Exploring School Resilience to Violence in Mexico and Colombia. An analysis using data from ICCS 2009

Andrés Sandoval-Hernández
IEA-DPC

Introduction

Violence and organized crime (e.g. drug trafficking and kidnaping) are among the most persistent problems across Latin American countries, especially in Mexico and Colombia. Many cities and regions in these two countries are recognized as violent places. For example according to The Eighth United Nations Survey on Crime Trends and the Operations of Criminal Justice Systems, Mexico and Colombia ranked first and third place in the total recorded intentional homicides committed with a firearm, respectively (UNODC, 2005).

According to Reimers (2007) growing up in a society with high levels of violence has implications for the development of citizenship competencies and attitudes. Research over the past 15 years has consistently shown exposure to violence, as a witness or a victim, is strongly associated to aggressive, delinquent and violent behavior (Flannery, et al., 2007). Data from the ICCS 2009 Latin American Report (Schulz, Ainley, Friedman and Lietz, 2011) reveals that more than one third of students experienced physical aggression at school during the month prior to the survey in Colombia (33%) and Mexico (45%). According to the same report, in both countries, the promotion of peaceful relationships among students is explicitly recognized as one of the main aims of civic and citizenship education.

The question is then; to what extent it is possible to prevent violence among adolescents who are immersed in a violent society? More specifically, can schools play a role in reducing the risk of violent behavior in their students? Resiliency against violence is a useful concept for exploring these questions.

It can be said that someone is resilient to violence if despite being in a violent environment do not present violent behavior. Along these lines, research on the topic has demonstrated that violence is associated with certain risk factors (Farrington et al., 2006), for example students

with low academic performance, school located in urban and socially disadvantaged areas, social tension in the community, etc.).

There is a more or less general consensus regarding the individual factors related to individual resiliency against violence. Caring relationships and high expectations are among the most individual factors more consistently associated to resiliency against violence. Research shows that developing relationships with caring adults protects "at-risk" youth against engaging in violent activities (Williams, Stiffman and O'Neal, 1998). Students who feel they are a part of their school and are treated fairly by teachers are less inclined towards involvement in violence (Catalano and Hawkins, 1996). The same authors state that students whose parents express high expectations for their performance at school are less likely to engage in violent behavior.

Although the phenomenon of individual resiliency to violence has been widely explored in the literature the same level of inquiry has not emerged at the organizational level, especially within school environments. Nevertheless, some studies suggest that activities that involve students in decisions about school and participation in school based and community networks are important to helping create a school climate of inclusion, respect, and safety (Nettles, 1991).

Objectives

In order to contribute to identify school factors associated to resilience against violence, this work has the next objectives:

- First to estimate, for Colombia and Mexico, the proportion of schools that are in a high-risk of experiencing violence; and then, among such schools, the proportion that manage to remain resilient to violence.

- Second, to identify and compare the factors more consistently associated with school resiliency against violence in both countries.

Methods

First, we isolate a high-risk cohort of schools and seek to understand how different factors insulate these institutions from experiencing violence. Using a cohort of high-risk schools is appropriate because we should expect to observe the effects of protective factors to emerge most strongly within this cohort.

Then we use a set of variables measuring different protective factors in a cluster robust logistic regression model to predict school resiliency to violence. We use sampling and replicate weights to account for the complex sample design and for the hierarchal structure of the data.

Data

We use data from the IEA's International Civic and Citizenship Education Study (ICCS). ICCS is a large-scale study of pupil knowledge and understanding, dispositions, attitudes, and family background which was administered across 38 countries worldwide (see Schulz, et al., 2011). Additional contextual data were collected using surveys of principals and teachers of the sampled schools.

Sample

The present study uses data from a subset of schools identified as 'high-risk'. High-risk schools were differentiated from their low-risk counterparts by their scores in a scale measuring the principal's perceptions of social tension in the community. Because the school is part of the community it is located in, it tends to be affected by community-based issues and problems (Schulz, Ainley, Fraillon, Kerr and Losito, 2010). For this study we considered that the presence of issues of social tension within the local community increase the risk of violence both outside and inside the school. Therefore, schools with a score higher than the national mean were considered as schools in high risk of experiencing violence. Only 'high-rick' schools were included in the sample. In this way, the final sample used for this study had 171 and 165 schools for Mexico and Colombia, respectively.

Measures

Dependent variable

The dependent variable was Resilience. This is a dichotomous variable indicating whether a school is resilient to violence. A school was considered to be resilient to violence if it presented two characteristics: high risk of violence *and* low incidence of violence.

As mentioned before, a school was considered to be in high risk of violence if it scored higher than the national average in the scale "principal's perceptions of social tension in the community" (COMSOCT). This scale summarizes a set of items asking principals to what extent—"large," "moderate," "small"—issues of social tension existed in the school's wider community. The issues listed in the two questions were:

- Immigration;
- Poor-quality housing;
- Unemployment;
- Religious intolerance;
- Ethnic conflicts;
- Extensive poverty;

- Organized crime;
- Youth gangs;
- Petty crime;
- Sexual harassment;
- Drug abuse;
- Alcohol abuse.

In turn, a school was considered to have low incidence of violence if it scored lower that the national average in the scale “principals' perceptions of social problems at school” (CSCPROB). This measure, based on a school was derived from principals’ ratings (“to a large extent,” “to a moderate extent,” “to a small extent,” “not at all”) of statements reflecting nine indicators of violent related behavior in the school.

- Vandalism;
- Truancy;
- Racism;
- Religious intolerance;
- Bullying;
- Violence;
- Sexual harassment;
- Drug abuse;
- Alcohol abuse.

Independent variables

We used the next set of school characteristics to predict the probability of a school to remain resilient to violence. We consider these 5 characteristics to be amenable to schools’ actions.

Principals' perceptions of student influence on decisions about school (CSTUDINF). This scale summarizes the answers of principals to the question: how much are students’ opinions taken into account when decisions are made about the following issues?

- Teaching/learning materials;
- The timetable;
- Classroom rules;
- School rules;
- Extra-curricular activities.

Principals' perceptions of parents' participation in the school life (SCPARACT). This scale summarizes the answers of principals to the question: In your opinion, how many parents of students in this school participate in the following activities?

- Taking part actively in the school parent association;
- Voting in school council elections;
- Supporting school projects within the local community;
- Attending school parent association meetings;
- Attending parent-teacher meetings.

Principals' perceptions of student opportunities to participate in community activities (SCSTUDOP). This scale summarizes the answers of principals to the question: During the current school year, have you and any of your classes taken part in any of these activities?

- Activities related to the environment, geared to the local area;
- Human rights projects;
- Activities related to underprivileged people or groups;
- Cultural activities;
- Multicultural and intercultural initiatives within the local community;
- Campaigns to raise people's awareness, such as AIDS World Day, World No Tobacco Day;
- Activities related to improving facilities for the local community.

Principals' perceptions of teacher participation in school governance (SCTCPART). This scale summarizes the answers of principals to the question: In your opinion, how many teachers in this school:

- make their own contribution to solving school problems?
- put forward useful suggestions for improving school governance?
- contribute to establishing school priorities?
- support good discipline throughout the school even with students not belonging to their own class or classes?
- act to resolve conflict situations arising among the students in the school?
- actively take part in school development/improvement activities?
- encourage students' active participation in school life?

Principals' perceptions of student behavior at school (CSTUDBEH). This scale summarizes the answers of principals to the question: In your opinion, how many students in this school:

- are well behaved on entering and leaving the school premises?
- adhere to school rules?
- show care for school facilities and equipment?
- are well behaved during breaks?

Control variables

Finally, we included the school socioeconomic composition and the resources available in the community as control variables. In contrast to the independent variables, we consider these two characteristics not to be amenable to schools' actions.

The availability of resources in local community (RESCOM) was measured through the answers of principals to the following question: Are the following resources available in the local area where this school is located?

- Public library;
- Cinema;
- Theatre or Concert Hall,
- Language school;
- Museum or Art Gallery;

- Public garden or Park.

The socioeconomic composition of the school was measured by estimating the school average of the National index of socio-economic background (NISB) to the school level. This index includes information about the parents' highest occupational status, the highest parental educational level, and the number of books at home.

All scales were estimated using Item Response Theory (IRT) procedures with weighted likelihood estimation (WLE) scores and have a mean of 50 and standard deviation of 10 for equally weighted countries.

Model

We used probit regression models to estimate the probability of a school in high-risk to remain resilient to violence. Probit regression is used to model dichotomous outcome variables (e.g. Resilient school=1, otherwise=0). The purpose of the model is to estimate the probability that an observation (i.e. a school) with particular characteristics will fall into a specific one of the categories (i.e. resilient or not).

In the software that we used for the analyses (MPlus 6.8) probit models are offered as an alternative to logit models for binary categorical data when the complex sample design requires the use of replicate weights (e.g. ICCS data). Probit models are similar to a logit model and normally produce equivalent results, however they use a different transformation. In the probit model, the inverse standard normal distribution of the probability is modeled as a linear combination of the predictors.

The probit regression model expresses the probability of u given x as,

$$P(u = 1 \mid x) = F(a + b*x)$$

$$= F(-t + b*x),$$

Where:

u = School resilient to violence (1)

x = set of school characteristics or explanatory variables

F = the standard normal distribution function

a = the probit regression intercept

b = the probit regression slope

t = the probit threshold, where

t = -a, and

$P(u = 0 \mid x) = 1 - P(u = 1 \mid x)$

Results

Table 1 shows the proportions of schools at risk of violence and schools resilient to violence in both Mexico and Colombia.

Table 1. Percent of schools at risk of violence and, from those, percent of resilient schools in Mexico and Colombia

	% Schools at risk	S.E.	% Resilient schools	S.E.
Colombia	84.55	3.74	36.84	4.44
Mexico	77.66	3.48	31.98	4.21

As it can be seen, according to the definition described above, in both countries a similar proportion of the schools are considered to be at a high risk of experiencing violence, 85% in Colombia and 78% in Mexico. In Colombia 37% of those schools manage to remain resilient to violence, while in Mexico this proportion adds to 32%.

Table 2 shows the probit estimates of relationship between selected school characteristics and resilience to violence in Colombia and Mexico. The dependent variable indicates whether a particular school is considered to be resilient to violence according to de definition described above. The first and the second columns show the probit estimates and their standard errors for Colombia, and the fourth and fifth for Mexico. Columns three and six show the two-tailed p-values. Apart from the regression coefficients and their standard errors, the table reports two measures of fit: the Weighted Root Mean Square Residual (WRMR) and a pseudo-r square. The WRMR is a measure that is normally recommended for fit of models with categorical observed variables. Yu and Muthén (2002) recommend that a model with a WRMR of less than 0.9 indicates good fit. The Pseudo-r-square is a proxy measure of the variance in the dependent variable that is explained by the model.

Table 2. Probit estimates of relationship between selected school characteristics and resilience to violence

Dependent variable: School Resilient to Violence (resilient=1)

	Colombia			Mexico		
	Estimate	S.E.	p-value	Estimate	S.E.	p-value
Student influence on decisions about school	-0.005	0.002	0.021	0.021	0.001	0.000
School SES composition	0.004	0.000	0.000	0.000	0.000	0.000
Teacher participation in school governance	0.037	0.003	0.000	0.024	0.002	0.000
Student opportunities to participate in community activities	-0.011	0.004	0.002	-0.008	0.001	0.000
Parents' participation in the school life	0.026	0.004	0.000	0.045	0.001	0.000
Student behavior at school	0.008	0.003	0.006	0.001	0.000	0.003
Availability of resources in local community	0.031	0.003	0.000	-0.012	0.001	0.000
WRMSR		0.000			0.000	
R-Square		0.223			0.427	

As it can be observed all predictors have significant explanatory power on the probability of a school to remain resilient, and in almost all cases the relationship is positive. However the direction of the associations is not always consistent across the two countries included in the analysis. Contrary to what was expected, in Colombia, the participation of the students in school decisions and their opportunities to participate in community activities seem to be negatively associated to the probabilities of resilience; while in Mexico the former plus the availability of resources play a negative role.

The models for both countries show a good fit, with WRMSR indices clearly below 0.9. However, the explained variance in the probability of resilience is almost half in Colombia (22%) with respect to the model for Mexico (43%).

Discussion

We believe that this study adds to the research on school resiliency against violence in at least three ways. First, it contributes to fill a gap in the literature as not many studies have explored the school characteristics associated to resilience to violence, especially with large-scale comparative data like ICCS. In this respect, this study also makes an important contribution by proposing a quantitative operationalization of the concept.

Second, the results of our analyses provide insight into the role that education can play in helping to avoid violence in school, and therefore in the wider community. Exploring how high-risk schools manage to evade experiencing violence in Mexico and Colombia is necessary because in both countries violence is currently one of the main social concerns. The results of the probit models indicate that schools in which teachers and parents participate actively in school activities, and where discipline is observed by students are more likely to remain resilient to violence.

Third, this paper points out resiliency-building activities that are amenable to schools, therefore offer practitioners an understanding of a range of activities to support the healthy development of students, schools, and communities. However, when thinking of and designing activities to foster resiliency it is crucial to make sure that they are culturally relevant, non-stigmatizing, and accessible to all youth (Dealgado, 2002).

Finally, this work contributes to the research on school effectiveness and improvement by proposing an outcome other than cognitive to evaluate school performance. Educational researchers have made considerable progress in identifying the main features of highly effective education systems; however, it is well recognized in the literature the need of adopting social outcome measures in addition to academic achievement (Hopkins, et al. 2010; Reynolds, et al. 2011). This work addresses this issue by focusing on resilience to violence as a measure of an educational social outcome.

However, there are several limitations to this paper that must be acknowledged. First, the analyses presented here are not final, the models and the operationalization of the variables included can be improved. Our analyses used the indices included in the ICCS database, which were created for the comparison across all participating countries. For this reason it is possible that better (more culturally and theoretically relevant) indices can be created for Colombia and Mexico. Second the nature of the data (i.e. cross-sectional survey) does not allow a causal interpretation of the observed patterns. Future research on this field should explore different operationalizations of the concepts involved and combine the analysis of quantitative data with other techniques that allow testing hypothesis about mechanisms underlying the concept of school resiliency to violence.

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