 <sup>***</sup>	0.19 <sup>***</sup>
Violence toward the subject	0.73 <sup>***</sup>	0.65 <sup>***</sup>	0.74 <sup>***</sup>
Watching violent television	0.35 <sup>***</sup>	0.19 <sup>***</sup>	0.40 <sup>***</sup>
Neighborhood victimization	0.03 <sup>*</sup>	0.03 <sup>**</sup>	0.02

<sup>a</sup>Subjects' age, ethnicity, and socioeconomic status are controlled in all analyses.

<sup>b</sup>Violent behavior was defined as the number of instances of the behaviors listed in Table 1.

\* p<0.05.

\*\* p<0.01.

\*\*\* p<0.001.

**TABLE 5**  
 Hierarchical Regression Analysis of the Relationship of Four Domains of Psychosocial Risk Factors With Violent Behavior in a Community Sample of Adolescents in Three Cities in Colombia

Domain	Analysis of Relationship With Violent Behavior <sup>a</sup>											
	Without Other Domains Controlled					With Other Domains Controlled					Difference	
	R <sup>2</sup>	F	df			R <sup>2</sup>	F	df			R <sup>2</sup>	F
Adolescent's personality	0.29	383.84*	7, 2,829			0.27	338.38*	17, 2,819			0.02	45.46
Family	0.12	97.09*	8, 2,828			0.011	75.72*	17, 2,819			0.01	21.37
Peers	0.27	533.45*	6, 2,850			0.25	453.18*	17, 2,819			0.02	80.27
Ecological/cultural	0.50	713.97*	8, 2,828			0.30	393.23*	17, 2,819			0.20	320.74

<sup>a</sup>Violent behavior was defined as the number of instances of the behaviors listed in Table 1.

\* p<0.01.