VIOLENCE IN THE SCHOOLYARD: USING SELF-REPORT SURVEYS TO UNDERSTAND SCHOOL-BASED AGGRESSION AND VIOLENCE

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ABSTRACT: This article examines sex differences in the relationship between factors known to contribute to the use of aggression and violence using students' self-reports regarding these behaviors. Preliminary data analysis shows higher levels of aggression and violence, including relational and sexual aggression/harassment, and higher levels of victimization among males than among females. For both males and females in the sample, the use of physical aggression was significantly correlated with masculinity, the use of relational violence, endorsement of moral attitudes that supports violence, and victimization. Also significant, but only for boys and girls in coeducational public schools, was an association between the use of sexual aggression and harassment, and the use of physical violence. Finally, for girls only, we found a significant negative association with the endorsement of values and reciprocity. Implications for child and youth care practice are discussed.

Key words: sex differences, correlations, aggression, violence, intervention, school-based

BACKGROUND

As members of a Canadian Institutes of Health Research (CIHR) funded New Emerging Team working on a five year longitudinal research project entitled Aggressive and Violent Girls: Contributing Factors, Developmental Course, and Intervention Strategies,[1] we are focusing our research on the use of aggression and violence among adolescent females in suburban schools. Other research teams participating in the project are focusing on urban schools, custody and treatment centers, and

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1 The principal investigator on the team is Dr. Marlene Moretti; the co-investigators are Dr. Marc Le Blanc, Dr. Candice Odgers, Dr. Nadine Lanctôt, Dr. Bonnie Leadbeater, Dr. Sibylle Artz,

in some cases, on younger girls. Our choice of focus was strongly influenced by
the opportunity made possible by the CIHR grant to continue research on girls
and school-based violence in which the first author has been involved since 1993
(Artz, 1998; Artz & Riecken, 1994a, 1994b, 1995a, 1995b; Artz, Riecken, MacIntyre,
& Lam, 1997; Artz, Riecken, MacIntyre, Lam, & Maczewski, 1998, 1999a, 1999b,
2000; Riecken, Artz, MacIntyre, Lam, & Maczewski, 1998).

That research, like this study, focused on tracking and investigating the nature and
incidence of violence and victimization among females in the participating schools,
examining cultural and social factors correlated to the involvement in these aggres-
sive and violent behaviors, and developing, implementing, monitoring, and evaluat-
ing school- and community-based violence prevention programs that addressed the
correlates of aggression and violence. For comparative purposes, this research also
included tracking and investigating violence and victimization among male students.
This study, like the previous work, employed quantitative and qualitative methods,
and many of the tools and strategies from the previous research were adopted and
adapted here. This study was located in the same school district that participated in
the previous work. This added to our ability to study gender- and school-based ag-
gression and violence the ability to compare present findings with past findings. In
this article we report on our first quantitative data collection. Future articles will de-
scribe our qualitative work and comparison between past and present findings.

THE STUDY
Research Questions
This study (2002-2007), followed cohorts of school girls and boys to track their
experiences with, and their use of, aggressive and violent behavior in schools. We
examined the personal, social, and cultural correlates of such behavior and made
gender comparisons in order to inform the design, implementation, and evaluation
of effective, gender sensitive, school-based violence prevention programming. We
then established the nature and current incidence levels of violence and victimiza-
tion among female and male students in the participating schools, at the same time
we examined current cultural and social factors correlated to the involvement in
these aggressive and violent behaviors.

Method
Instrumentation
Given the support in the literature for self-reports as a basis for establishing
incidence rates (see for example, Alder & Worall, 2004; Doob & Cesaroni, 2004;
Hindelang, Hirschi, & Weis, 1981; Sprott & Doob, 2004), we used self-reports to
gather our quantitative data, and for reasons stated above, adapted previously used
instruments.

To that end, we constructed two self-report surveys: the revised *Survey of Stu-
dent Life* (SSL) and the *Survey of Student Relationships*.[2]

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2 Electronic copies of these surveys can be obtained from Sibylle Artz at sartz@uvic.ca

The *Survey of Student Life* was adapted from Artz and Riecken (1994a&b), and is now an eight-page scannable survey consisting of 181 questions and space for comments. The *Survey of Student Relationships* (Artz, Nicholson, & McNamara 2001) is a four-page scannable survey consisting of six demographic items and 89 questions. Within these two surveys a number of questions were compiled to form subscales on topics of interest related to understanding youth's use of aggression and violence. Cronbach's alpha was computed for each subscale on the surveys using data obtained from each school in which the surveys were administered. For both surveys the subscales proved to be highly related to the use of aggression, with Cronbach's alpha above the .75 cutoffs on every comparison.

Subscales within the *"Survey of Student Life"* (SSL)
The subscales in this survey focused on factors that had previously been shown to be implicated in the use of aggression and violence and included questions about values, participants views on reciprocity, and their need for peer acceptance (Artz, 1998; Artz & Riecken, 1994a&b); empathy derived from the *Interpersonal Reactivity Index* (Davis, 1983); problematic moral attitudes (Artz, 1998; Artz & Van Domselaar, 1996); self-esteem (Moretti, Holland, and McKay, 2001); number of fears, and victimization; use of physical violence (Artz, 1998); participants use of relational violence (Geiger, Zimmer-Gembec, & Crick, 2005; Vaillancourt & Hymel, 2004) use of sexual aggression/harassment (Artz, 1998; Katz, 2004); and school connectedness (Macklem, 2003; Sustainable Calgary, 2002; UK Home Office, 2003).

Subscales within the *"Survey of Student Relationships"*
The subscales within this survey had also previously been shown to be implicated in the use of violence and aggression and were focused on various aspects of self-in-relationship: masculinity and femininity (Bem, 1974); stereotypical gender attitudes (Artz, Riecken, MacIntyre, & Lam 1997; Dahlberg, Toal, & Behrens, 1998); rejection sensitivity (Downey & Feldman 1996; Downey, Irwin, Ramsey, & Ayduk, 2004); and emotional intelligence (Shutte & Malouff, 1999, pp. 40-41).

Research Sites
Our funding provided us with the resources necessary to involve in our study a high school and a middle school that had participated in the previous research with Sibylle Artz, the first author of this study. Both schools were willing to commit for the duration of the study (2004-2007), and the school district allowed us access to the students. This meant that we were able to set up a longitudinal study as well as compare the current cohort with the cohorts that had participated in the previous research. For the first time, we were also able to include in our research sites a girls-only private school, thus allowing us to draw comparisons between coeducational public school settings and a single-sex private school setting. The private school also committed to participating from 2004 to 2007, which would allow us to examine longitudinally self-reported differences between public and private school students.

Survey Administration

Prior to administering the surveys in participating schools, we distributed consent forms to parents of students who were under 13 years of age and general information about the project to all other parents of students who were being asked to participate in the surveys. At the time the surveys were administered in each school, students were provided with an oral introduction to the project that stressed their voluntary participation and the efforts being taken to ensure confidentiality and anonymity.

Dates for administering the surveys were set in advance by the schools. Surveys were administered in the three schools between January 21 and April 6, 2004. Each school arranged their students' participation in slightly different ways in order to fit with their timetables and teaching priorities, but the three-person university research team administered the surveys in every school. Participating students were assigned a five digit alphanumeric code that was pre-entered on their individual copies of the surveys at the time of administration. A removable name label was placed over the code to facilitate distribution, and students were instructed to peel off the label before beginning the surveys. Thus, when completed surveys were returned, only the code appeared on the surveys.

Sample

The demographic data for the participating students are given in Table 1 and discussed in the Results section. Table 1 shows that the students who participated in the study were between 12 and 15 years of age, and that public schools tended to be more homogeneous in ethnicity, the majority of students being Caucasian with English as their first language. The private school, a residential and day school, that drew international students, had more ethnic diversity in the students.

Table 1: Demographic Percentages for Male and Female Students

	Public Schools		Private School
	Males	Females	Females
	N=146	N=118	N=70
	%(N)	%(N)	%(N)
Age			
12 years old	13 (19)	16.1 (19)	1.4 (1)
13 years old	29.5(43)	26.3(31)	31.4(22)
14 years old	47.9(70)	52.5(62)	42.9(30)
15 years old	9.6(14)	5.1(6)	21.4(15)
16 years old	0	0	2.9(2)
Grade			
7	15(23)	16.9(20)	0
8	37(54)	28.8(34)	50(35)
9	47.3(69)	54.2(64)	50(35)
Ethnicity			
African/Caribbean	0.7(1)	0.8(1)	1.4(1)

Table 1: Demographic Percentages for Male and Female Students

	Public Schools		Private School
	Males	Females	Females
	N=146	N=118	N=70
	%(N)	%(N)	%(N)
Asian	2.1(3)	0.8(1)	28.6(20)
Caucasian	83.6(122)	86.3(101)	64.3(45)
Aboriginal	6.2(9)	6.0(7)	1.4(1)
South Asian	0.7(1)	0.8(1)	4.3(3)
Other	6.7(9)	5.1(7)	1.4(1)
First Language English	95.9(140)	99.1(116)	68.6(48)

Our sample comprised a sufficient proportion of each grade level in the school such that our results were representative of the grade population in each school.

School #1 (Community High School).
In this school, our sample of 131 grade 9 students represented 69% of the total grade 9 population (N=192). Nine students did not consent to participating in the study; other nonparticipation was due to spoiled surveys and student absences.

School #2: (Middle School).
In this school, our sample came from students in grades 7 and 8. Our sample of 43 grade 7 students was only 27% of the total grade 7 population (N=157). Many students did not return a signed parental consent form, and one entire grade 7 class was lost because its teacher neglected to send the parental consent forms home with students. Our participation within the grade 8 population was 88 students, or 88% of that grade's total population (N=100).

School # 3 (Private Girls' School).
In this school, our participants were drawn from grades 8 and 9. Our sample of 35 grade 8 students was 90% of the total grade 8 population (N=39). Two students lacked parental consent and two students were absent. In the grade 9 group, our sample of 37 students was 100% of the total grade 9 population.

ANALYSIS
Creating the Data Base
The questionnaires were scanned by Conway Information Systems and the data output to SPSS data files, with separate files for each survey and school. The data were then transferred to the SAS statistical package (version 8 and 9.1) for cleaning and data analysis. Any inconsistencies noted during the data entry scanning procedure were checked. For data missing in variables such as grade, age, or gender, the correct values were obtained and entered into the database. The skip patterns in the questionnaire were checked for consistency, and only

valid responses were used. Finally, subscale scores were calculated. Both SPSS and SAS databases were created with the final, corrected data as analyses were carried out in both of these statistical packages. In the data reported here we used SPSS.

Dependent Variable

Physical aggression subscale was our dependent variable. Students, in responding to the three questions in this variable, could select as their answer one of four options. For the questions about pushing and shoving in the last month the options were: never, 1-3 times, 4-9 times, 10+ times. For the question about beating up another student in the past year the options were never, once or twice, sometimes, very often. We opted to provide different response categories for the "beating up" question because this question had been used in 1993 and 1998 in the earlier version of the *Survey of Student Life* and had also been used in research by Jessor and Jessor (1977) and Barnes (1991) in that format. We thus retained the older version of that question in the redesigned newer version of the survey. To assist us with selecting students who fit into the category of reporting positively on our dependent variable, we grouped the responses into any physical aggressive and no physical aggression. For purposes of comparison, we then created four groups of interest: girls who use physical violence, boys who use physical violence, girls who do not use physical violence, and boys who do not use physical violence.

Correlation Analysis

In order to allow us to see how subscales were able to detect overall gender differences, we first analyzed the public school students' mean responses by independent samples t tests for gender differences. We included only the public school students in this analysis because we did not want setting to confound our findings. Secondly, to examine how our subscales correlated with self-reported use of physical aggression, we performed a bivariate correlational analysis based on gender and school in which we included both public and private school students.

RESULTS

Descriptive Results

With respect to respondents' use of violence and experiences of victimization, male students most frequently reported the highest levels of the use of physical, relational, and sexual aggression or harassment, while female respondents in the public and private schools reported lower rates. Private school girls reported the lowest rates of using physical, relational, and sexual aggression or harassment (see Table 2).

Table 2: Violence Percentages for Male and Female Students

	Public Schools		Private School
	Males	Females	Females
	N=146	N=118	N=70
Use Physical Violence	77.9	52.2	31.2
Use Relational Violence	83.6	76.2	61.9
Use Sexual Aggression/Harassment	56.8	31.3	14.3
Global Victimization	58	35	63.1
Victimized Physically at			
School	43.2	6.8	19
Home	9.6	6.8	9.2
In a Romantic Couple	16.4	19.8	23.5
Sexually Assaulted	1.4	16.9	1.9

Where global victimization is concerned, however, over 63% of the students from the private school reported having been victimized[3], a number much closer to the victimization rates reported by public school boys (58%) and far higher than the victimization rate of 35% reported by female students in the public schools. But when it came to school-based experiences with aggression and violence, male public school students reported the highest rates of being physically attacked at school (43.2%), in contrast to the 19% rate reported by private school girls and the 7% rate reported by public school girls. The self-reported rates for victimization at home were almost the same for public school males (9.6%) and private school girls (9.2%), with public school girls reporting a 6.8% rate. The percentage of public school girls reporting being sexually assaulted (16.4%), was in sharp contrast to public school boys (1.4%) and private school girls (1.9%).

Self-Reported Subscale Gender Differences
    As Table 3 shows, there were numerous significant gender differences in the public school sample. For males, we found higher masculinity scores, higher endorsement of stereotypes, higher levels of peer acceptance, higher endorsement of moral attitudes that support aggression and violence, higher levels of victimization by males, higher levels of overall aggression, and higher levels of relational and sexual aggression or harassment. For females, our results showed higher femininity scores, higher levels of rejection sensitivity, higher emotional intelligence, a stronger endorsement of values and reciprocity, higher empathy levels, higher levels of fear, and higher levels of social interdependence. At the same time, males and females reported experiencing similar amounts of

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3 Several of the private school girls we interviewed qualitatively told us that they had moved to the private school as a result of having been victimized in a public school. This may help to explain the high victimization rates reported by these girls.

victimization by females and had approximately the same degree of self-esteem and the same level of involvement in romantic relationships. Finally, there were no significant differences between the two genders with respect to school connectedness.

Table 3 Means of Subscale Responses for Male and Female Public School Students

	Males		Females	
	Number	Mean Response	Number	Mean Response
Subscales				
Masculinity	146	2.67	117	2.50(**)
Femininity	146	2.58	117	2.87(***)
Stereotype	145	2.02	118	1.54(***)
Rejection Sensitivity	143	1.71	118	2.00(***)
Romantic Partner	23	2.17	23	2.27
Emotional Intelligence	145	2.71	117	2.83(**)
Values	145	3.02	118	3.23(***)
Reciprocity	145	3.16	117	3.54(***)
Peer Acceptance	145	2.57	118	2.40(*)
Empathy	144	2.48	117	2.73(***)
Problematic Moral Attitudes	136	2.36	117	1.89(***)
Self-Esteem	137	3.04	117	2.90
Number of Fears	138	.940	117	1.44(*)
Victimization by Males	141	.939	117	.531(***)
Victimization by Females	140	.465	116	.476
Overall Aggression	140	.701	115	.412(***)
Relational Violence	140	.436	115	.241(***)
Sexual Aggression/Harassment	139	.317	115	.116(***)
School Connectedness	34	2.45	115	2.58

*p<.05, **p<.01, *** p<.001

Correlations with the use of Physical Violence

The pattern of association between subscale scores and the use of physical violence showed that masculine self-descriptions, the use of relational violence, endorsement of moral attitudes that support the use of aggression and violence (problematic moral attitudes) and victimization by males. Victimization by females was significantly related to the use of physical violence for both males and females (see Table 4).

Two patterns of association were significant only for female students in the public and private schools: a negative association with both the reciprocity subscale and the values subscale. One pattern of association applied only to pubic school male and female students: a strong significant relationship between using sexual aggression or harassment and using physical violence.

Table 4: Correlations for Subscale Responses for Male and Female Users of Physical Aggression

Subscales	Physical Aggression		Private School
	Public Schools		
	Males N=146	Females N=118	Females N=70
Masculinity	.204*	.217**	.248**
Femininity	.007	-.111	-.156
Stereotype	.055	-.037	-.184
Rejection Sensitivity	.141	.109	.119
Emotional Intelligence	.113	.114	-.014
Relational Violence	.593**	.714**	.543**
Sexual Aggression/Harassment	.514**	.491**	.208
Reciprocity	-.023	-.210**	-.308**
Peer Acceptance	.063	-.038	-.122
Values	.089	-.186**	-.328**
Empathy	-.025	-.071	-.060
Moral Attitude	.284**	.342**	.489**
Self-Esteem	.022	-.028	-.098
Number of Fears	.133	.075	-.097
Victimization by Males	.483**	.506**	.441**
Victimization by Female	.424**	.560**	.600**
School Connectedness	-.004	-.151	-.043

*p<.05, **p<.001 (two tailed)

DISCUSSION

Our finding that the male students who participated in our study used more physical violence confirms the findings in earlier research on gender differences discussed in our introduction. Our finding that males students also reported higher levels of relational aggression than females confirms previous research that males use this kind of aggression at least as much and sometimes more than girls (Craig 1998; David & Kistner, 2000; Hennington, Hughes, Cavell, & Thompson, 1998; Roecker, Caprini, Dickerson, Parks & Barton, 1999). Both findings indicate the need to engage males in deconstructing their use of violence especially in view of the strong correlation between our masculinity subscale and self-reported use of physical aggression for males and females.

If masculinity is as implicated in the use of aggression and violence as our findings suggest, we may well need to revisit the debate in criminology regarding masculinization theories as explanatory for female delinquency and crime, and with it female use of aggression and violence. However, we suggest caution in do-

ing so. As Reitsma-Street, Artz ,and Nicholson (2005) state, it is"when…theories about female delinquency are constructed out of already existing theories premised upon male experience, it appears that 'masculinity, of one sort or another, is at the core of [female] delinquency"(Chesney-Lind & Shelden, 1998)…(p. 70). In other words, as long as the behavior associated with the use of aggression and violence is described as"male"behavior, we will indeed find that aggressive girls appear more like boys. What needs to be discussed and evaluated is whether descriptors such as tough, powerful, assertive, dominant, hard, and so forth are necessarily male or simply gender neutral. We have, of course, landed ourselves in the middle of this debate by designating such descriptors as"male"and by creating masculinity and femininity subscales in the first place. This will need to be examined further.

Still, we should pay attention to self-descriptions that underpin the use of aggression and violence in our attempts to mitigate such behavior. We take seriously the calls by a number of researchers, (Garbarino, 1999; Pollack, 1998; Totten, 2000; Plummer, 1999) for interventions and programs that examine culturally bound, entrenched notions of male dominance. This is integral to reducing the use of aggression and violence in males and females.

Our finding that the use of relational aggression is significantly associated with the use of physical aggression for both girls and boys in all settings is as expected and confirms previous research (Moretti & Odgers, 2002). Also sexual aggression or harassment by both male and female students in the public schools is significantly correlated with use of physical aggression (Artz, Blais, & Nicholson, 2000). The absence of this finding in the girls' private school has yet to be explained and may be connected to the protective effect of a single sex setting.

Our finding that public school girls have higher self-reported levels of physical and relational violence than private school girls still needs to be explored but may be explained by their much smaller classes (10-12 students per class vs. 20-30 students per class) and by their being educated in single sex classes (AAUW Educational Foundation, 1998; Hamilton, 1985; Riordan, 1990). This suggests that manageable group size and single sex intervention and prevention programs would be successful for girls and boys.

Our finding that boys who participated in the study had higher victimization rates than girls is consistent with previous research (see, for example, Katz, 2004). However, the finding that private school girls reported higher victimization levels than those reported by public school girls seems almost anomalous, given the private school girls' lower levels of participation in physical and relational aggression. This needs further exploration. Our finding that 16.9% of the public school girls reported having been sexually assaulted confirms earlier research in the school district (Artz, 1998). Our finding that victimization by males and victimization by females is significantly correlated with the use of physical aggression as expected and confirms earlier research in the district and many years of previous research on the relationship between victimization and the use of violence (see, for example, Katz, 2004, for an in-depth discussion).

Our findings about victimization suggest it is important to consider when working with young people who use aggression and violence. Interventions that seek to prevent or reduce aggression and violence must deal with the victimization of those involved. For girls, sexual victimization is an ever-present risk that must be addressed preventatively as well as in its aftermath. All victimization, especially sexual victimization, marks those who have experienced it with post-traumatic stress that must be dealt with.

Our findings with regard to the significant gender differences in the means of our subscale responses for public school males and females were largely expected and reflect findings similar to those reported by previous cohorts in these schools in 1993 and 1998 for all the items that were repeated in our survey: values, reciprocity, peer acceptance, problematic moral attitudes, number of fears (Artz & Riecken, 1994 a&b; Artz, 1998; Artz, Riecken, MacIntyre, Lam, & Maczewski, 1999b). Girls seem to have experienced a more positive socialization. In designing aggression prevention programs for girls', even aggressive girls', positive social orientation can support our efforts to build relationships with them. We note, however, that despite overall positive social orientation of girls, such an orientation does preclude girls' engaging in aggression and violence. Girls who reported using physical violence also reported a negative association for reciprocity and values. This finding is of particular interest because it is inconsistent with previous findings in which only boys had a negative association of this kind (Artz, 1998; Artz & Van Domselaar, 1996). Something has changed since 1993 and 1998 when we first gathered data about values. The latest data suggests that negative social values now play a role for girls and that the development of positive values must play a role in violence prevention programs for girls.

Despite the overall significant differences in moral attitudes between boys and girls, with girls reporting higher positive scores, we found that an endorsement of moral attitudes that support the use of aggression and violence is significantly associated with both girls' and boys' self-reported use of physical aggression. This finding was as expected and confirms earlier research conducted in the district (Artz, 1998). Thus, for both girls and boys, moral attitudes play a significant role and need to be examined and challenged as part of any violence prevention approach.

The finding that girls have higher levels of emotional intelligence confirms previous research by Petrides and Furnham (2000), and the finding that girls have higher levels of empathy confirms research by Davis (1983). However, while we expected a gender difference in emotional intelligence and empathy, we also expected that lower scores on emotional intelligence and empathy would be related to the use of physical aggression (Hastings, Zahn-Waxler, Robinson, Usher, & Bridges, 2000; Schonert-Reichl, under review). Our data did not support this expectation. The lack of relationship between emotional intelligence and empathy and the use of physical aggression in our data could be due to the age differences between participants in our study and participants in other studies (i.e., both the Hastings et al., and the Schonert-Reichl studies involved younger children). The

impact of age differences should be further explored. It is also possible that males' self-reports overestimated their emotional intelligence (Petrides, Frederickson, & Furnham, 2004) and thereby artificially reduced the possibility of a relationship emerging between low emotional intelligence and physical violence. Our findings do suggest that beginning with emotional intelligence and empathy training with males may not yield the expected violence prevention result despite the current endorsement of this approach.

Our finding that females had higher levels of rejection sensitivity confirms previous research by Downey, Irwin, Ramsey, and Ayduk (2004). It also points to girls' greater social sensitivity, but as with emotional intelligence and empathy, the expected correlation between rejection sensitivity and the use of physical aggression was not supported. The non-support for the findings of Downey et al. could be explained by the age difference between participants in our study and those who took part in studies on adults conducted by Downey et al. (2004). The lack of relationship in our study theirs suggests that working on rejection sensitivity in the context of violence prevention may not be the best use of available resources.

Social interdependence, as described in our subscale, has not been previously explored by gender. It may be important to further research gender differences, however, given that the social interdependence subscale was not significantly correlated to self-reported use of physical aggression (see Table 4), this subscale may not be relevant to learning more about girls (or boys) and their use of aggression and violence.

Therefore our data point to key issues that require attention in violence prevention: victimization, the use of other forms of aggression such as relational and sexual aggression, stereotypical masculine self-descriptions that depict one as tough, powerful, assertive, dominant, hard, and so forth, and moral attitudes that support aggressive and violent behavior. While these factors play a significant role in the use of violence for both male and female students, they need to be understood in terms of their gender scripts. We believe that single sex programs stand a better chance of having an impact than co-educational approaches given our finding regarding the significantly higher involvement of males in the use of violence, the role of masculinity for boys and masculinization for girls, the differential role of social values for girls, and the high number of overall gender differences with respect to the correlates for the use of aggression and violence. Given the absence of any connection between emotional intelligence, empathy and rejection sensitivity, and the use of violence, our findings suggest that much time, trouble, and expense can be saved by focusing on the relatively few and dare we say, straightforward contributing factors that underpin young people's use of aggression and violence.

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