

Community Violence and Reactive and Proactive Aggression: The Mediating Role of Cognitive and Emotional Variables

Violencia Comunitaria y Agresión Reactiva y Proactiva: el Papel Mediacional de las Variables Cognitivas y Emocionales

Violência Comunitária e Agressão Reativa e Proativa: o Papel Mediacional das Variáveis Cognitivas e Emocionais

ENRIQUE CHAUX

JULIANA ARBOLEDA

CLAUDIA RINCÓN

Universidad de los Andes, Bogotá, Colombia

Abstract

Children exposed to higher levels of violence tend to be more aggressive. Specific mechanisms explaining this relationship are still being uncovered. This study sought to identify the relationship between exposure to community violence and reactive and proactive aggression, as well as cognitive and emotional variables mediating this relationship. Participants were 1,235 students (from fifth to ninth grade) from localities of Bogotá, Colombia, with varying levels of community violence. Analyses of self-reported measures confirmed significant associations between exposure to community violence and both reactive and proactive aggression. Normative beliefs supporting aggression, hostile attribution of intent, positive expectations for aggression, and lack of guilt after aggression, partially mediated these relationships, suggesting strategies for prevention.

Keywords: reactive aggression, proactive aggression, community violence, political violence, guilt, hostile attribution of intent, normative beliefs, Colombia.

Resumen

Los niños y niñas expuestos a elevados niveles de violencia tienden a ser más agresivos que los demás, pero los mecanismos específicos que explican esta relación todavía se están descubriendo. Este estudio buscó identificar la relación entre la exposición a la violencia comunitaria y la agresión reactiva y proactiva, así como las variables cognitivas y emocionales que median dicha relación. Con la participación de 1,235 estudiantes (de quinto a noveno grado) de diferentes localidades de Bogotá, Colombia, y de diversos niveles de violencia comunitaria, los análisis de las medidas de autoreporte confirmaron la existencia de asociaciones significativas entre la exposición a la violencia comunitaria y la agresión tanto reactiva como proactiva. Las creencias que legitiman la agresión, la atribución hostil de intenciones, las expectativas positivas sobre la agresión, y la falta de culpa al agredir, mediaron parcialmente estas relaciones, sugiriendo estrategias de prevención.

Palabras clave: agresión reactiva, agresión proactiva, violencia comunitaria, violencia política, culpa, atribución hostil de la intención, creencias normativas, Colombia.

Resumo

As crianças expostas a elevados níveis de violência tendem a ser mais agressivas que as demais; no entanto, os mecanismos específicos que explicam esta relação ainda estão se descobrindo. Este estudo pretendeu identificar a relação entre a exposição à violência comunitária e a agressão reativa e proativa, assim como as variáveis cognitivas e emocionais que mediam tal relação. Com a participação de 1.235 estudantes (de 8 a 18 anos) de diferentes localidades de Bogotá (Colômbia) e de diversos níveis de violência comunitária, as análises das medidas de autorrelatório confirmaram a existência de associações significativas entre a exposição à violência comunitária e a agressão tanto reativa quanto proativa. As crenças que legitimam a agressão, a atribuição hostil de intenções, as expectativas positivas sobre a agressão e a falta de culpa ao agredir, mediaram parcialmente estas relações e sugeriram estratégias de prevenção.

Palavras-chave: agressão reativa, agressão proativa, violência comunitária, violência política, culpa, atribuição hostil da intenção, crenças normativas, Colômbia.

Correspondence concerning this article should be addressed to Enrique Chaux, e-mail: echaux@uniandes.edu.co. Department of Psychology, Universidad de los Andes.

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GROWING UP in a violent environment has many negative long-lasting effects. One of these is a higher risk for the development of aggression. Several studies have confirmed this effect in the context of the family (e.g., Dodge, Bates, & Pettit, 1990; Huesmann, Eron, Lefkowitz, & Walder, 1984; Thornberry, Freeman-Gallant, Lizotte, Krohn, & Smith, 2003; Widom, 1989). Other studies have found that exposure to community violence also has an effect on the development of aggression (e.g., Allwood & Bell, 2008; Bradshaw, Rodgers, Ghandour, & Garbarino, 2009; Brookmeyer, Henrich, & Schwab-Stone, 2005; Calvete & Orue, 2011; Flannery, Wester, & Singer, 2004; Gorman-Smith, Henry, & Tolan, 2004; Guerra, Huesmann, & Spindler, 2003; Liddell, Kvalsvig, Qotyana, & Shabalala, 1994; Miller, Wasserman, Neugebauer, Gorman-Smith, & Kamboukos, 1999; Musher-Eizenman et al., 2004; Orue et al., 2011; Schwab-Stone et al., 1999; Schwartz & Proctor, 2000). These studies have confirmed that exposure to violent events in the community, either as a witness or as a victim, increase the chances of developing aggressive behaviors. Furthermore, some of these studies have identified cognitive and emotional mechanisms that may be mediating or moderating the effect of exposure to community violence on aggressive behavior (e.g., Allwood & Bell, 2008; Bradshaw et al., 2009; Calvete & Orue, 2011; Guerra et al., 2003; Musher-Eizenman et al., 2004; Orue et al., 2011; Schwartz & Proctor, 2000). In this way, the dynamics that lead to the development of aggression can be better understood and ways of minimizing the negative effects of community violence could be developed. The current study seeks to make a contribution to these theoretical and practical goals by identifying cognitive and emotional variables mediating the relationship between community violence and aggression, in urban contexts where violence may be associated with political violence or common crime.

In a study conducted in high crime neighborhoods of Chicago, Guerra et al. (2003) found

that exposure to community violence, such as witnessing someone being beaten or having to hide because of shootings in their neighborhood, predicted increases in aggressive behavior one year later (interestingly, the contrary was not true, that is, aggressive behavior did not predict exposure to community violence). Furthermore, this effect of exposure to community violence on aggressive behavior was in part mediated by two kinds of social cognitions: normative beliefs supporting aggression and aggressive fantasies. That is, being exposed to violent events in the community leads to an increase in normative beliefs that support aggression and in aggressive fantasies which, in turn, lead to an increase in aggressive behaviors. At least three other studies have also found that normative beliefs about aggression mediate this relationship (Allwood & Bell, 2008; Bradshaw et al., 2009; Orue et al., 2011).

Musher-Eizenman et al. (2004) also found that social cognitions play a mediating role between exposure to violence and children's aggressive behavior. In particular, aggressive fantasies, beliefs legitimizing retaliation, and positive self-evaluations after behaving aggressively mediated the effect of exposure to violence (as witness) on aggression. In addition, they found that while social cognitions related to direct aggression (e.g., fantasizing about hitting someone) mediated the effect of exposure to violence on direct aggression, social cognitions related to indirect aggression (e.g., fantasizing about spreading rumors about someone) mediated the effect of exposure to violence on indirect aggression. This suggests that the pathways by which exposure to violence affects aggression might be different for different types of aggression. The study, however, concentrated on the form of aggression (direct vs. indirect), but not on the function of aggression (proactive vs. reactive) (Little, Jones, Henrich, & Hawley, 2003).

Schwartz and Proctor (2000) conducted a similar study in high crime neighborhoods in Los Angeles. They found that while both witnessing and being victimized by community violence are

associated with aggression, only being victimized was associated with being rejected and bullied by peers. Furthermore, the mediating psychological variables seem to be different, too. On the one hand, problems of emotional dysregulation were found to mediate the relation between being a victim of violence in the community and being rejected and bullied. On the other hand, cognitive biases such as positive expectations about the outcomes of aggression and efficacy beliefs for aggression (i.e., considering that it is rather easy for them to behave aggressively) mediated the relation between witnessing violence in the community and behaving aggressively.

The results of Schwartz and Proctor's (2000) study suggest that different types of experiences with community violence might lead to the development of different types of aggression. Exposure as a witness was found to be related to positive expectations about the outcome of aggression, a social cognitive bias which other studies (e.g., Crick & Dodge, 1996) found to be associated with proactive aggression (i.e., aggression used as an instrument to obtain a goal without any previous provocation). In contrast, exposure as a victim was found to be related to problems of emotion regulation, which according to Dodge (1991) are associated with reactive aggression (i.e., aggression used as a reaction against a real or perceived provocation). However, Schwartz and Proctor (2000) did not explicitly differentiate these two types of aggression in their study.

In a three wave longitudinal study conducted in the Basque Country, Spain, Calvete and Orue (2011) did differentiate reactive and proactive aggression. They found that hostile attribution of intent (i.e., interpreting others' intentions hostilely even when those intentions are not evident; Dodge et al., 1990; Orobio de Castro, Veerman, Koops, Bosch, & Monshouwer, 2012), anger reactions, and selection of aggressive responses mediate the relationship between exposure to violence and reactive aggression. However, they did not find this mediation for proactive aggression,

suggesting that different mechanisms might be associated with the effect that exposure to violence has on reactive versus proactive aggression.

This difference seems crucial since several studies have suggested that reactive and proactive aggression are associated with different peer processes (e.g., Dodge, Lochman, Harnish, Bates, & Pettit, 1997; Poulin & Boivin, 2000), different cognitive and emotional processes (Crick & Dodge, 1996; Dodge et al., 1997; Orobio de Castro et al., 2005) and seem to follow different developmental trajectories (Brendgen et al., 2001; Dodge et al., 1997; Vitaro & Brendgen, 2005; Vitaro, Gendreau, Tremblay, & Oligny, 1998). It may also be that the effect of exposure to community violence on the development of reactive aggression could be mediated by variables different from those affecting proactive aggression. Thus, one of the goals of the current study was to investigate the relation between exposure to community violence and both types of aggression and to uncover possible mediating cognitive and emotional variables.

As mentioned above, several studies have found that normative beliefs supporting aggression mediated the relationship between exposure to community violence and aggressive behavior. However, just as Musher-Eizenman et al. (2004) found differences in the beliefs mediating the effect on direct versus indirect aggression, beliefs mediating the effect of exposure to violence on reactive aggression may be different from those mediating the effect on proactive aggression. For example, considering that "it is OK to hurt someone who hurt you first" may support the use of reactive aggression while considering that "sometimes you have to use threats to get what you want" may support the use of proactive aggression. A second goal of the current study was, therefore, to investigate the possible mediating roles of reactive versus proactive normative beliefs.

If violence is common in their social environment, children may learn that others are likely to use violence in their interactions and

could therefore develop hostile attribution of intent. Furthermore, by having many opportunities to witness the use of violence among young and adult role models around them, they may learn to expect positive outcomes of using aggression. Both of these cognitive biases are likely to mediate the effect of exposure to community violence on the development of aggression, although differently for both types of aggression, since hostile attribution of intent has been related to reactive aggression while positive expectations about the outcome of aggression has been related to proactive aggression (Crick & Dodge, 1996). The mediating role of these two cognitive biases was also investigated in the current study.

Finally, by observing interactions around them and by interacting with others, children learn the moral standards of their environments (Bandura, 1991). If violence is common in their communities, they are likely to learn that it is not against moral standards to use violence as a way to defend themselves or to obtain goals. Thus, they are not likely to feel guilt when behaving aggressively, since guilt is associated with acting (or considering to act) against internalized moral standards (Hoffman, 1998; Kochanska, Gross, Lin, & Nichols, 2002). Since feelings of guilt serve as internal constraints against particular behaviors, not feeling guilt when having aggressive thoughts or behaviors may increase the chances of actually behaving aggressively. In this way, lack of guilt after aggression may be another mediating variable in the relation between exposure to community violence and development of aggression. This relation may be particularly evident for proactive aggression, since this type of aggression has been related to a certain coldness and lack of empathy towards the victims of aggression (Arsenio & Lemerise, 2001; Dodge, 1991; Endresen & Olweus, 2001; Parra, 2005). Thus, another goal of this study was to consider the possible mediating role of lack of guilt after aggression.

Most studies of the impact of community violence on children's aggression have been

conducted in the context of inner city violence where crime rates related to illegal drug activities and gang violence are high. Few studies, however, have been conducted in urban contexts where political violence is also present (Liddell et al., 1994, and Punamäki, Muhammed, & Abdulrahman, 2004, are some of the exceptions). Some large cities in Colombia, such as the capital, Bogotá, have neighborhoods where community violence is related to political violence (caused by the five-decade-old, low-intensity internal conflict between left-wing guerrillas, right-wing paramilitaries, and the Colombian army) and crime-based violence intermingle, while in other neighborhoods, community violence is only related to common crime. This allows us to make comparisons between the effects of exposure to different kinds of community violence. The final goal of this study was thus to consider the possible relations between aggression and exposure to different types of community violence.

To summarize, the current study sought to answer the following research questions and, based on previous studies, tested the following hypotheses:

1. What is the relation between exposure to community violence and reactive and proactive aggression? We were expecting to find significant relations between exposure to community violence and both types of aggression.
2. What cognitive and emotional variables may be mediating that relation? We expected that beliefs supporting reactive aggression and hostile attribution of intent would mediate the relation between exposure to community violence and reactive aggression. In contrast, we expected that beliefs supporting proactive aggression, lack of guilt and positive expectations for aggression would mediate the relation between exposure to community violence and proactive aggression.
3. How does aggression and its related cognitive and emotional variables compare between

children and adolescents who are exposed to crime-based community violence and those who, additionally, live in communities where there is presence of political violence? Because of the dearth of studies comparing the effect of exposure to different types of community violence, we did not have clear hypotheses related to this question.

Methodology

Participants

Participants in this study were 1,235 children and adolescents (49.7% female) from seven public schools in Bogotá, Colombia. Their ages ranged from 8 to 18 years, although 87% were between 10 and 15 years old. Two fifth, seventh, and ninth grade classes were randomly selected from each of the schools (except for one school which was much larger than the others and where four classes from each of the three grades were randomly selected).

Schools were selected seeking diversity in levels and types of community violence (crime-based or political) in their neighborhoods. These schools are located in four of the 20 localities (*localidades*) of this city with a population of 6.8 million. Two schools are located in Santafé, a downtown area with the city's highest crime and homicide rates, but with very little presence of urban militias from guerrilla and paramilitary groups. Socio-economic conditions in these

neighborhoods are low, but not the lowest in Bogotá (see Table 1).

Two other schools are from Ciudad Bolívar, which is a peripheral area with very low socio-economic conditions. Ciudad Bolívar is also the area of the city with the greatest incidence of political violence at the time of data collection. Although direct combats are very rare, urban militias from guerrilla and paramilitary groups compete for territorial control, extortion of commercial activities and recruiting of members, especially among the locality's youth (Alcaldía Mayor de Bogotá, 2005). It is also the area receiving most internally displaced families who arrive in Bogotá from rural areas because they received threats or were direct victims of Colombia's internal armed conflict (see Table 1). Youth gangs are also more prevalent in Ciudad Bolívar than in any other area of the city (Alcaldía Mayor de Bogotá, 2005).

Two schools are located in Usme, which is another peripheral and very poor area of the city, but with moderate crime and homicide rates. Armed groups are also present in Usme, but not to the extent of Ciudad Bolívar. Finally, one school is located in Tunjuelito, which has relatively low homicide rates and low presence of political violence. Contrary to all the other schools, this one draws its students from many areas of the city and not only from nearby neighborhoods. For this reason, students from this school were not considered in the ANOVAs comparing students from different localities of the city.

Table 1

Socio-Economic Status, Violence, Crime and Political Violence in the Studied Localities of the City

City area	Location	Population with unsatisfied basic needs	Population living in misery	Homicide rate	Robbery rate	Presence of militias	Reception of displaced population (% out of Bogotá)
Santafé	Downtown	16.3%	2.9%	92	352	low	4%
Ciudad Bolívar	Peripheral	26.1%	6.7%	37	115	high	27%
Usme	Peripheral	23.8%	5.1%	27	185	medium	8%
Tunjuelito	Intermediate	12.8%	1.5%	18	103	low	3%

Note: Homicide and robbery rates are per 100,000 inhabitants in 2003 and 2004, respectively. Robberies are of persons, cars, homes, and stores. Sources of data for this table: Colombian National Police, Social Solidarity Network, Office of the Mayor of Bogotá (2005), and Office of the Secretary of Government of Bogotá (www.suivd.gov.co).

Instruments

Measures were created for this study or translated into Spanish and adapted from existing ones. In order to verify whether students understood the questions the way we intended and responded to them in consistent ways, three phases of pilot tests and focus groups were conducted with 421 students in total from schools in similar neighborhoods in Bogotá. Several changes in the language and in the kind of questions were introduced to each of the instruments following these pilot tests and focus groups¹.

Reactive ($\alpha=.560$) and proactive aggression ($\alpha=.747$). Reactive aggression was evaluated with the following questions (translated from Spanish): “When they treat you badly, do you retaliate immediately?” and “When they treat you badly, do you wait a while before retaliating?”. Proactive aggression was measured with the following questions: “Do you threaten others to get what you want?”, “Do you bully and make others feel bad?” and “Do you enjoy treating others badly?” Possible answers were *never* (coded as 0), *almost never* (1), *almost always* (2), and *always* (3). Correlation between reactive aggression items was .390 and significant at $p<.001$. A composite of all five items was used as a general measure of *aggression* ($\alpha=.759$).

Exposure to community violence ($\alpha=.573$). Exposure to community violence was measured with the following three questions: “Within the last month, how many times have you...”: “seen or heard gun shots in your neighborhood?”, “seen fights in the street?”, and “heard about or seen someone being robbed with violence in your neighborhood?” Possible answers were *never* (coded as 0), *once* (1), *two to four times* (2), and *five or more times* (3).

Exposure to gangs ($\alpha=.672$). Exposure to youth gangs was measured with the following three questions: “Are there any gangs in your neighborhood?”, “Do you know anyone who belongs or has belonged to a gang?”, and “Do you have friends who belong to gangs?” Possible answers were *no* (coded as 0), *yes* (1), or in the case of the first question *don't know* (0).

Parental supervision ($\alpha=.732$). Parental supervision was measured with the following two questions: “Do they know at home where you spend your free time?” and “Do they know at home with whom you spend your free time?”. Possible answers were *never* (coded as 0), *almost never* (1), *almost always* (2), and *always* (3).

Hostile attribution of intent ($\alpha=.415$). Hostile attribution of intent was measured by asking participants to imagine themselves in two different situations in which someone ambiguously hurt them. For example: “Imagine that in the next class break you are talking to your best friend and suddenly a student passes by and bumps into you. You fall down and hurt yourself”. Each of the stories is followed by questions asking for the intention of the others. In this example, the question was: “Why did he/she bump into you?” The possible answers are: *he/she wanted to hurt you* (coded as 1), *it was an accident* (0), and *you don't know* (0). One of the stories was adapted from Milich and Dodge (1984), and the other was drawn from previous research about actual interpersonal conflicts among Colombian children and adolescents (Chaux, 2001). Alpha's Cronbach was particularly low in part because the measure included only two (dichotomous) items. Correlation between these items was .263 and significant at $p<.001$.

Lack of guilt ($\alpha=.641$) and positive expectations about the outcome of aggression ($\alpha=.713$). Four different kinds of expectations about the outcome of aggression were evaluated

¹ The complete questionnaire in Spanish as well as its English translation is available upon request from the first author.

using short hypothetical stories: (a) that the outcome will be beneficial for you; (b) that you will be respected; (c) that you won't feel guilt after behaving aggressively; and (d) that aggression won't get you into trouble. Each of the stories asks participants to imagine themselves in a situation where they would behave aggressively. For example, "Imagine that someone in your class has been bothering you and then you hit that person". Then four questions were asked about each case. For example: (a) "Will the student stop bothering you?" (benefits), (b) "Others will respect you?" (respect), (c) "Would you feel fine about what you did afterwards?"

(guilt)", and (d) "Would you get into trouble?" (problems). Possible answers were *yes* or *no* (benefits, respect, lack of guilt and lack of problems were coded as 1 when answering *yes*). This measure was adapted from Zelli, Dodge, Lochman, Laird, & Conduct Problems Prevention Research Group (1999).

Normative beliefs supporting reactive ($\alpha=.624$) and proactive aggression ($\alpha=.661$ for reaching goals; $\alpha=.619$ for protecting image). Normative beliefs supporting aggression were measured with a list of 33 statements to which participants responded true or false. Some of

Table 2
Factor Analysis of Beliefs Legitimizing Aggression with Varimax Rotation

Item	Factor		
	1	2	3
Proactive aggression 1: Aggression is Useful to Reach Goals			
Sometimes you have to treat others badly to get what you want	.755	.081	-.017
Sometimes you have to threaten others to get what you want	.669	.142	.167
Being aggressive is the best way to avoid being bothered	.554	.177	.234
Aggression is not a good thing, but helps you get what you want	.532	.237	.144
Sometimes you have to be bad to stand out	.500	.019	.284
Reactive aggression: Reactive Aggression is OK			
It's OK to hurt those who talk badly about your mother	.025	.645	.051
Vengeance is sweet	.223	.604	-.127
You play me, you pay me	.344	.604	.134
It's OK to hurt someone if he/she hurt you first	.253	.571	.264
One has to aggressively stop those who insult you so they won't do it again	-.039	.512	.244
Proactive aggression 2: Aggression Protects Image			
One has to fight so that others won't think you are a coward	.253	.187	.638
Those who don't defend their friends when they fight are not good friends	-.049	.014	.610
It is important that people know you are strong and that they can't mess with you	.294	.180	.545
People admire you if you fight a lot	.245	-.013	.540
If you don't know how to fight you are a chicken	.175	.335	.502
Eigenvalue	2,334	2,028	1,972
Variance explained	15,561	13,523	13,144

these statements were adapted from Slaby and Guerra (1988), and Stuckless and Goranson (1992), while others were created for this study. A series of factor analyses showed that a subset of these items could be categorized into beliefs legitimizing reactive and proactive aggression. Specifically, an initial factor analysis showed a six factor structure, three of which were not directly related to reactive or proactive aggression (“victims deserve the aggression they get”, “aggression is OK to defend friends”, and “aggression is OK if everyone uses it”). Items that loaded equally high on two or more factors were eliminated (e.g., “if someone hurts you, you have to respond in the same way”, loaded .37 on Factor 1 and .32 on Factor 2). The remaining 15 items grouped into two factors of beliefs legitimizing proactive aggression (Aggression is Useful to Reach Goals and Aggression Protects Image) and a factor of beliefs legitimizing reactive aggression (Reactive Aggression is OK; see Table 2).

Procedure

Students were invited to participate and were given letters to their parents informing them about the purpose of the study. Letters also explained that they were free to request their children’s withdrawal from the study by filling and returning an attached slip. A few parents requested more information about the study by phone (some asked for advice about how to manage aggression at home) but only five (0.4%) returned the slip denying their children’s participation.

Two research assistants administered the questionnaire in each classroom. They did not read the questions out loud to the students, but were available to answer questions by individual students about how to fill out the questionnaire. All responses were anonymous. Data collection was conducted in all schools during the second month of the school year.

Data Analyses

Analyses of variance were performed to identify significant gender differences and differences between the localities in the means of all the variables. Cluster analyses were conducted to identify profiles of students in terms of their reactive and proactive aggression. Analyses of variance were carried out to check for differences between the clusters identified. Bivariate Pearson’s correlations were performed to identify significant bivariate relationships between the variables. Multiple regressions were conducted using SPSS to identify the variables that best predict reactive and proactive aggression. The forward method of introduction of variables was used. Structural equation models were constructed using the program EQS to identify how much the relationships between exposure to violence and reactive or proactive aggression are mediated by the measured psychological variables.

Results

Differences between Localities

Reactive aggression was significantly higher in Santafé (high-crime downtown) compared to Usme (peripheral, moderate levels of political violence) and Ciudad Bolívar (high levels of political violence) (see Table 3). Students in Santafé also had significantly higher levels of proactive aggression when compared to Usme, but did not differ significantly from Ciudad Bolívar. Exposure to community violence was significantly lower in Usme when compared to all other groups. Exposure to youth gangs was highest among students in Ciudad Bolívar. Beliefs legitimizing aggression were significantly higher in Santafé when compared to Usme, with Ciudad Bolívar always in the middle. No significant differences between these localities were found in lack of guilt, hostile attribution of intent, and positive expectations for aggression (see Table 3).

Table 3
ANOVAS Comparing Students from Different Localities of the City

	Total (4 areas)	Santafé (downtown)	Ciudad Bolívar (peripheral)	Usme (peripheral)	F	Sig.	η^2
N	1235	347	282	306			
Age	12.5 (2.0)	12.7 _a (2.0)	12.5 _{a,b} (2.2)	12.2 _b (2.1)	4.043	.018	.009
Reactive aggression	.347 (.293)	.391 _a (.314)	.326 _b (.269)	.265 _c (.257)	15.888	.000	.033
Proactive aggression	.180 (.235)	.216 _a (.265)	.177 _a (.226)	.130 _b (.189)	10.937	.000	.023
Community violence	.398 (.273)	.446 _a (.281)	.426 _a (.277)	.298 _b (.242)	28.182	.000	.057
Gangs	.391 (.375)	.397 _b (.367)	.480 _a (.377)	.273 _c (.331)	24.686	.000	.051
Parent supervision	.723 (.330)	.681 _b (.355)	.699 _{a,b} (.328)	.754 _a (.299)	4.174	.016	.009
Lack of guilt	.378 (.372)	.411 (.390)	.380 (.368)	.353 (.355)	1.963	.141	.004
Hostile attribution of intent	.238 (.339)	.269 _a (.347)	.250 _{a,b} (.356)	.201 _b (.321)	3.407	.034	.007
Positive expectations for aggression	.462 (.276)	.485 (.265)	.444 (.277)	.448 (.284)	2.198	.112	.005
Reactive aggression is OK	.490 (.309)	.542 _a (.310)	.470 _b (.303)	.437 _b (.298)	10.101	.000	.021
Aggression useful to reach goals	.270 (.288)	.304 _a (.309)	.282 _a (.296)	.223 _b (.251)	6.749	.001	.014
Aggression protects image	.334 (.294)	.388 _a (.308)	.341 _a (.288)	.258 _b (.260)	16.940	.000	.035

Age and Sex Differences in Reactive and Proactive Aggression

Significant gender differences were found in almost all variables, with boys scoring higher in reactive and proactive aggression, exposure to community violence and gangs, lack of guilt, hostile attribution of intent, positive expectations for aggression and beliefs legitimizing aggression (see Table 4). In addition, participants were classified according to whether their scores in reactive or proactive aggression were higher or lower

than the median score. In this way, 47.5% of the participants were classified as non-aggressive (NA), 14.5% were only reactive aggressive (RA), 14.4% were only proactive aggressive (PA), and 23.6% were both reactive and proactive aggressive (RPA). Girls were overrepresented in the NA group (57.1%) and underrepresented in all the other groups (47.2% in RA, 42.3% in PA, and 41.8% in RPA; $\chi^2(3)=24.1$; $p<.000$). Groups also differed in age, with older participants in the PA and RPA groups compared to the NA group (see Table 5).

Table 4
ANOVAS Comparing Boys and Girls

Variables	Total	Boys	Girls	F	Sig.	η^2
N	1235	621	614			
Reactive aggression	.347 (.293)	.380 *** (.299)	.313 (.283)	16.060	.000	.013
Proactive aggression	.180 (.235)	.205 *** (.244)	.155 (.224)	13.836	.000	.011
Community violence	.398 (.273)	.422 ** (.278)	.372 (.267)	10.368	.001	.008
Gangs	.391 (.375)	.425 ** (.384)	.357 (.362)	10.404	.001	.008
Parent supervision	.723 (.330)	.709 (.325)	.737 (.334)	2.107	.147	.002
Lack of guilt	.378 (.372)	.436 *** (.381)	.318 (.353)	31.499	.000	.025
Hostile attribution of intent	.238 (.339)	.271 *** (.350)	.205 (.323)	11.585	.001	.009
Positive expectations for aggression	.462 (.276)	.497 *** (.267)	.426 (.279)	20.822	.000	.017
Reactive aggression is OK	.490 (.309)	.540 *** (.301)	.439 (.308)	33.479	.000	.026
Aggression useful to reach goals	.270 (.288)	.321 *** (.303)	.220 (.263)	38.936	.000	.031
Aggression protects image	.334 (.294)	.378 *** (.302)	.289 (.279)	29.023	.000	.023

Note: ** $p<.01$; *** $p<.001$. Standard deviations are in parenthesis under each mean.

Table 5
 ANOVAS Comparing Non-Aggressive Students with those High on Reactive Aggression, High on Proactive Aggression, and High on Both Reactive and Proactive Aggression

Variable	Total	Non-aggressive	Reactive only	Proactive only	Reactive and proactive	F	η^2
Age	12.5 (2.0)	12.2 _b (2.1)	12.6 _{a,b} (2.1)	12.7 _a (2.0)	12.9 _a (1.9)	8.31	.020
Community violence	.401 (.272)	.333 _c (.249)	.416 _b (.280)	.412 _b (.255)	.522 _a (.279)	33.96	.078
Gangs	.391 (.375)	.294 _c (.338)	.411 _b (.385)	.45 _{a,b} (.368)	.532 _a (.391)	30.23	.070
Parent supervision	.724 (.329)	.764 _a (.315)	.721 _{a,b} (.335)	.711 _{a,b} (.308)	.655 _b (.352)	7.17	.017
Lack of guilt	.378 (.372)	.298 _c (.338)	.352 _{b,c} (.365)	.389 _b (.369)	.548 _a (.386)	30.91	.072
Hostile attribution of intent	.238 (.339)	.171 _c (.296)	.256 _b (.338)	.243 _{b,c} (.338)	.357 _a (.386)	20.35	.048
Positive expectations for aggression	.460 (.275)	.429 _b (.276)	.456 _b (.253)	.452 _b (.272)	.530 _a (.275)	8.77	.021
Reactive aggression is OK	.489 (.308)	.340 _c (.265)	.579 _b (.289)	.536 _b (.292)	.705 _a (.248)	130.04	.244
Aggression useful to reach goals	.271 (.290)	.165 _c (.222)	.282 _b (.276)	.274 _b (.272)	.477 _a (.316)	90.77	.183
Aggression protects image	.333 (.295)	.242 _c (.247)	.371 _b (.316)	.320 _b (.270)	.503 _a (.306)	58.71	.127

Note: All ANOVAS were statistically significant at $p < .001$. Means in the same row that do not share the same subscripts differ at $p < .05$ in Bonferroni post-hoc tests. Standard deviations are in parenthesis under each mean.

Psychological Factors and Reactive and Proactive Aggression

Lack of guilt after behaving aggressively, hostile attribution of intent, positive expectations for aggression, and beliefs legitimizing reactive and proactive aggression were significantly correlated to reactive and proactive aggression scores (see Table 6) and were significantly higher in RPA in comparison to all the other groups (see Table 5). The RA and PA groups did not differ significantly in any of these

psychological variables, but RAs were significantly higher than NAs in hostile attribution of intent and beliefs legitimizing aggression, while lack of guilt and beliefs legitimizing aggression were significantly higher in PAs than in NAs (see Table 5). In regression analyses, lack of guilt after aggression predicted proactive aggression; hostile attribution of intent, beliefs legitimizing reactive aggression, and beliefs legitimizing proactive aggression predicted both reactive and proactive aggression (see Table 7).

Table 6
Bivariate Pearson's Correlations among the Main Variables of the Study

	1	2	3	4	5	6	7	8	9
1 Age									
2 Reactive aggression	.133 ***								
3 Proactive aggression	.116 ***	.497 ***							
4 Community violence	.084 **	.269 ***	.296 ***						
5 Gangs	.270 ***	.245 ***	.271 ***	.390 ***					
6 Parent supervision	-.087 **	-.070 *	-.136 ***	-.081 **	-.106 ***				
7 Lack of guilt	.073 *	.197 ***	.271 ***	.111 ***	.110 ***	-.065 *			
8 Hostile attribution of intent	.035	.203 ***	.232 ***	.106 ***	.079 **	-.019	.213 ***		
9 Positive expectations for aggression	-.069 *	.110 ***	.156 ***	.081 **	.072 *	-.062 *	.387 ***	.131 ***	
10 Beliefs legitimizing aggression	.117 ***	.489 ***	.498 ***	.272 ***	.292 ***	-.158 ***	.385 ***	.283 ***	.295 ***

Note: * $p < .05$; ** $p < .01$; *** $p < .001$.

Community Violence and Psychological Factors

Exposure to community violence and to youth gangs were both significantly correlated to reactive and proactive aggression (see Table 6). However, in the regression analyses, exposure to community violence significantly predicted reactive and proactive aggression while exposure to youth gangs predicted only proactive aggression (see Table 7). Neither parental supervision nor sex moderated these relations.

Exposure to community violence was related to several psychological variables. As shown in Table 6, hostile attribution of intent, positive expectations for aggression, lack of guilt after behaving aggressively, and several normative beliefs were all significantly correlated with exposure to community violence.

Psychological Factors Mediating the Effect of Exposure to Community Violence on Reactive and Proactive Aggression

Structural equation models indicated that the aggregate of psychological factors measured (lack of guilt with aggression, hostile attribution of intent, positive expectations with aggression, and beliefs legitimizing aggression) mediated almost 60% of the effect of exposure to community violence into reactive and proactive aggression. More specific analyses indicated that beliefs legitimizing aggression had stronger mediation effects on both reactive and proactive aggression than all the other factors (see Tables 8 and 9, and Figures 1 and 2).

Table 7
Regression Analyses for Reactive and Proactive Aggression as Dependent Variables

Variable	Reactive aggression			Proactive aggression		
	Beta	t	Sig.	Beta	t	Sig.
(Constant)		3.262	.001		-4.858	.000
Sex (women)						
Age						
Community violence	.142	5.579	.000	.146	5.419	.000
Gangs				.086	3.177	.002
Parent supervision						
Lack of guilt				.074	2.769	.006
Hostile attribution of intent	.057	2.220	.027	.086	3.340	.001
Positive expectations for aggression						
Reactive aggression is OK	.347	11.931	.000	.218	7.263	.000
Aggression useful to reach goals	.132	4.340	.000	.171	5.614	.000
Aggression protects image	.073	2.456	.014	.076	2.578	.010
Adjusted R ²	.290			.298		
N	1,189			1,183		

Table 8
Mediation Analyses from Exposure to Community Violence to Reactive Aggression

	Direct path	Indirect path through the following mediators				
		All psych variables	Reactive beliefs	Hostile attribution	Lack of guilt	Posit expect of aggr
Direct path						
Indep -> Dependent	.48	.19	.22	.39	.40	.44
Indirect path						
Indep -> Mediator		.42	.36	.22	.19	.18
Mediator -> Dependent		.64	.73	.35	.29	.13
CFI	.99	.92	1.00	.99	.99	.77
RMSEA	.04	.06	.01	.02	.02	.08
% through indirect path		58.59	54.43	16.49	12.11	5.05

Note: All paths were significant with $p < .05$.

Table 9
Mediation Analyses from Exposure to Community Violence to Proactive Aggression

	Direct path	Indirect path through the following mediators					
		All psych variables	Proactive beliefs 1	Proactive beliefs 2	Hostile attribution	Lack of guilt	Posit expect of aggr
Direct path							
Indep -> Dependent	.43	.19	.25	.31	.36	.38	.41
Indirect path							
Indep -> Mediator		.43	.37	.32	.21	.19	.19
Mediator -> Dependent		.60	.48	.39	.32	.32	.14
CFI	.99	.94	.97	.96	.99	.99	.82
RMSEA	.04	.06	.04	.04	.03	.03	.08
% through indirect path		57.59	41.53	28.70	15.73	13.79	6.09

Note: All paths were significant with $p < .05$.

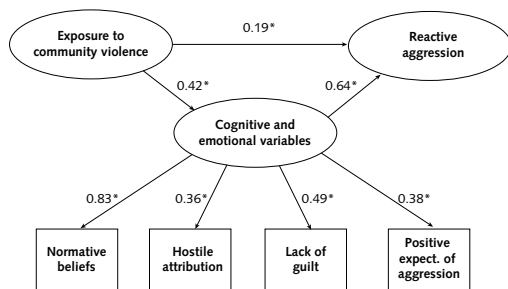


Figure 1. Mediation of psychological variables from exposure to community violence to reactive aggression. For simplicity, error terms and items used to construct latent variables are not shown. CFI=0.92; RMSEA=0.06.

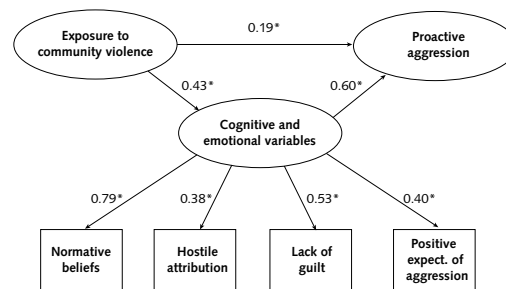


Figure 2. Mediation of psychological variables from exposure to community violence to proactive aggression. For simplicity, error terms and items used to construct latent variables are not shown. CFI=0.94; RMSEA=0.06.

Discussion

Several studies have shown that exposure to community violence increases the chances of aggressive behaviors (Brookmeyer et al., 2005; Flannery et al., 2004; Gorman-Smith et al., 2004; Guerra et al., 2003; Liddell et al., 1994; Miller et al., 1999; Schwab-Stone et al., 1999; Schwartz & Proctor, 2000). This study adds evidence to this general finding by showing that children and adolescents living in neighborhoods where community violence is high due to political violence or to common crime, report higher levels of reactive and proactive aggression among peers than those who live in localities of the same city with lower levels of community violence. In addition, this study highlights some cognitive and emotional processes that may be mediating this relationship. In particular, children and adolescents exposed to higher levels of community violence feel less guilt after using aggression, expect more positive results when using aggression, have more beliefs legitimizing the use of aggression, and attribute more negative intentions to others. Furthermore, these cognitive and emotional biases seem to explain why they use more aggression than those who are not exposed to such high levels of community violence.

Beliefs legitimizing aggression were found to mediate the relationship between community violence and aggression better than any of the other psychological variables. This finding suggests that one of the greatest psychological effects of growing up in a violent environment might be the development of beliefs about the legitimacy of aggression. These beliefs, in turn, might have a great impact on behavior since they help remove moral restraints to using aggression (such as feeling guilt) and may even make using aggression socially and morally desirable (Bandura, 1999; Liau, Barriga, & Gibbs, 1998).

This study was not designed to test for the direction of causal relationships. It actually seems just as likely that aggressive beliefs lead to aggressive behavior as it is that aggressive

behavior leads to aggressive beliefs. Beliefs might appear after behaving aggressively as a way to calm conscience. Similarly, it seems plausible that aggressive children and adolescents are more prone to seek violent environments and therefore will be more exposed to community violence than non-aggressive children. Although it seems reasonable that all these relations might be bidirectional, Guerra et al. (2003) found in a longitudinal study that exposure to violence predicted normative beliefs and aggressive behaviors better than how normative beliefs and aggression predicted exposure to violence. In addition, Guerra et al. found that normative beliefs partially mediated the lagged effect of exposure to community violence on aggressive behavior. In any case, the consistent relationships found in this study, as well as in Guerra et al. (2003) and Musher-Eizenman et al. (2004), between beliefs and both exposure to violence and aggression suggest that more attention should be paid to this variable. Educational interventions able to change beliefs legitimizing aggression (e.g., Guerra & Slaby, 1990) might have an important potential to prevent violence, especially in violent contexts.

Contrary to our hypotheses, the results found in this study for reactive and proactive aggression were very similar. Although the correlation between the two (.50) was not as high as that found in other studies (e.g., .76 in Dodge & Coie, 1987), reactive and proactive aggression were related in very similar ways to all other variables. For example, there were no statistical significant differences in any of the community or psychological variables measured between the participants who scored high only on reactive aggression and those who scored high only on proactive aggression. Additionally, except for the different types of beliefs legitimizing aggression, the mediating variables between exposure to violence and reactive aggression were very similar to those between exposure to violence and proactive aggression. One possibility is

that theorized differences between the two (e.g., Dodge, 1991) might only be evident in very extreme cases. In fact, in an examination of the results of a national test that more than a million fifth- and ninth-grade students in Colombia have to take, significant differences between reactive and proactive aggressive children in their levels of empathy and in their capacity to control anger were only evident when those who reported very high levels of reactive aggression but no proactive aggression were compared to those who reported very high levels of proactive aggression but no reactive aggression (Chaux, Arboleda, Kanayet, & Torrente, 2005). This suggests that, although conceptual differences between reactive and proactive aggression are very useful in practical terms since they suggest different prevention strategies, it continues to be a challenge to disentangle them in research (see also Bushman & Anderson, 2001).

Finally, students living in communities with moderate levels of crime and political violence (Ciudad Bolívar) had lower levels of reactive aggression, but similar levels of proactive aggression, when compared to students living in high-crime areas with no political violence (Santafé). This suggests that exposure to political violence in their communities might be more related to the development of proactive rather than reactive aggression. Children exposed to political violence might be learning early in life that violence could be used as an instrument to reach power and other goals. However, evidence here is preliminary and more studies should be conducted before a clear conclusion could be reached about the different effects of crime-based versus politically-based community violence.

There are several limitations of the study that need to be acknowledged. First, this was not a longitudinal study and therefore it was not possible to analyze the evolution of the variables or the direction of the relationships among them. Second, all the information is based on the same

reporter and therefore it is possible that the relationship between some of the variables could have been overestimated. Third, all measures were self-reports, which creates risks of social desirability. Fourth, some of the measures created for this study did not reach high internal consistency (e.g., hostile attribution of intent) and therefore all results related to these variables should be interpreted with caution.

In addition, the study did not consider other variables which might help explain the complexity of the relationship between exposure to violence and development of aggression. For example, exposure to community violence was limited to witnessing events. Witnessing community violence seems to have different effects than being a victim of community violence (Schwartz & Proctor, 2000). Emotional variables were limited to lack of guilt after aggression, leaving out emotional competencies such as regulation of own anger, which are known to be related to aggression and especially to reactive aggression (Chaux et al., 2005; Dodge, 1991; Schwartz & Proctor, 2000). Exposure to violence was limited to community violence, excluding the possible interaction with other contexts where children and adolescents might be exposed to violence such as the family and the media. Finally, although the particular context of this study made it possible to contrast community violence related to common crime with that related to political violence, for security reasons, exposure to political violence was only measured indirectly with police records about the neighborhoods where the schools are located (i.e., there were no specific questions about participants' contact with urban guerrilla or paramilitary militias) limiting the possible statistical analyses that could be conducted to explore this difference in detail. All these identified variables suggest directions for future research and are in fact being considered in ongoing studies in the same context.

In spite of its limitations, this study contributes to our understanding of the relationships

between community violence and children and adolescent's aggression and suggests points of intervention for prevention programs. In particular, the study highlights the potential that changing beliefs might have on reducing youth aggression. These interventions might be needed to contribute to the reduction of reactive and/or proactive aggression, and in community contexts where common crime and/or political violence are common.

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