SOLUCIONES

# Influence of Risk and Protective Factors on School-aged Youth Involvement with Gangs, Guns, and Delinquency: Findings from the El Salvador Youth Survey

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# Influence of Risk and Protective Factors on School-aged Youth Involvement with Gangs, Guns, and Delinquency: Findings from the El Salvador Youth Survey

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**About Solucion.ES**

Solucion.ES is a violence prevention program implemented by an alliance of five leading Salvadoran nonprofit organizations that has formed to prevent crime and violence. Alliance members are Fundación Nacional para el Desarrollo (FUNDE), Fundación Salvadoreña para la Salud y el Desarrollo Humano (FUSAL), Fundación Crisálida (known locally as Glasswing), Fundación Salvadoreña para el Desarrollo Económico y Social (FUSADES), and Fundación Empresarial para el Desarrollo Educativo (FEPADE), with partial funding from USAID/El Salvador. Together, these five organizations possess widely recognized expertise in education, health, community development, economic development, research, and youth leadership. They bring their combined synergy and strengths to the mission of preventing crime and violence in El Salvador, using a three-pronged strategy: (1) strengthening municipal capabilities and actions, (2) increasing social investment from the private sector, and (3) researching, publishing and disseminating findings to inform decision making.

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Specifically, the Center evaluates policies and programs; analyzes and evaluates patterns and causes of violence; develops strategies and programs; develops a clearinghouse of research reports and "best practice" models; educates, trains and provides technical assistance; and facilitates the development and construction of databases.

For more information about the Center for Violence Prevention and Community Safety, please contact us using the information provided below.

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# Executive Summary

Youth participation in problem behavior, including crime and violence, especially in gang-related violence, has become a global concern over the past several years. The research that is the basis for this report was designed to provide policymakers in El Salvador with systematic empirical evidence to serve as the foundation for developing evidence-based prevention and intervention strategies for addressing such problem behavior. This research was organized around three research questions. First, it was designed to collect data that could be used to gauge the involvement of school-aged Salvadoran youth in gangs, guns, and delinquent activity. Second, the research was designed to identify factors that put school-aged youth at risk for and protect them from engaging with gangs, guns, and delinquency. Third, it was designed to determine which, if any, of those risk and protective factors would have cumulative effects on that involvement.

To answer these questions, the El Salvador Youth Survey was developed and administered to more than 8,900 6$^{th}$ and 9$^{th}$ graders attending 81 schools throughout El Salvador. The survey was organized around the risk and protective factor paradigm, with a principal goal of identifying risk and protective factors within the four domains of community, family, school and peers.

The analyses reported in this document are based upon a final sample of 6,268 school-aged Salvadoran youth. Youth in the sample were selected on the basis of having completed surveys without missing data and having denied being dishonest in their responses to survey items.

Of those 6,268 school-aged respondents, 19.6% were classified as having gang involvement. This meant that they reported being a member or former member of a gang or having friends who were in a gang. In addition, approximately 5.3% of the respondents in the sample were classified as having been involved with guns, and 8.5% were classified as having been engaged in delinquent activity.

Within the sample, significant associations of risk factors with gang involvement were found in three of four domains. Two risk factors were found to be significant in the community domain, four in the family domain, and six in the peer-individual domain. None of the risk factors in the school domain were found to be significantly associated with gang involvement.

For gun involvement, risk factors in two domains (community and peer-individual) were found to be significant, but none of the risk factors in the school or family domains were significant. Nine risk factors were found to be associated with delinquency, with three of those being in the community domain, two in the family domain, and four in the peer-individual domain. Again, none of the risk factors in the school domain were found to be significantly associated with delinquency. Significant associations also were found for protective factors within three domains. And as was expected, the cumulative effect of multiple risk factors was significantly associated with involvement in problem behaviors, and conversely the cumulative effect of multiple protective factors was associated with a lower probability of participation in problem behaviors.

These findings have provided program planners and policymakers with an opportunity to identify and develop prevention and intervention strategies that target significant risk and protective factors within the community, family and peer-individual domains. Research findings from the risk and protective factor paradigm have previously been used to develop programs that target specific risk and protective factors, and the evidence supports their effectiveness. Most of those programs have been implemented and evaluated in settings other than El Salvador, however; it is essential for Salvadoran program planners and policymakers to determine the appropriateness and suitability of adopting such programs within the cultural context of El Salvador. In all likelihood, existing evidence-based "best practices" programs will serve simply as a heuristic starting point preceding their adaptation to reflect the cultural context of El Salvador.

# Introduction

Youth participation in crime and violence, especially in gang-related violence, has grown into a global concern. The problem has been identified as a major public health issue in many nations, much like a disease pandemic. Attempts to identify and develop strategies for preventing and intervening in youth crime and violence have revealed the need for more research using a public health framework to understand the problem's scope, correlates and causes. The advantage of such a framework is that it focuses on identifying those factors that put youth at risk for engaging in violence and misbehavior, while at the same time identifying factors that protect them from engaging in such activities. Policies, programs and practices that decrease risk factors and increase protective factors have great potential for reducing youth violence.

In El Salvador, crime and violence as major concerns have been extensively studied. Still, research is urgently needed to specifically address youth violence using a framework that informs development of prevention and intervention strategies based on risk and protective factors. The findings presented in this report are from the El Salvador Youth Survey (ESYS), a study of more than 8,900 $6^{th}$ and $9^{th}$ grade students attending 81schools in El Salvador. The principal objectives of the study were, first, to provide national and local officials with an up-to-date description of the scope of youth involvement with gangs, guns, and delinquency (and other forms of undesirable behavior) and, second, to develop a body of knowledge about the correlates of youth engagement in illegal and related behaviors, particularly their involvement with gangs and guns.

The current research was organized around three research questions. First, it was designed to collect data that could be used to gauge the involvement of El Salvador's school-aged youth with gangs, guns, and delinquent activity. Second, the research was designed to identify factors that put school-aged youth at risk for and that protected them from such involvement. Third, it was designed to determine which, if any, risk and protective factors are likely to have cumulative effects on the involvement of school-aged Salvadoran youth with gangs, guns, and delinquent activity. Put simply, the questions are whether there is a direct relationship between the number of risk factors and the propensity to be engaged with youth gangs, guns and law-violating behaviors, and whether there is an inverse relationship between the number of protective factors and the propensity to engage in such behaviors.

## Gangs and Violence in El Salvador

Developing a stronger research base that can be used to inform the development of programs and policies that divert school-aged youth from developmental trajectories leading to participation in delinquency and violence, while important in all countries, it is especially important in El Salvador. Salas-Wright, Olate, and Vaughn (2013b) reported that El Salvador had a country-wide homicide rate of 69 per 100,000 population, a rate 10 times higher than the worldwide rate and about 300% higher than Latin America overall. An El Salvador 2014 Crime and Safety Report (https://www.osac.gov) indicates that the country is one of the world's most violent, with San Salvador's homicide rate of 43.3 per 100,000 population establishing the capital city as the 27$^{th}$ most violent city in the world. The Overseas Security Advisory Council estimates that hundreds of gangs in El Salvador account for a total of more than 2,000 murders (https://www.osac.gov). Salas-Wright, Olate, and Vaughn (2013b) claimed that youth gangs in El Salvador might account for 25% of all of the country's homicides. Although the impact of the larger context of the country's violence, crime and gangs on school-aged Salvadoran youth is not known, it seems reasonable to expect that such criminogenic influences are disproportionately pervasive and influential, making research that informs the development of prevention and intervention policies and practices crucial.

## Prior Research and the Risk Factor Prevention Paradigm

As previously noted, crime and violence in El Salvador have been extensively studied, yet relatively few of those studies used a risk factor perspective to assess relationships of youth violence and law-violating behavior with risk and protective factors (e.g., Olate, Salas-Wright, and Vaughn 2011, 2014). That perspective is based on the premise that risk and protective factors are correlated with and can serve as predictors of youth involvement in delinquency and violence.

The use of the risk factor prevention paradigm for the study of youthful crime and delinquency, first introduced by Hawkins, Catalano, and Miller in 1992, has a 25-year history. Within the paradigm, risk factors are conceptualized as conditions that will increase the probability that an individual will engage in negative behaviors, including delinquency, violence, drug use and dropping out of school. Protective factors, sometimes called "assets," are conditions that decrease the probability that an individual will engage in such behaviors by reducing the effect of risks or the way that young individuals deal with risks (Arthur et al. 2002, 575-601;

Blum et al. 2006; Hawkins and Catalano 2002; Hawkins, Catalano, and Miller 1992; Katz and Fox 2010). The risk factor prevention paradigm is derived from a public health model that focuses on identifying factors that put one at risk for disease, as well as factors that protect one from disease. The paradigm is consistent with action-oriented research strategies that aim to inform social development strategies, including prevention and intervention programs, by identifying risk and protective factors that are malleable and can be modified through program and policy activity.

In the original conceptualization, risk and protective factors were viewed as occurring in four domains: community, school, family and peer-individual (Hawkins, Catalano, and Miller 1992). A substantial body of empirical research has identified factors within each of those domains that have been associated with the presence or absence of problem behaviors, including delinquency, substance abuse and violence. Research has identified more than 30 different factors that put youth at risk for engaging in such problem behaviors. Conversely, substantial empirical research also demonstrates that exposure to protective factors reduces the prevalence of problem behaviors (1992).

The risk factor paradigm has been used successfully by several researchers to identify risk and protective factors associated with youth gang involvement (Esbensen and Deschenes 1998; Esbensen et al. 2001a; Hill et al. 1999). Within the community domain, factors that increase the odds of youth joining a gang include availability of firearms (Maxson, Whitlock, and Klein 1998), availability of drugs (Curry and Spergel 1992; Hill et al. 1999), and number of neighborhood youth engaging in various forms of youthful misbehavior (Katz and Fox 2010). Within the school domain, youth with low commitment to school and low academic achievement are found to be more likely to join a gang (Maxson, Whitlock, and Klein 1998; Hill et al. 1999). Within the family domain, risk factors such as youth having little supervision or monitoring of their activities and having parents who display favorable attitudes toward antisocial behaviors increase their likelihood of joining a gang (Esbensen and Deschenes 1998; Hill et al. 1999; Maxson, Whitlock, and Klein 1998). Although risk factors in the community, school and family domains have previously been identified as significant predictors for youth joining a gang, research shows that risk factors within the peer-individual domain have the strongest effect on youth gang involvement (Esbensen and Deschenes 1998; Esbensen et al. 2001a; Hill et al. 1999;

Thornberry et al. 2003).

As noted above, most research using the risk factor paradigm has been conducted in North America and Australia (Klein and Maxson 2006). Noteworthy exceptions include Katz and Fox (2010), who successfully used this approach to identify risk and protective factors associated with gang involvement of youth in Trinidad and Tobago. Salas-Wright, Olate, and Vaughn (2013a) also have used the paradigm to examine the protective effects of religion and spirituality on substance abuse among high-risk youth in El Salvador; Olate, Salas-Wright, and Vaughn (2014) have used the paradigm to identify the influence on those youth of protective factors for aggression, violence and delinquency.

**The Present Study**

As noted above, the risk and protective factor paradigm addresses factors in four domains: community, school, family and peer-individuals. Within each of those domains, the present study identifies risk factors that are specifically related to youth involvement in illegal activities and other forms of undesirable youth behaviors, especially those including involvement with gangs and with guns, as well as factors that protect youth from becoming involved in such behaviors. In addition, we assess the cumulative effects of risk and protective factors on Salvadoran youth. The resulting information is of value in that it enables policymakers to develop and implement evidence-based prevention and intervention programs that have the greatest likelihood of reducing youth involvement in violence and delinquency in El Salvador.

Community-level risk factors, such as mobility, social disorganization and norms of violence, have already been associated with youth violence. Evidence-based community initiatives (e.g., Communities That Care, other mentoring programs) have decreased delinquency by targeting and decreasing risk factors (Hawkins, Catalano, and Miller 1992). The Communities that Care program, for example, identifies neighborhoods with high levels of risk and pairs mentors with youth residents. Typically, a coalition of community stakeholders will plan, manage and implement the program, assessing the community's prevention needs and then organizing and carrying out responses to those needs. The program takes a holistic approach to reducing community risk factors, and it has been empirically shown to be promising.

Within the family domain, risk and protective factors known to be associated with youth delinquency include levels of parental supervision, parental attachment, and parental acceptance

of and/or involvement in crime and delinquency. Several evidence-based programs have effectively incorporated family-based factors. Parental training programs such as the Nurse-Family Partnership, for example, have been shown to reduce parental child abuse and neglect, increase parental attachment, and reduce parental criminality by decreasing family risk factors.[1] Programming that targets family risk and protective factors associated with violence could be expected to be similarly efficient and effective.

Within the school domain, certain school-based programming aimed at reducing school risk factors have been associated with reductions in individual levels of violent offending. The Seattle Social Development Project, for instance, trains parents and teachers in practices that increase parental and school attachment among at-risk youth (Washington State Institute for Public Policy 2012).[2] Youth whose parents and teachers participated later reported significantly less violence, less alcohol use and fewer sexual partners than did youth with nonparticipating parents and teachers. Similarly, the Montreal Longitudinal-Experimental Study showed that youth who received skills training, and whose parents and teachers received training, were significantly less likely to be involved in fights and delinquent behaviors than nonparticipating youth (Tremblay et al. 2003). Many programs that target risk and protective factors within the peer-individual domain (e.g., gang membership, drug use, onset of delinquency, drug use) have been associated with decreased violence. Such programs are varied and are often chosen based on the specific needs of the at-risk individuals or groups they are intended to help. The Blueprints Model and Promising Programs website identifies several effective evidence-based programs for addressing substance abuse treatment, special educational issues, cognitive behavior therapy, and other problem areas.[3]

[1] See *Blueprints for Healthy Youth Development* (2015) at http://blueprintsprograms.com.
[2] See Washington State Institute for Public Policy (2012) at http://www.wsipp.wa.gov/ReportFile/1509.
[3] To match specific risk factors with proven evidence-based programs, in addition to the Blueprints website, see http://www.CrimeSolutions.gov, http://evidencebasedprograms.org, and http:www.ncbi.nlm.nih.gov.

# Setting and Methods

The present study administered the nationwide El Salvador Youth Survey (ESYS) to a sample of 6th and 9th grade students attending 81 schools in each of El Salvador's 14 departments (approximately equivalent to U.S. states). The survey was administered in the respondents' classrooms from October 2014 through February 2015.

## Sample

The Ministry of Education's *Censo Matricular*, the complete list of all public and private schools and student enrollments in El Salvador, was the sampling frame for this study. To protect the confidentiality of individual student responses, schools with fewer than 30 students in the 6th or 9th grades were eliminated from the sample,[4] resulting in a reduced sample of 81 randomly selected schools, stratified by department and region (urban or rural). The margin of error for each grade included was less than +/-1.5.

The reduced sample included 8,916 students, of whom 50.3% (n=4486) were 6th graders and 49.7% (n=4430) were 9th graders; 51.6% (n=4598) were girls and 48.4% (n=4318) were boys; 68.5% (n=6103) attended urban schools and 31.5% (n=2813) attended rural schools. After the ESYS was administered, individual surveys with missing data (e.g., from students who could not finish within the allotted time) for any variable directly involved in the bivariate and logistic regression analyses were omitted. Surveys were also removed for students who agreed with the response "I was not honest in my answers at all." With those eliminated, 6,268 students remained in the final sample.

## Survey Instrument and Measures

The El Salvador Youth Survey (ESYS) instrument was a slightly modified version of the survey instrument developed by the Social Development Research Group. The ESYS was

[4] To maximize representativeness of the sample across urban and rural areas, 6th grade students attending schools with 30 or more students in their grade were separated into two strata: those attending schools where 6th was the highest grade offered (largely rural) and those attending schools with grades beyond the 6th. Also, only 1,119 schools had 30 or more 9th graders attending, and only 92% (1,032) of those also had 30 or more 6th graders attending.

*Censo* data indicated that 1,468 schools had 30 or more students enrolled in 6th grade, but only 70% of those also enrolled 30 or more students in the 9th grade. Of 1,119 schools with 30 or more students in 9th grade, 96% of urban and 92% of rural 9th graders would have been eligible to be included in the study. Of the 1,468 schools with 30 or more 6th graders, however, 90% were urban and 54% were rural. Schools with 30 or more students in both 6th and 9th grades would have included 95% of all urban, but only 67% of all rural 6th graders; thus, the distribution of students across urban and rural schools varied by grade level.

designed to capture demographic, school setting and living characteristics, to measure the presence of risk and protective factors, and to measure the primary outcome variables of self-reported gang involvement, gun involvement and illegal (criminal and delinquent) behaviors. In its final form, the survey items were used to construct 43 scales, 31 of them measuring risk factors and 12 measuring protective factors (appendix A).

Several survey items related to student involvement with guns were designed to elicit reasons for having a gun, methods and sources of obtaining guns, and locations where guns were kept. The survey also contained several items measuring student attitudes toward the National Civil Police (PNC). Finally, the survey collected information on student family characteristics, living arrangements, and school involvement and performance. (See appendix A).

## Findings: Risk and Protective Factors

The central goal of this study was to assess the effects of risk and protective factors in four domains (community, family, school and peer-individual) on school-age Salvadoran youths' involvement with gangs, guns and delinquency. We developed risk and protective factor scales by constructing summated scales for factors in each of the domains. Initially, we used scale items previously used by the Social Development Research Group. We constructed individual scale scores for each student respondent by summing items and determining an average score across items in each factor.

We used factor analysis to assess the fit of survey items with factor scales, and assessed scale reliability using Cronbach's alpha, a commonly used internal reliability method based on averaging inter-item and item total score correlations within each scale. Together, the four domains included 31 risk factors and 12 protective factors (appendix B).[5] Most of the scales exhibited acceptable reliability, although four scales were excluded from additional analyses due to low reliability coefficients, which resulted in a reduced total of 29 risk factors and 10 protective factors.

The analytic strategy for assessing the effect of risk and protective factors involved assigning student respondents with a value of "1" when their score on a given scale placed them above a specific cut point of respondent scores for the factor; this indicated being "at risk" for that factor. Respondents scoring lower than the cut point for a specific factor were assigned a

value of “0” and were considered "at low risk" for that factor. The same procedure was used for assigning respondents with values for protective factors.[5] Actual cut points were not uniform across scales due to a wide range of variability in scores across the factor scales (see appendix C).[6] n the end, respondent scores for each factor were dichotomous (i.e., either "1" or "0"). Converting scale scores into dichotomous variables has some disadvantages, but among its several advantages is ease of interpretation of findings when using logistic regression (Katz and Fox 2010).

**Gang Involvement**

The various ways to measure youth involvement in gangs ranged from a simple "yes" or "no" response to a question (e.g., are you a member of a gang?) to more complex approaches, such as the Eurogang approach that asks multiple questions about friendship groups while not using the term “gang” (Gati, Haymoz, and Schadee 2011). Other methods for measuring gang membership fall between those two approaches (Katz and Fox 2010). In the present study, emphasis was intentionally placed on measuring gang *involvement* rather than gang *membership*. Gang involvement was measured using three survey items, which are based on prior scholarly research (Curry et al., 2002; Curry, Decker, & Egley, 2002; Esbensen & Winfree, 1998). Students who reported being a current gang member, a current member interested in leaving, or a former member were coded as having gang involvement, as were students who reported having at least one best friend or current friends in a gang. Students not falling into one of those categories were coded as having no gang involvement. (See table 1).

[5] See Bond et al. (2005) for a discussion of cut points.
[6] See appendix C for cut points used in the analysis for each factor scale.

**Table 1. Students Reporting Gang Involvement (%) (n= 6268)**

| | % |
|---|---|
| How many of your four best friends were members of a gang in the past 12 months? | |
| None | 92.0 |
| One | 3.8 |
| Two | 1.7 |
| Three | 0.8 |
| Four | 1.6 |
| Are any of your friends currently a member of a gang? | |
| Yes | 14.7 |
| Have you ever been a member of a gang? | |
| No | 93.6 |
| No, but I would like to | 2.5 |
| Yes, I am a member now | 2.0 |
| Yes, but I want to leave | 0.4 |
| Yes, I used to be a member but I left | 1.6 |

The remaining measure of gang involvement was binary, with gang involvement coded as "1" and no involvement coded as "0." The underlying foundation is the same, but this measure differs from measures used by other researchers. Measures of gang *membership* frequently include self-reports of membership and past membership and having friends who are in a gang. These self-reported measures may then be used to classify respondents into categories such as gang member, former gang member, gang associate, non-gang member and so forth. As mentioned above, the focus of the current study is on involvement of youth with gangs rather than gang membership per se. Using this measurement approach, 19.6% (n=1229) student respondents with valid responses (i.e., no missing data, denying dishonest responses) for each item were classified as being gang involved (see table 2).[7]

[7] Note, however, that had our study relied solely on self-reports of gang membership, the prevalence of gang membership in the sample would have been about 2.4%, an exceptionally low figure compared with prevalence rates in other countries. When the focus was changed from gang membership to gang involvement, the prevalence rate increased substantially.

The prevalence of gang involvement by gender, age and location (urban or rural) relies on bivariate analysis, whereas the analysis of the impact of risk and protective factors on gang involvement relies on logistic regression. As noted above, surveys missing data for variables directly involved in the analyses were eliminated from both bivariate and logistic regression analyses. This included surveys from student respondents who were unable to complete them in the allotted time and who agreed with the response "I was not honest at all." Those eliminations reduced the sample size to 6,268. Table 2 summarizes basic demographic characteristics of the students whose surveys remained in the sample and were included in bivariate and logistic regression analyses. Of those student respondents, 52.8% were girls, 70.6% resided in urban areas, 46.2% were enrolled in 6$^{th}$ grade, and 53.8% were enrolled in 9$^{th}$ grade; 19.6% were classified as gang involved.

**Table 2. Sample Descriptives (n= 6268)**

| | n | % |
|---|---|---|
| Sex | | |
| Boys | 2,957 | 47.2 |
| Girls | 3,311 | 52.8 |
| Area | | |
| Urban | 4,428 | 70.6 |
| Rural | 1,840 | 29.4 |
| Grade | | |
| 6th | 2,898 | 46.2 |
| 9th | 3,597 | 53.8 |
| **Gang Involvement** | 1,229 | 19.6 |

As shown in table 3, of the reduced sample of 6,268 student respondents, more boys (22.4%) than girls (17.2%) were classified as gang involved. The percentages of urban (19.3%) and rural (20.3%) students who were classified as gang involved differed only slightly. Not surprisingly, more students enrolled in 9th grade (23.3%) than students enrolled in 6th grade (15.4%) were classified as gang involved.

**Table 3. Gang-involved Students by Sex, Area and Grade (%) (n= 6268)**

| | % |
|---|---|
| Sex* | |
| Boys | 22.4 |
| Girls | 17.2 |
| Area | |
| Urban | 19.3 |
| Rural | 20.3 |
| Grade* | |
| 6th | 15.4 |
| 9th | 23.3 |

*p < 0.01

Table 4 summarizes demographic characteristics of the subset of student respondents classified as gang-involved (n=1229) by gender, area location and grade. Of all students classified as gang-involved, the majority were boys (53.8%); 69.6% of the students resided in urban areas, and 63.8% were enrolled in 9$^{th}$ grade. As would be expected, the differences in gang-involvement prevalence rates between boys and girls and between 6$^{th}$ and 9$^{th}$ graders were statistically significant, with the probability of gang involvement being greater for boys and for 9$^{th}$ grade students. No significant difference was found in the representation of urban versus rural students.

**Table 4.Gang-involved Students by Sex, Area and Grade (n=1229)**

| | % |
|---|---|
| Sex* | |
| Boys | 53.8 |
| Girls | 46.2 |
| Area | |
| Urban | 69.6 |
| Rural | 30.4 |
| Grade* | |
| 6th | 36.2 |
| 9th | 63.8 |

*p < 0.01

The analysis of risk and protective factors and their impact on gang-involvement used all of the factors listed in Appendix D. However, only statistically significant finding of risk and protective factor associate with gang-involvement are reported in Table 5. The complete analysis including non-significant factors can be found in Appendix D. Across all four domains, 12 of 29 risk factors and 4 of 10 protective factors were significantly related to youth gang involvement in El Salvador; only those statistically significant findings are shown in table 5, below. Logistic regression analyses indicated that within the community domain, two risk factors were associated with gang involvement: high community disorganization (OR=1.899) and perceived availability of handguns (OR=1.353). Four risk factors in the family domain appeared to have considerable influence: The odds of a student being gang involved increased by about 54% (OR=1.539) when reporting a family history of antisocial behavior, by 88% (OR=1.883) when reporting poor family management practices, and by 41% (OR=1.410) when reporting parental attitudes favorable towards alcohol use. Parental attitudes favorable towards drug use also exhibited a significant association with student gang involvement (OR=.688). Six risk factors in the peer-individual domain were associated with gang involvement; no risk factors in the school domain showed a significant impact.

In addition, across domains, four pro-social protective factors impacting gang involvement were found: in the community domain, opportunity for pro-social involvement (OR=1.223) and rewards for pro-social involvement (OR=1.243);[8] in the school domain, school opportunity for pro-social involvement (OR=1.384); and in the peer-individual domain, interaction with pro-social peers (OR=.743), with the odds of gang involvement being 34% less for respondents reporting such interaction. No significant protective factors were found in the family domain. (See table 5.)

[8] Measurement items for these two scales were reverse coded so that an increase in the Log Odds Ratio signified a reduction in the odds of a respondent being gang involved. Respondents with higher scores on these two scales were 22% and 24% less likely to be gang involved.

**Table 5. Logistic Regression for Gang Involvement by Risk and Protective Factors**

| **Risk Factors** | B (SE) | Exp (B) | Sig. |
|---|---|---|---|
| **Community** | | | |
| High community disorganization | .641 (.094) | 1.899 | ** |
| Perceived availability of handguns | .302 (.136) | 1.353 | * |
| **Family** | | | |
| Family of history of antisocial behavior | .431 (.095) | 1.539 | ** |
| Poor family management | .633 (.104) | 1.883 | ** |
| Parental attitudes favorable towards alcohol use | .350 (.168) | 1.42 | * |
| Parental attitudes favorable towards drug use | -.374 (.143) | .688 | ** |
| **Peer-individual** | | | |
| Antisocial peers scale | .817 (.093) | 2.265 | ** |
| Peers' drug use scale | .669 (.114) | 1.953 | ** |
| Peers' alcohol use scale | .470 (.103) | 1.600 | ** |
| Rewards for antisocial involvement scale | .317 (.102) | 1.373 | ** |
| Depression outcome | .369 (.093) | 1.446 | ** |
| Sensation seeking scale | .253 (.090) | 1.287 | * |
| **Protective Factors** | | | |
| **Community** | | | |
| Opportunity for pro-social involvement | .202 (.089) | 1.223 | * |
| Rewards for pro-social involvement | .217(.107) | 1.243 | * |
| **School** | | | |
| School opportunity for pro-social involvement | .325 (.112) | 1.384 | ** |
| **Peer-individual** | | | |
| Interaction with pro-social peers | -.298 (.102) | .743 | ** |
| Intercept | -3.601 (.176) | | |
| $\chi 2$ | 1058.863 | | |
| df | 39 | | |
| Nagelkerke R Square | 0.327 | | |

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

Diagnostic statistics for the complete set of risk and protective factor scales were statistically significant with a Chi-square of 1058.86, significant at the .001 level. The overall model effect indicated by the Nagelkerke R Square is about .33, indicating that risk and protective factors explained a substantial portion of the variance in the measure of gang involvement.

**Gun Involvement**

Assessment of the effect of risk and protective factors on the involvement with guns of school-aged Salvadoran youth was a central focus of this study. The survey included multiple items related to gun involvement. For analysis, gun involvement was operationalized using responses to a question about the purpose of gun ownership. Table 6 indicates that nearly 93% of student respondents reported never having had a gun. The gun involvement variable was constructed and dichotomized by grouping students who reported never having had a gun with those who reported having had a gun for hunting or target practice in the no-gun-involvement category (coded "0") and grouping students who reported having had a gun for protection or self-defense, criminal activity or "other" into the gun-involved category (coded "1"). Using this procedure, 5.3% of respondents were classified as being gun involved.

**Table 6. Frequency and Stated Reason for Gun Possession (n= 6268)**

| | n | % |
|---|---|---|
| **If you ever had a gun, what was the main reason for having it?** | | |
| Never had a gun | 5,698 | 92.7 |
| Hunting or target shooting | 119 | 1.9 |
| For protection or self-defense | 203 | 3.3 |
| Criminal activity | 29 | 0.5 |
| Other | 95 | 1.5 |
| **Gun involvement** | | |
| No | 5,817 | 94.7 |
| Yes* | 327 | 5.3 |

*Includes three reasons: for protection or self-defense, criminal activity, and other.

Seven risk factors and one protective factor were significantly associated with respondents reporting being gun involved. (Statistically significant findings for gun involvement are shown in table 7; the full model for including all risk and protective factors can be found in (appendix E) These same factors were also significantly associated with gang involvement. Gun-involved respondents had significant scores on two risk factor scales in the community domain: perceived availability of handguns (OR=3.150) and perceived availability of drugs (OR=.598). One risk factor was significant in the family domain: poor family management. None of the risk

factors in the school domain were significant, but four risk factors in the peer-individual domain were significant: antisocial peers (OR=1.525), peers' drug use (OR=1.793), rewards for antisocial involvement (OR=1.818), and sensation seeking (OR=1.480). Opportunities for pro-social involvement (OR 1.377) was the only protective factor associated with gun involvement within the family domain. Respondents reporting protective pro-social involvement were about 38% more likely to be gun involved. Statistics for the overall model (all factors considered together) were significant; the Ngelkerke R Square = .176 indicates that risk and protective factors in the model explained less than 18% of the variance in gun involvement. (See table 7.)

**Table 7. Logistic Regression for Gun Involvement by Risk and Protective Factors**

| **Risk Factors** | B (SE) | Exp (B) | Sig. |
|---|---|---|---|
| **Community** | | | |
| Perceived availability of handguns | 1.147 (.212) | 3.150 | ** |
| Perceived availability of drugs | -.514 (.221) | 0.598 | * |
| **Family** | | | |
| Poor family management | .817 (.176) | 2.265 | ** |
| **Peer-individual** | | | |
| Antisocial peers scale | .422 (.162) | 1.525 | ** |
| Peers' drug use scale | .584 (.193) | 1.793 | ** |
| Rewards for antisocial involvement scale | .598 (.170) | 1.818 | ** |
| Sensation seeking scale | .392 (.154) | 1.480 | * |
| **Protective Factors** | | | |
| **Family** | | | |
| Rewards for pro-social involvement scale | .320 (.163) | 1.377 | * |
| Intercept | -4.923 (.302) | | |
| $\chi 2$ | 272.339 | | |
| df | 39 | | |
| Nagelkerke R Square | 0.176 | | |

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

**Delinquency**

The effect of risk and protective factors on the involvement of youth respondents in delinquency was another key area of interest. The measure of delinquency was constructed using six survey items that probed student involvement in illegal behavior. Student respondents were asked how many times during the last 12 months they had sold illegal drugs, stolen or tried to steal a vehicle or motorcycle, attacked someone with intent to harm, stolen or tried to steal something worth less than $300, stolen or tried to steal something worth more than $300, and/or entered or tried to enter a building to steal something (see table 8). Students who responded affirmatively to any of the six items were classified as delinquent. Table 8 presents a frequency distribution for the six items used in the delinquency measure. Of the sample of 6,268 students, 8.5% (n=517) reported being involved in one or more of the six crime types.

**Table 8. Student Delinquency by Crime Type (n=6268)**

| | n | % |
|---|---|---|
| **How many times in the last twelve months have you…** | | |
| Sold illegal drugs | | |
| Never | 6,162 | 98.7 |
| 1 to 2 times | 42 | 0.7 |
| 3 to 5 times | 12 | 0.2 |
| 6 to 9 times | 6 | 0.1 |
| 10 to 19 times | 5 | 0.1 |
| 20 to 29 times | 5 | 0.1 |
| 30 to 39 times | 3 | 0.0 |
| Over 40 times | 10 | 0.2 |
| Stolen or tried to steal a vehicle or motorcycle | | |
| Never | 6,147 | 99.2 |
| 1 to 2 times | 27 | 0.4 |
| 3 to 5 times | 5 | 0.1 |
| 6 to 9 times | 12 | 0.2 |
| 10 to 19 times | 2 | 0.0 |
| 20 to 29 times | 2 | 0.0 |
| 30 to 39 times | 1 | 0.0 |
| Over 40 times | 2 | 0.0 |
| Attacked someone with the intent of serious harm | | |
| Never | 5,979 | 95.9 |
| 1 to 2 times | 187 | 3.0 |
| 3 to 5 times | 25 | 0.4 |

| | | |
|---|---|---|
| 6 to 9 times | 22 | 0.4 |
| 10 to 19 times | 7 | 0.1 |
| 20 to 29 times | 0 | 0.0 |
| 30 to 39 times | 1 | 0.0 |
| Over 40 times | 13 | 0.2 |
| | | |
| Stolen or tried to steal something worth less than $300 | | |
| Never | 6,155 | 98.6 |
| 1 to 2 times | 48 | 0.8 |
| 3 to 5 times | 13 | 0.2 |
| 6 to 9 times | 5 | 0.1 |
| 10 to 19 times | 8 | 0.1 |
| 20 to 29 times | 3 | 0.0 |
| 30 to 39 times | 3 | 0.0 |
| Over 40 times | 9 | 0.1 |
| Stolen or tried to steal something worth more than $300 | | |
| Never | 6,166 | 99 |
| 1 to 2 times | 35 | 0.6 |
| 3 to 5 times | 8 | 0.1 |
| 6 to 9 times | 4 | 0.1 |
| 10 to 19 times | 5 | 0.1 |
| 20 to 29 times | 1 | 0.0 |
| 30 to 39 times | 2 | 0.0 |
| Over 40 times | 7 | 0.1 |
| Entered or tried to enter a building to steal something | | |
| Never | 6,162 | 98.8 |
| 1 to 2 times | 41 | 0.7 |
| 3 to 5 times | 18 | 0.3 |
| 6 to 9 times | 7 | 0.1 |
| 10 to 19 times | 5 | 0.1 |
| 20 to 29 times | 2 | 0.0 |
| 30 to 39 times | 3 | 0.0 |
| Over 40 times | 1 | 0.0 |
| | | |
| **Criminal Involvement** | | |
| No | 5,565 | 91.5 |
| Yes | 517 | 8.5 |

Nine risk factors and one protective factor were found to be associated with the delinquency variable. (Statistically significant findings for delinquency are shown in table 9; the

full model for including all risk and protective factors can be found in appendix F) Within the community domain, respondents classified as delinquent scored high on the community disorganization scale (OR=1.677), on laws and norms favorable to drugs (OR=1.477), and on perceived availability of handguns (OR=1.517), indicating that the odds of scoring high on these three scales were between 47% and 67% greater for delinquent students.

Two risk factors within the family domain were significantly associated with a student being classified as delinquent: a family history of antisocial behavior (OR=1.854) and parental attitudes favorable to antisocial behavior (OR=1.482). The odds of having elevated scores on these two risk factors increased by 85% and 48% respectively for respondents classified as delinquent.

Within the peer-individual domain, four risk factors were significant: rebelliousness (OR=2.12), early initiation of antisocial behavior (OR=6.438), attitudes favorable to antisocial behavior (OR=1.796), and depression outcome (OR=1.559). The odds of having elevated scores on these risk factor scales increased between 79% and 543% for respondents classified as delinquent.

Only one protective factor was significantly associated with delinquency. Respondents with higher scores for school rewards for pro-social involvement (school domain) had lower odds (OR=.654) of being in the delinquent category by about 35%. Chi-squared (719.69) for the overall model of risk and protective factors was significant (p=.001), and the Nagelkerke R Square of .40 indicated that the risk and protective factors explained a substantial portion of the variance in delinquency. (See table 9.)

**Table 9. Logistic Regression for Delinquency by Risk and Protective Factors**

| **Risk Factors** | B (SE) | Exp (B) | Sig. |
|---|---|---|---|
| **Community** | | | |
| High community disorganization | .517 (.164) | 1.677 | ** |
| Laws and norms favorable to drugs | .390 (.160) | 1.477 | * |
| Perceived availability of handguns | .417 (.196) | 1.517 | * |
| **Family** | | | |
| Family of history of antisocial behavior | .617 (.180) | 1.854 | ** |
| Parental attitudes favor antisocial behavior | .394 (.176) | 1.482 | * |
| **Peer-individual** | | | |
| Rebelliousness scale | .751 (.189) | 2.12 | ** |
| Early initiation of antisocial behavior scale | 1.862 (.168) | 6.438 | ** |
| Attitudes favorable to antisocial behavior scale | .585 (.185) | 1.796 | ** |
| Depression outcome | .444 (.160) | 1.559 | ** |
| **Protective Factors** | | | |
| **School** | | | |
| School rewards for pro-social involvement | -.425 (.217) | .654 | * |
| Intercept | -6.075 (.375) | | |
| $\chi 2$ | 719.692 | | |
| df | 39 | | |
| Nagelkerke R Square | 0.404 | | |

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

In addition to identifying individual risk factors associated with being involved with gangs, guns, or delinquency, or protect them from the same, the cumulative effects of multiple factors on such involvement must be determined. In past studies, other researchers (e.g., Katz and Fox 2010) have found that apart from the nature of individual factors, the *total number* of factors has a cumulative effect. Table 10 presents the results of an analysis of the effect of the number of risk and protective factors on involvement with gangs, guns, and delinquency.

**Table 10. Accumulation of risk and protective factors by involvement with gangs, guns, and delinquency.**

| | Gang Involvement | | | | Gun Involvement | | | | Delinquency | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | n | Percent | Sig. | Pearson Chi-Square | n | % | Sig. | Pearson Chi-Square | n | Percent | Sig. | Pearson Chi-Square |
| Number of elevated risk factors | | | *** | 707.683*** | | | *** | 158.807*** | | | *** | 535.215*** |
| 0-3 | 52 | 4.7% | | | 13 | 1.2% | | | 3 | .3% | | |
| 4-6 | 159 | 9.4% | | | 52 | 3.1% | | | 21 | 1.3% | | |
| 7-9 | 251 | 17.3% | | | 57 | 4.0% | | | 36 | 2.5% | | |
| 10 + | 767 | 38.0% | | | 205 | 10.4% | | | 333 | 16.8% | | |
| Number of elevated protective factors | | | *** | 119.672*** | | | *** | 23.206*** | | | *** | 72.128*** |
| 0-2 | 631 | 26.0% | | | 161 | 6.8% | | | 227 | 9.5% | | |
| 3-4 | 320 | 18.4% | | | 92 | 5.4% | | | 95 | 5.6% | | |
| 5 + | 278 | 13.2% | | | 74 | 3.6% | | | 71 | 3.4% | | |

*** p<0.001

As would be expected, students with higher numbers of risk factors were more likely than students with lower numbers of risk factors to be involved in gangs. Of students with 10 or more elevated risk factors, 38% were classified as gang involved; of students with three or fewer risk factors, only 4.7% were classified as gang involved. This pattern holds for gun involvement: 10.4% of students with 10 or more risk factors were classified as gun involved, compared with only 1.2% of students with three or fewer risk factors. For delinquency, 16.8% of students with 10 or more risk factors were classified as delinquent, compared with less than 1% of students with three or fewer risk factors.

Protective factors had the expected effect (an inverse relationship) also, in that the likelihood of involvement in problem behaviors decreased as the number of protective factors increased. Of students with two or fewer protective factors, 26% were classified as gang involved, while of those with five or more protective factors, only 13% were classified as gang involved. The same pattern was found for gun involvement: Of students with two or fewer protective factors, 6.8% were classified as gun involved, compared with only 3.6% of those with five or more protective factors. Students with two or fewer protective factors were also more likely than those with five or more protective factors to be classified as delinquent (9.5% vs. 3.4%). In sum, this analysis shows that the greater the number of risk factors, the more likely students are to become

involved in problems behaviors, while greater numbers of protective factors decrease the likelihood of problem behaviors.

# Discussion

Findings from the current study suggested that the prevalence of gang involvement among school-enrolled Salvadoran youth was greater than in most developed countries. The current survey findings indicate that 19.6% of the Salvadoran student respondents were gang involved. (Also, about 5% of the students surveyed reported gun involvement, and about 8.5% reported delinquency.) The Salvadoran student gang-involvement rate was somewhat higher than those suggested by school-based survey results in Canada, the United States, and certain Western European countries, while it was about the same as rates found in other less developed nations. In a study of Trinidad and Tobago, for example, about 20% of public school youth fell into one of that study's gang involvement categories (Katz and Fox 2010). When making comparisons, however, one should consider that prior studies have measured gang involvement in different ways and have used varied sampling strategies and research designs.

## Risk Factors

***Gang involvement***. Twelve significant risk factor associations with gang involvement were found in three of the four domains: two in the community domain, four in the family domain, and six in the peer-individual domain; no risk factor associations were found in the school domain.

In the community domain, gang-involved students were more likely than others to report as risk factors *high community disorganization* and *availability of handguns*. Significant risk factors within the family domain for gang involvement included *family history of antisocial behavior, poor family management, parental attitudes favorable towards alcohol use,* and *parental attitudes favorable towards drug use*. In the peer-individual domain, gang-involved students were more likely than others to have elevated scores for six risk factors: *antisocial peers, peer drug use, peer alcohol use, rewards for antisocial involvement, depression outcome* and *sensation seeking*.

***Gun Involvement.*** Student respondents involved with guns reported significant risk factors in three domains—community, family and peer-individual; again, no risk factors in the school domain were significant. In the community domain, significant risk factors reported were

*perceived availability of handguns* and *perceived availability of drugs*. In the family domain, *poor family management* was the only significant risk factor. Four significant risk factors for gun involvement were found in the peer-individual domain: *antisocial peers, peer drug use, rewards for antisocial involvement,* and *sensation seeking*.

***Delinquency.*** A total of nine risk factors were significantly associated with delinquency: three in the community domain, two in the family domain, and four in the peer-individual domain; no risk factors in the school domain were found to be significant. In the community domain, significant risk factors were *high community disorganization, ready availability of guns,* and *laws and norms favorable to drugs*. In the family domain, delinquent students were more likely than others to have elevated scores for *family history of antisocial behavior* and *parental attitudes favoring antisocial behavior*. In the peer-individual domain, delinquent student scores were elevated for *rebelliousness, early initiation of antisocial behavior, attitudes favorable to antisocial behavior,* and *depression outcome*.

**Protective Factors**

Across all domains, six protective factors were found to have significant associations: four with gang involvement, one with gun involvement, and one with delinquency.

***Gang Involvement***. Within the community domain, gang-involved students had significantly higher protective-factor scores for *opportunities for pro-social involvement* and *rewards for pro-social involvement*. Within the school domain, those students had one significantly elevated score—the protective factor of *school opportunity for pro-social involvement*. Within the peer-individual domain, *interaction with pro-social peers* was significantly related to gang involvement—that is, students reporting more interaction with pro-social peers were less likely to be gang involved.

***Gun and Delinquency***. Significant associations were also found for protective factors within three domains. In the family domain, one protective factor for gang involvement was also protective for gun involvement—*rewards for pro-social involvement*. In the school domain, *school rewards for pro-social involvement* was protective for delinquency; students with elevated scores for this factor were less likely than others to be classified as delinquent.

## Unexpected Outcomes

Although analysis identified several risk and protective factors significantly associated with students' gang, gun and delinquency, in some cases the sign of the relationship turned out to be opposite of what was expected. For example, the *parental attitudes favorable to alcohol use* risk factor was, as expected, found to be positively associated with gang involvement; unexpectedly, however, the *parental attitudes favorable to drug use* risk factor was inversely related to gang involvement, with gang-involved students scoring lower than students not involved in gangs. Similarly, the *opportunity for pro-social involvement* and *rewards for pro-social involvement* risk factors were found to be positively associated with gang involvement, as was *school opportunity for pro-social involvement*. This finding seems counterintuitive, but it is consistent with a similar finding by Katz and Fox (2010) in their Trinidad and Tobago study in which gang-involved youth were found to be more likely than non-gang youth to report living in communities with rewards for pro-social opportunities and greater opportunities for pro-social involvement in their schools. The researchers found the same pattern for gang-involved youth with respect to rewards for pro-social involvement within the family.

In the current study, that association was found not for gang-involved youth, but for gun-involved youth. As Katz and Fox pointed out, some research literature suggests that group activity can promote increased involvement in gangs. Indeed, some evaluations of group activity designed to reduce participation in gangs (e.g., a sports team) suggest a “backfire” effect in which the group activity leads to increased gang involvement. The underlying mechanism for this phenomenon is not clearly understood. It has been described in some circles as a type of peer contagion, in which at-risk youth in a group are influenced by other already-delinquent youth (Dishion and Dodge 2005; Klein 1995).

### Study Limitations

The research design for the present study had several strengths, including the use of a large national school-based sample; still, it had some noteworthy limitations as well. First, the study used a cross-sectional design; therefore, causality between risk and protective factors and behavior outcomes could not be determined. At best, the design could only identify the association of risk and protective factors with the outcome variables of gang and gun involvement and criminal/delinquent behaviors. Second, the sampling design did not allow generalizing to school-aged youth who were not in school at the time the survey was

administered; the absent students, in fact, could have been disproportionately involved in gangs, with guns, and in criminal and delinquent behaviors. Third, the length of the survey caused several students to be unable to complete it; others indicated that they had not been honest in their responses. Together, those factors resulted in a significant amount of missing data. The approach taken here to omit surveys with missing data was restrictive and substantially reduced the sample size used in the analyses reported. On the other hand, this approach contributed to the robustness of findings that might otherwise have influenced the use of missing data imputation strategies. This possibility is one that will need further exploration. Fourth, some scholars have criticized the risk and protective factor paradigm as being overly concerned with individual factors in contrast with social and structural factors (e.g., Haines and Case 2008).

# Conclusion

The El Salvador Youth Survey (ESYS) has generated a rich database of information useful for addressing many of the issues associated with the behaviors of school-aged youth in El Salvador. Even considering this study's limitations, ESYS data offer important opportunities for scholars and policy analysts to conduct additional analyses to better understand and explain the self-reported gang and gun involvement and criminal or delinquent behaviors of school-aged Salvadoran youth. More importantly, the data provide policymakers and program designers with an empirical foundation upon which to build effective intervention programs for preventing and reducing the engagement of Salvadoran youth in risky behaviors.

Successful implementation of the ESYS has demonstrated the feasibility and utility of establishing a national database. Consideration should be given to administering the survey every few years in order to monitor trends and gauge the impacts of ongoing policy and programmatic changes and innovations. The findings from the ESYS, using the risk and protective factor paradigm, provide policymakers and program planners in El Salvador with clear evidence-based guidance for reducing the risks associated with the country's school-aged youth becoming involved with gangs, guns, and crime and delinquency and for increasing the protective factors that tend to shield Salvadoran youth from such involvement.

Numerous prevention and intervention programs designed with the risk and protective factor paradigm have proved effective in other settings, especially in North America. These programs focus on specific risk and protective factors linked to troublesome youth behaviors. It

is not clear that duplicating those programs would be successful in El Salvador, which has its own unique cultural context. Salvadoran experts and officials can examine those evidence-based programs and policies to determine their fit within the local context, however, and can adapt the more promising of them to enhance their utility for El Salvador. In sum, findings from the ESYS have provided opportunities for scholars and policymakers alike to use sound social science data to inform their understanding of and responses to the problem of El Salvador's youth involvement with gangs, guns, and crime and delinquency.

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# Appendix A. Scales and Items Included in Scales

**Risk Factors**

**Community**

**Low neighborhood attachment:**

I like my neighborhood (reverse coded).

If I had to live somewhere else, I would miss the neighborhood I currently live in (reverse coded).

I'd like to leave my neighborhood.

I feel safe in my neighborhood (reverse coded).

**High community disorganization:**

Crime and/or selling drugs.

Fights.

Many empty and abandoned buildings.

A lot of graffiti.

Presence of gangs.

**Mobility:**

Have you changed homes in the past year?

**Laws and norms favorable to drugs:**

Use marijuana?

Drink alcohol?

If a boy/girl drinks beer or wine in your neighborhood will the police catch them? (reverse coded)

If a boy/girl smokes marijuana in your neighborhood will the police catch them? (reverse coded)

If a boy/girl carries a gun in your neighborhood will the police catch them? (reverse coded)

**Perceived availability of handguns:**

How easy to get a handgun?

**Perceived availability of drugs:**

Some beer, wine or spirits.

Some marijuana.

Drugs like cocaine or crack.

**School**

**Academic failure:**

Putting all your grades together, how are your grades this year? (reverse coded)

**Low commitment to school:**

How interesting do you think most of your classes are?

How much do you think the things you're learning in school will serve in the future of your life?

How often did you feel that your studies were significant and important? (reverse coded)

How often did you enjoy being in school? (reverse coded)

How often did you hate being at school?

How often did you work on your studies? (reverse coded)

**Family**

**Family of history of antisocial behavior:**

Used marijuana, crack, cocaine, or other drugs.

Sold or manufactured drugs.

Have done other things that would get them in trouble with the police such as, stealing, sold stolen things, or assaulted others.

Have been drunk or high.

**Poor family management:**

My parents ask me if I finished my homework. (reverse coded)

Your parents would notice if you didn't come home on time. (reverse coded)

When I'm not home, my mother and father know where I am and who I am with. (reverse coded)

The rules in my family are clear. (reverse coded)

My family has clear rules about drug and alcohol use. (reverse coded)

If you drank alcohol without your parents' permission, would they find out. (reverse coded)

If you missed school, would your parents find out? (reverse coded)

If you carried a gun without the permission of your parents, would they find out? (reverse coded)

**High family conflict:**

People in my family often insult and yell.

People in my family have serious issues.

In my family, we argue about the same topic over and over.

**Parental attitudes favorable towards drug use:**

How bad do your parents or guardians think these are for you? Regularly drink beer, wine, liquor.

**Parental attitudes favorable towards alcohol use:**

How bad do your parents or guardians think these are for you? Smoke marijuana.

**Parental attitudes favor antisocial behavior:**

Steal something worth more than $30?

Paint graffiti, draw things, or write things on other property without permission?

How bad do your parents or guardians think these are for you?

**Peer-individual**

**Rebelliousness scale**

I do the opposite of what people say, just to make them mad.

I ignore the rules that are set in place.

I like to see if I can get away with my will.

**Early initiation of antisocial behavior scale:**

How old were you when you first? Got suspended from school (reverse coded)

How old were you when you first? Got arrested (reverse coded)

How old were you when you first? Walked around with a gun (reverse coded)

How old were you when you first? Attacked someone with the intent of giving them a serious injury (reverse coded)

**Early initiation of drug use scale:**

How old were you when you first? Smoked marijuana (reverse coded)

How old were you when you first? Used cocaine or crack (reverse coded)

**Early initiation of alcohol use scale:**

How old were you when you first? Had more than one or two drinks of beer, wine or liquor (reverse coded)

How old were you when you first? Started drinking alcohol once or twice a month (reverse coded)

**Attitudes favorable to antisocial behavior scale:**

How wrong do you think it is for someone your age to bring a gun to school?

How wrong do you think it is for someone your age to steal something worth more than $30?

How wrong do you think it is for someone your age to try to fight someone?

How wrong do you think it is for someone your age to attack someone with intent to do serious harm?

How wrong do you think it is for someone your age to miss school all day without their parents knowing?

**Attitudes favorable to drug use scale:**

How wrong do you think it is for someone your age to smoke marijuana?

How wrong do you think it is for someone your age to use cocaine or crack?

**Attitudes favorable to alcohol use scale:**

How wrong do you think it is for someone your age to drink beer, wine or liquor regularly?

**Intention to use drugs scale:**

When you become an adult will you smoke marijuana?

**Intention to use alcohol scale:**

When you become an adult will you drink beer, wine or liquor?

**Peer-individual risk: perceived risk of drug use scale:**

How much of a risk do you think it is to people if they try marijuana once or twice?

How much of a risk do you think it is to people if they smoke marijuana regularly?

How much of a risk do you think it is to people if they take a drink or two of alcohol almost daily?

**Antisocial peers scale:**

Your friends got suspended or expelled from school in the last year.

Your friends carried around a gun in the last year.

Your friends sold illegal drugs in the last year.

Your friends robbed or tried to rob a car or motorcycle in the last year.

Your friends were arrested by the police in the last year.

Your friends left school in the last year.

**Peers drug use scale:**

Your friends used marijuana in the last year.

Your friends used cocaine, crack or other illegal drugs.

**Peers alcohol use scale:**

Your friends tried beer, wine or liquor without their parents knowing in the last year.

**Rewards for antisocial involvement scale:**

What are the chances others will consider you popular if you start drinking alcohol regularly, such as once or twice a month?

What are the chances others will consider you popular if you smoke marijuana?

What are the chances others will consider you popular if you walk around with a gun?

**Depression outcome:**

Sometimes I don't feel like living any more.

Sometimes I think I am not good for anything.

In the end, I am inclined to think I am a failure.

In the past year, have you felt depressed or sad most days?

**Sensation seeking scale:**

You do what feels good no matter what.

You do something dangerous because you're dared to.

You do crazy things even if they are dangerous.

**Impulsivity:**

For me it is important to think before acting. (reverse coded)

## Protective Factors

### Community

**Opportunity for involvement:**

Are there any sports activities for people of your age in the community where you live? (reverse coded)

Are there group activities for people your age in your community? (reverse coded)

**Rewards for pro-social involvement:**

My neighbors notice when I do something right and tell me.

There are people who motivate me to do better.

I like my neighborhood.

There are many adults I can talk to around me.

### School

**School opportunity for pro-social involvement:**

In my school, students have opportunities to comment on school rules and activities.

There are opportunities to talk to the teacher individually.

Teachers ask me to do special projects.

There are opportunities for sports and clubs outside of class.

I have many opportunities to be part of discussions and class activities.

**School rewards for pro-social involvement:**

My teacher tells me when I do something well.

The school tells my parents when I do something good.

I feel safe in my school.

My teachers praise me when I work on my studies.

### Family

**Family attachment scale:**

Do you feel close to your mother?

Do you share your feelings and thoughts with your mother?

Do you feel close to your father?

Do you share your feelings and thoughts with your father?

**Family opportunities for pro-social involvement scale:**

My parents give me opportunities to do fun things with them.

My parents ask me what I think before making family decisions that will affect me.

If you had a problem you could seek help from your mother or father.

**Rewards for pro-social involvement scale:**

Do your parents notice when you do well in your studies and say it to you?

How often do your parents say they are proud of you?

**Peer-individual**

**Religiosity scale:**

Attend religious ceremonies.

**Social skills scale:**

Imagine that you are browsing CDs in a music store with a friend. You notice she puts a CD in her bag. She smiles at you and says, "Which one do you want? Grab it now that no one is watching." There are no customers or employees around. What do you do?

It is 8:00pm on a weeknight, and are about to go to a friend's house when your mother (or who you consider your mother) asks you where you're going. You tell her, "out with my friends." She tells you, "No, you only get into trouble if you go with him. Stay home." What would you do?

You are visiting another part of the country, and you don't know anyone your age. You are walking down the street and a teenager whom you do not know is walking towards you. She/he is about your size and bumps into you and you almost fall. What would you do?

You're at a party at someone's house, and one of your friends offers you a drink containing alcohol. What would you do?

**Belief in moral order scale:**

It is okay to take something without asking if no one sees. (reverse coded)

Is it acceptable to beat up people if they started it? (reverse coded)

For me it is important to think before acting. (reverse coded)

It's important to be honest with you parents even if it upsets them and you get in trouble.

**Rewards for pro-social involvement:**

What are the chances others will consider you popular if you defend someone who is being bullied at school?

What are the chances others will consider you popular if you are very diligent in your studies?

What are the chances others will consider you popular if you do community service?

What are the chances others will consider you popular if you participate in some artistic or cultural activity?

What are the chances others will consider you popular if you are very good in sports?

What are the chances others will consider you popular if you get good grades in math or science?

What are the chances others will consider you popular if you do community service?

**Interaction with pro-social peers:**

Your friends participated in school activities, organizations or groups.

Your friends pledged to be drug-free.

Your friends struggled to get good grades in school.

Your friends liked school.

Your friends regularly attended religious activities.
Your friends participated in sports.
Your friends participated in an artistic or cultural activity.

# Appendix B. Scales Descriptive Statistics

| Domains and Scales | Items | Range | Mean | SD | Cronbach's Alpha |
|---|---|---|---|---|---|
| **Risk Factors** | | | | | |
| **Community** | | | | | |
| Low neighborhood attachment | 4 | 1-4 | 1.943 | 0.744 | 0.602 |
| High Community disorganization | 5 | 1-4 | 1.740 | 0.724 | 0.776 |
| Mobility | 1 | 0-1 | 0.079 | 0.270 | NA |
| Laws and norms favorable to drugs | 5 | 1-4 | 1.841 | 0.673 | 0.734 |
| Perceived availability of handguns | 1 | 1-4 | 1.229 | 0.634 | NA |
| Perceived availability of drugs | 3 | 1-4 | 1.332 | 0.676 | 0.862 |
| **School** | | | | | |
| Academic Failure | 1 | 1-5 | 2.065 | 0.702 | NA |
| Low commitment to school | 6 | 1-5 | 1.776 | 0.490 | 0.617 |
| **Family** | | | | | |
| Family of history of antisocial behavior | 4 | 1-5 | 1.417 | 0.779 | 0.815 |
| Poor family management | 8 | 1-4 | 1.740 | 0.715 | 0.846 |
| High family conflict | 3 | 1-4 | 1.907 | 0.815 | 0.667 |
| Parental attitudes favorable towards alcohol use | 1 | 1-4 | 1.162 | 0.497 | NA |
| Parental attitudes favorable towards drug use | 1 | 1-4 | 1.099 | 0.399 | NA |
| Parental attitudes favor antisocial behavior | 3 | 1-4 | 1.277 | 0.467 | 0.670 |
| **Peer-individual** | | | | | |
| Rebelliousness scale | 3 | 1-4 | 1.561 | 0.678 | 0.692 |
| Early initiation of antisocial behavior scale | 4 | 1-9 | 8.852 | 0.555 | 0.508 |
| Early initiation of drug use scale | 2 | 1-9 | 8.764 | 0.842 | 0.419 |
| Early initiation of alcohol use scale | 2 | 1-9 | 8.250 | 1.423 | 0.461 |
| Attitudes favorable to antisocial behavior scale | 5 | 1-4 | 1.358 | 0.490 | 0.790 |
| Attitudes favorable to drug use scale | 2 | 1-4 | 1.193 | 0.529 | 0.793 |
| Attitudes favorable to alcohol use scale | 1 | 1-4 | 1.441 | 0.798 | NA |
| Intention to use drugs scale | 1 | 1-4 | 1.203 | 0.554 | NA |
| Intention to use alcohol scale | 1 | 1-4 | 1.445 | 0.792 | NA |
| Perceived risk of drug use scale | 3 | 1-4 | 3.301 | 0.822 | 0.804 |
| Antisocial peers scale | 6 | 0-4 | 0.154 | 0.361 | 0.612 |
| Peers drug use scale | 2 | 0-4 | 0.249 | 0.691 | 0.599 |
| Peers alcohol use scale | 1 | 0-4 | 0.564 | 1.134 | NA |
| Rewards for antisocial involvement scale | 3 | 1-5 | 1.287 | 0.677 | 0.716 |
| Depression outcome | 4 | 1-4 | 1.971 | 0.878 | 0.800 |
| Sensation seeking scale | 3 | 1-6 | 2.013 | 1.031 | 0.507 |
| Impulsivity | 1 | 1-4 | 1.511 | 0.789 | NA |

| | | | | | |
|---|---|---|---|---|---|
| **Protective Factors** | | | | | |
| **Community** | | | | | |
| Opportunity for involvement | 2 | 1-2 | 1.546 | 0.428 | 0.674 |
| Rewards for involvement | 4 | 1-4 | 2.777 | 0.879 | 0.765 |
| **School** | | | | | |
| School opportunity for pro-social involvement | 5 | 1-4 | 2.929 | 0.712 | 0.726 |
| School rewards for pro-social involvement | 4 | 1-4 | 3.104 | 0.767 | 0.786 |
| **Family** | | | | | |
| Family attachment scale | 4 | 1-4 | 2.966 | 0.876 | 0.792 |
| Family opportunities for pro-social involvement scale | 3 | 1-4 | 3.114 | 0.883 | 0.786 |
| Rewards for pro-social involvement scale | 2 | 1-4 | 3.101 | 0.804 | 0.623 |
| **Peer-individual** | | | | | |
| Religiosity scale | 1 | 1-4 | 2.611 | 1.156 | NA |
| Social skills scale | 4 | 1-4 | 2.513 | 0.443 | 0.153 |
| Belief in moral order scale | 4 | 1-4 | 3.439 | 0.573 | 0.492 |
| Rewards for pro-social involvement | 7 | 1-5 | 3.358 | 0.730 | 0.686 |
| Interaction with pro-social peers | 7 | 0-4 | 2.476 | 0.913 | 0.715 |

# Appendix C. Scale Cut Points

**(n=6268)**

| Domains and Scales | Low Risk | High Risk | Low Protection | Protection |
|---|---|---|---|---|
| **Risk Factors** | | | | |
| **Community** | | | | |
| Low neighborhood attachment | 73.3 | 26.7 | | |
| High community disorganization | 68.1 | 31.9 | | |
| Mobility | 92.1 | 7.9 | | |
| Laws and norms favorable to drugs | 65.7 | 34.3 | | |
| Perceived availability of handguns | 85.4 | 14.6 | | |
| Perceived availability of drugs | 72.7 | 27.3 | | |
| **School** | | | | |
| Academic failure | 77.3 | 22.7 | | |
| Low commitment to school | 57.6 | 42.4 | | |
| **Family** | | | | |
| Family of history of antisocial behavior | 58.5 | 41.5 | | |
| Poor family management | 64.7 | 35.3 | | |
| High family conflict | 48.4 | 51.6 | | |
| Parental attitudes favorable towards alcohol use | 88.3 | 11.7 | | |
| Parental attitudes favorable towards drug use | 92.8 | 7.2 | | |
| Parental attitudes favor antisocial behavior | 61.9 | 38.1 | | |
| **Peer-individual** | | | | |
| Rebelliousness scale | 57.6 | 42.4 | | |
| Early initiation of antisocial behavior scale | 88.7 | 11.3 | | |
| Early initiation of drug use scale | 90.3 | 9.7 | | |
| Early initiation of alcohol use scale | 70.0 | 30.0 | | |
| Attitudes favorable to antisocial behavior scale | 61.2 | 38.8 | | |
| Attitudes favorable to drug use scale | 84.1 | 15.9 | | |
| Attitudes favorable to alcohol use scale | 71.6 | 28.4 | | |
| Intention to use drugs scale | 85.3 | 14.7 | | |
| Intention to use alcohol scale | 71.1 | 28.9 | | |
| Perceived risk of drug use scale | 64.1 | 35.9 | | |
| Antisocial peers scale | 70.4 | 29.6 | | |
| Peers drug use scale | 83.4 | 16.6 | | |
| Peers alcohol use scale | 74.6 | 25.4 | | |
| Rewards for antisocial involvement scale | 76.3 | 23.7 | | |
| Depression outcome | 67.9 | 32.1 | | |
| Sensation seeking scale | 60.8 | 39.2 | | |
| Impulsivity | 62.4 | 37.6 | | |

| | | |
|---|---|---|
| **Protective Factors** | | |
| **Community** | | |
| Opportunity for involvement | 58.4 | 41.6 |
| Rewards for involvement | 61.8 | 38.2 |
| **School** | | |
| School opportunity for pro-social involvement | 67.8 | 32.2 |
| School rewards for pro-social involvement | 68.8 | 31.2 |
| **Family** | | |
| Family attachment scale | 63.0 | 37.0 |
| Family opportunities for pro-social involvement scale | 68.8 | 31.2 |
| Rewards for pro-social involvement scale | 52.0 | 48.0 |
| **Peer-individual** | | |
| Religiosity scale | 64.9 | 35.1 |
| Social skills scale | 59.2 | 40.8 |
| Belief in moral order scale | 53.1 | 46.9 |
| Rewards for pro-social involvement | 64.8 | 35.2 |
| Interaction with pro-social peers | 65.3 | 34.7 |

# Appendix D: Logistic regression for gang membership by risk and protective factors

| Risk Factors | B (SE) | Exp (B) | Sig. |
|---|---|---|---|
| **Community** | | | |
| Low neighborhood attachment | .182(.105) | 1.199 | |
| High Community disorganization | .641(.094) | 1.899 | ** |
| Mobility | .065(.155) | 1.067 | |
| Laws and norms favorable to drugs | .118(.095) | 1.126 | |
| Perceived availability of handguns | .302(.136) | 1.353 | * |
| Perceived availability of drugs | .144(.120) | 1.155 | |
| **School** | | | |
| Academic Failure | .059(.103) | 1.061 | |
| Low commitment to school | -.053(.099) | 0.948 | |
| **Family** | | | |
| Family of history of antisocial behavior | .431(.095) | 1.539 | ** |
| Poor family management | .633(.104) | 1.883 | ** |
| High family conflict | .013(.095) | 1.013 | |
| Parental attitudes favorable towards alcohol use | .350(.168) | 1.42 | * |
| Parental attitudes favorable towards drug use | -.374(.143) | .688 | ** |
| Parental attitudes favor antisocial behavior | .167(.101) | 1.182 | |
| **Peer-individual** | | | |
| Rebelliousness scale | .051(.097) | 1.05 | |
| Early initiation of antisocial behavior scale | -.003(.006) | .997 | |
| Attitudes favorable to antisocial behavior scale | .021(.102) | 1.021 | |
| Attitudes favorable to drug use scale | .237(.123) | 1.267 | |
| Attitudes favorable to alcohol use scale | .001(.000) | 1.001 | |
| Intention to use drugs scale | .000(.001) | 1.000 | |
| Intention to use alcohol scale | -.001(.001) | .999 | |
| Perceived risk of drug use scale | .000(.001) | 1.000 | |
| Antisocial peers scale | .817(.093) | 2.265 | ** |
| Peers drug use scale | .669(.114) | 1.953 | ** |
| Peers alcohol use scale | .470(.103) | 1.600 | ** |
| Rewards for antisocial involvement scale | .317(.102) | 1.373 | ** |
| Depression outcome | .369(.093) | 1.446 | ** |
| Sensation seeking scale | .253(.090) | 1.287 | * |

| | | | |
|---|---|---|---|
| Impulsivity | .119(.103) | 1.126 | |
| **Protective Factors** | | | |
| **Community** | | | |
| Opportunity for prosocial involvement | .202(.089) | 1.223 | * |
| Rewards for prosocial involvement | .217(.107) | 1.243 | * |
| **School** | | | |
| School opportunity for prosocial involvement | .325(.112) | 1.384 | ** |
| School rewards for prosocial involvement | -.130(.118) | .878 | |
| **Family** | | | |
| Family attachment scale | -.019(.118) | .981 | |
| Family opportunities for prosocial involvement scale | .171(.128) | 1.186 | |
| Rewards for prosocial involvement scale | -.097(.099) | .907 | |
| **Peer-individual** | | | |
| Religiosity scale | -.179(.095) | .836 | |
| Rewards for prosocial involvement | -.009(.102) | .991 | |
| Interaction with prosocial peers | -.298(.102) | .743 | ** |
| Intercept | -3.601(.176) | | |
| $\chi^2$ | 1058.863 | | |
| df | 39 | | |
| Nagelkerke R Square | 0.327 | | |

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

# Appendix E. Logistic regression for gun involvement by risk and protective factors

| **Risk Factors** | B (SE) | Exp (B) | Sig. |
|---|---|---|---|
| **Community** | | | |
| Low neighborhood attachment | .137(.168) | 1.147 | |
| High Community disorganization | .252(.164) | 1.287 | |
| Mobility | .152(.244) | 1.164 | |
| Laws and norms favorable to drugs | .368(.156) | 1.444 | |
| Perceived availability of handguns | 1.147(.212) | 3.150 | ** |
| Perceived availability of drugs | -.514(.221) | 0.598 | * |
| **School** | | | |
| Academic Failure | .103(.165) | 1.109 | |
| Low commitment to school | .123(.168) | 1.131 | |
| **Family** | | | |
| Family of history of antisocial behavior | -.075(.167) | 0.928 | |
| Poor family management | .817(.176) | 2.265 | ** |
| High family conflict | .182(.159) | 1.199 | |
| Parental attitudes favorable towards alcohol use | .111(.249) | 1.118 | |
| Parental attitudes favorable towards drug use | .066(.215) | 1.068 | |
| Parental attitudes favor antisocial behavior | -.054(.172) | .948 | |
| **Peer-individual** | | | |
| Rebelliousness scale | -.147(.169) | 0.86 | |
| Early initiation of antisocial behavior scale | -.002(.007) | .998 | |
| Attitudes favorable to antisocial behavior scale | .248(.173) | 1.282 | |
| Attitudes favorable to drug use scale | .083(.198) | 1.087 | |
| Attitudes favorable to alcohol use scale | -.001(.001) | 0.999 | |
| Intention to use drugs scale | .001(.001) | 1.0001 | |
| Intention to use alcohol scale | -.006(.013) | .994 | |
| Perceived risk of drug use scale | .000(.001) | 1.000 | |
| Antisocial peers scale | .422(.162) | 1.525 | ** |
| Peers drug use scale | .584(.193) | 1.793 | ** |
| Peers alcohol use scale | .056(.179) | 1.057 | |
| Rewards for antisocial involvement scale | .598(.170) | 1.818 | ** |
| Depression outcome | .060(.157) | 1.062 | |
| Sensation seeking scale | .392(.154) | 1.480 | * |
| Impulsivity | -.002(.168) | .998 | |

| | | | |
|---|---|---|---|
| **Protective Factors** | | | |
| **Community** | | | |
| Opportunity for pro-social involvement | .218(.147) | 1.244 | |
| Rewards for pro-social involvement | .116(.183) | 1.122 | |
| **School** | | | |
| School opportunity for pro-social involvement | -.368(.202) | .692 | |
| School rewards for pro-social involvement | .333(.202) | 1.396 | |
| **Family** | | | |
| Family attachment scale | .070(.204) | 1.073 | |
| Family opportunities for pro-social involvement scale | .143(.221) | 1.153 | |
| Rewards for pro-social involvement scale | .320(.163) | 1.377 | * |
| **Peer-individual** | | | |
| Religiosity scale | -.153(.162) | .858 | |
| Rewards for pro-social involvement | -.015(.172) | .985 | |
| Interaction with pro-social peers | -.049(.173) | .952 | |
| | | | |
| Intercept | -4.923(.302) | | |
| □□ | 272.339 | | |
| df | 39 | | |
| Nagelkerke R Square | 0.176 | | |

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

# Appendix F. Logistic regression for delinquency by risk and protective factors

| **Risk Factors** | B (SE) | Exp (B) | Sig. |
|---|---|---|---|
| **Community** | | | |
| Low neighborhood attachment | -.036(.177) | 0.965 | |
| High Community disorganization | .517(.164) | 1.677 | ** |
| Mobility | .033(.263) | 1.034 | |
| Laws and norms favorable to drugs | .390(.160) | 1.477 | * |
| Perceived availability of handguns | .417(.196) | 1.517 | * |
| Perceived availability of drugs | .106(.207) | 1.111 | |
| **School** | | | |
| Academic Failure | .098(.166) | 1.103 | |
| Low commitment to school | .267(.177) | 1.306 | |
| **Family** | | | |
| Family of history of antisocial behavior | .617(.180) | 1.854 | ** |
| Poor family management | .112(.176) | 1.119 | |
| High family conflict | .177(.176) | 1.193 | |
| Parental attitudes favorable towards alcohol use | -.104(.243) | 0.901 | |
| Parental attitudes favorable towards drug use | .101(.207) | 1.107 | |
| Parental attitudes favor antisocial behavior | .394(.176) | 1.482 | * |
| **Peer-individual** | | | |
| Rebelliousness scale | .751(.189) | 2.12 | ** |
| Early initiation of antisocial behavior scale | 1.862(.168) | 6.438 | ** |
| Attitudes favorable to antisocial behavior scale | .585(.185) | 1.796 | ** |
| Attitudes favorable to drug use scale | .150(.200) | 1.162 | |
| Attitudes favorable to alcohol use scale | -.199(.188) | 0.820 | |
| Intention to use drugs scale | -.079(.221) | .924 | |
| Intention to use alcohol scale | .024(.186) | 1.024 | |
| Perceived risk of drug use scale | .028(.206) | 1.028 | |
| Antisocial peers scale | .244(.171) | 1.277 | |
| Peers drug use scale | .036(.195) | 1.036 | |
| Peers alcohol use scale | .261(.181) | 1.298 | |
| Rewards for antisocial involvement scale | .295(.176) | 1.343 | |
| Depression outcome | .444(.160) | 1.559 | ** |
| Sensation seeking scale | -.117(.164) | .890 | |
| Impulsivity | -.038(.170) | .963 | |

| | | | |
|---|---|---|---|
| **Protective Factors** | | | |
| **Community** | | | |
| Opportunity for pro-social involvement | .273(.154) | 1.314 | |
| Rewards for pro-social involvement | -.075(.193) | .927 | |
| **School** | | | |
| School opportunity for pro-social involvement | .268(.195) | 1.308 | |
| School rewards for pro-social involvement | -.425(.217) | .654 | * |
| **Family** | | | |
| Family attachment scale | .343(.213) | 1.409 | |
| Family opportunities for pro-social involvement scale | .101(.235) | 1.106 | |
| Rewards for pro-social involvement scale | -.100(.179) | .905 | |
| **Peer-individual** | | | |
| Religiosity scale | -.170(.168) | .844 | |
| Rewards for pro-social involvement | .054(.189) | 1.055 | |
| Interaction with pro-social peers | -.119(.187) | .888 | |
| Intercept | -6.075(.375) | | |
| $\chi^2$ | 719.692 | | |
| df | 39 | | |
| Nagelkerke R Square | 0.404 | | |

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