Secular Trends in Self-reported Violent Activity Among Ontario Students, 1983-2001

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ABSTRACT

Introduction: This paper examines secular trends in violence among Ontario students between 1983 and 2001, and variation by sex.

Methods: Using data from the Ontario Student Drug Use Survey, we examined self-reports of assault, weapon carrying, and gang fighting based on 10 cross-sectional surveys from 1983 to 2001. Respondents were derived from representative samples of Ontario students in grades 7, 9, 11, and 13 (OAC) who completed in-class anonymous self-administered surveys. Data were weighted to account for the complex survey design and analyzed using logit trend analyses.

Results: Short-term trends (1991-2001) showed assault, weapon carrying, and gang fighting have been on downward trajectories since the mid-1990s, reaching the lowest prevalence in 2001 among males and females. Long-term trends (1983-2001) among 11th-graders showed assault increased between 1985 and 1999, but declined in 2001. Gang fighting among males increased during the late 1980s and again during the mid-1990s, but declined between 1997 and 2001. Gang fighting among females remained at a stable, low level.

Discussion: Future monitoring is necessary to understand whether the decline in self-reported violent behaviour among adolescents is robust.

Injuries from violent acts are one of the leading causes of morbidity and mortality among young people in Canada.¹ Violence can also impede health and well-being by threatening fundamental prerequisites (e.g., peace, equity).² Current definitions of violence transcend the physical. Violence has been defined as "...a social act involving the abuse of power in order to control and/or oppress others."³ Indeed, for the public health community, "...violence takes on many more forms than physical blows or wounds. It includes sexual assault, neglect, verbal attacks, insults, threats, harassment and other psychological abuses."³ Thus, it is not surprising that official public health bodies in Canada^{3,4} and the US⁵ established the reduction of violence and youth violence (e.g., assault, weapon carrying) as a priority issue.

The complexity of violence indicators is especially evident for adolescents. Indeed, official records of youth crime hardly provide unambiguous trends. Canadian police reports show that the number of youths charged with violent crime (e.g., assault, robbery) decreased in the late 1990s after peaking in 1991, yet remained higher in 1998 compared to 1988.⁶ Also, while violent crime committed by young females is one third that of their male counterparts, the female rate doubled and increased faster than that of males over this period.

A study of Canadian youth court records showed that the proportion of violent cases increased between 1991 and 1996, but the authors acknowledge that this was largely due to minor assaults.⁷ Still other Canadian studies of youth crime statistics have shown a decrease in the 1990s,⁸ or stable rates.⁹

The limitations of such crime statistics are well known, and include the under-reporting of crime, the reporting by police to official agencies, changes in legislation, and enforcement practices.^{9,10} In general, viewing official crime statistics as a barometer for the total volume of violence can be misleading, since they tend to underestimate the level of crime because minor acts go unreported.¹¹

Population surveys, on the other hand, while limited by disclosure error, can provide useful information indicative of the overall volume and social location of deviance.¹⁰ For example, American trend data from the *Youth Risk Behavior Survey* (YRBS) of high school students show a decrease in violent behaviours over the

La traduction du résumé se trouve à la fin de l'article.

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1990s.¹² Specifically, between 1993 and 1999, self-reports of carrying a gun, carrying a weapon on school property, fighting, and fighting on school property all declined.¹³

Unfortunately, Canada does not have a national survey similar to the *YRBS* to assess trends in adolescent risk behaviours. However, one survey that can provide some utility in this regard is the *Ontario Student Drug Use Survey (OSDUS)*, which has surveyed Ontario elementary and secondary school students every two years since 1977. The purpose of this study is twofold: first, we examine trends in self-reported violence among Ontario students between 1983 and 2001; and second, we assess whether these trends vary by sex.

METHODS

Our data for this analysis consists of self-reported delinquency based on 10 cross-sectional surveys spanning an 18-year period between 1983 and 2001. These data are derived from the *Ontario Student Drug Use Survey (OSDUS)*, Canada's longest on-going school survey, administered by the Institute for Social Research at York University on behalf of the Centre for Addiction and Mental Health.¹⁴ Prior to 1999, only students in grades 7, 9, 11, and OAC (Ontario Academic Credit) were surveyed. Starting in 1999, the design included students in all grades from 7 through OAC. Because we assess trends, we limit the 1999 and 2001 data to students only in grades 7, 9, 11, and OAC.

Prior to 1999, each survey employed a full-probability single-stage (school board) cluster design, stratified by four regions. In 1999, the design was modified to a two-stage (school, class) cluster design stratified by region. In elementary schools, two classes were randomly selected (one 7th- and one 8th-grade) and in secondary schools, three classes were randomly selected regardless of grade. The survey excludes students in private schools, special education classes, institutions, and those living on Native reserves or army bases (a total of about 7% of Ontario students). The survey is an anonymous in-class self-administered questionnaire. Over the years, the student completion rate has varied between 71% and 83%. Reasons for non-completions included absenteeism (range 12%-15%), and lack of parental consent (3%-16%).

TABLE I

Percentage of Ontario Students (Grades 7, 9, 11, OAC) Reporting Violent Activities in the Past 12 Months, OSDUS 1991-2001

	(N=)	1991 (3,945)	1993 (3,571)	1995 (3,870)	1997 (1,974)	1999 (1,391)	2001 (1,242)
Assault							
Total		18.3	16.0	18.2	20.4	18.5	11.5
Males		24.9	21.1	25.6	27.7	28.9	16.6
Females		11.3	11.1	11.3	13.9	8.6	6.7
G7		18.3	19.6	22.5	27.7	17.1	13.5
G9		21.3	17.6	18.1	19.1	22.6	13.4
G11		19.1	15.2	18.9	19.9	20.1	9.5
OAC		11.1	6.9	8.8	10.1	9.4	7.2
Weapon Carrying							
Total	n/a	15.4	14.0	11.1	12.3	9.0	
Males	n/a	22.8	22.6	17.3	19.9	14.7	
Females	n/a	8.3	6.0	5.6	5.0	3.5	
G7	n/a	12.9	12.8	9.2	7.8	5.4	
G9	n/a	18.9	14.7	12.6	13.4	12.6	
G11	n/a	16.2	16.6	13.3	16.2	8.5	
OAC	n/a	10.1	8.4	6.6	9.6	7.9	
Gang Fighting							
Total		7.0	5.6	6.8	6.4	7.0	4.6
Males		10.5	7.8	10.0	9.5	9.9	8.5
Females		3.3	3.4	3.8	3.6	4.2	0.9
G7		5.8	6.7	5.7	7.7	5.9	4.4
G9		8.3	7.1	8.4	5.5	8.7	6.4
G11		7.9	4.4	7.5	8.0	6.9	2.8
OAC		5.1	2.4	3.7	1.9	5.1	4.0

Notes: Numbers in parentheses are the number of interviews. n/a = data not available.

Assault 2001: Sex (Design-Based $F[1,98]=25.93$, $p<0.001$); Grade (Design-Based $F[2.5,224.0]=1.77$, $p=0.163$)

Weapon-Carrying 2001: Sex (Design-Based $F[1,98]=47.7$, $p<0.001$); Grade (Design-Based $F[2.5,224.3]=2.08$, $p=0.114$)

Gang-Fighting 2001: Sex (Design-Based $F[1,98]=38.2$, $p<0.001$); Grade (Design-Based $F[2.8,245.7]=1.58$, $p=0.197$)

The primary characteristics of the sample have remained stable across years.

The items used here, which were first asked in 1983, pertain to three violent activities during the 12 months preceding the survey. Students were asked "How often in the last 12 months have you done each of the following...?": beat up anyone or hurt anyone (on purpose) excluding your brother or sister; carried a weapon, such as a gun or knife; and taken part in gang fights. Responses, originally in open-ended frequency counts, were dichotomized to indicate involvement in the activity at least once in the previous 12 months.

Our analyses are based on two analytical samples. First, trends over the six surveys conducted between 1991 and 2001 are based on 15,993 students in grades 7, 9, 11 and OAC. For the surveys conducted in 1997, 1999, and 2001, the delinquency items were asked of random-half samples.

The second analytical sample assesses trends over the 10 surveys conducted between 1983 and 2001 among 7,889 11th-graders. Because only 11th-graders received the violence questions in earlier surveys, long-term data are limited to this grade. The N varies between 273 and 1,125, with smaller Ns attributed to random-half sampling since 1997.

There are several statistical notes: First, missing values for the three items in 2001 were under 5%. Second, because our sample designs are complex, we weighted all estimates and all statistical tests are based on Taylor series methods,¹⁵ which account for the cluster effect.

Our logit trend analyses are based on a frequency count data matrix containing the design variables: *Year* (values 1 to 10 representing the 10 long-term survey cycles, and 1 to 6 for the 6 short-term cycles); *Year*², to represent non-linear quadratic trends; and *Sex* (1=male) and each dependent variable, represented by the frequency engaging in and not engaging in the activity.^{16,17} Frequency counts were based on weighted estimates that incorporated an average design effect due to the complex survey designs.

RESULTS

Short-term trends 1991-2001; Grades 7, 9, 11, OAC

Table I presents the percentage of students in grades 7, 9, 11, and OAC reporting the three violent activities during the 12 months before each survey, while Figure 1 displays these trends by sex. The 2001

TABLE II

Percentage of 11th-Graders Reporting Violent Activities in the Past 12 Months, OSDUS 1983-2001

	(N=)	1983 (931)	1985 (1,017)	1987 (1,121)	1989 (879)	1991 (1,125)	1993 (721)	1995 (932)	1997 (533)	1999 (357)	2001 (273)
Assault		11.1	8.5	13.9	16.0	19.1	15.2	18.9	19.9	20.1	9.5
Males		15.8	11.4	21.8	24.2	27.5	20.4	25.8	31.3	31.7	14.1
Females		6.5	5.0	7.1	7.4	10.5	9.7	12.0	8.0	8.0	4.5
Carried a Weapon		15.4	n/a	n/a	n/a	n/a	16.2	16.6	13.3	16.2	8.5
Males		24.7	n/a	n/a	n/a	n/a	22.6	25.2	21.4	26.0	13.0
Females		5.8	n/a	n/a	n/a	n/a	9.4	8.0	5.0	6.0	3.6
Gang Fighting		5.5	4.9	7.0	7.3	7.9	4.4	7.5	8.0	6.9	2.8
Males		6.7	6.8	11.5	12.9	13.0	6.4	12.9	13.9	9.8	4.9
Females		4.4	2.4	3.2	1.3	2.7	2.2	2.0	1.8	3.8	0.5

Notes: Numbers in parentheses are the number of interviews. n/a = data not available.

Note: nonlinear trend for total sample, $p < 0.05$

Note: linear trend for total sample, $p < 0.01$

Note: nonlinear trend-by-sex interaction, $p < 0.05$

Figure 1. Percentage Reporting Violent Activities During the Past 12 Months, OSDUS 1991-2001 (Grades 7, 9, 11, & OAC)

prevalence for assault was 11.5%, 9.0% for weapon carrying, and 4.6% for gang fighting. Males were significantly more likely to report each activity, but no significant variation by grade was found for any activity.

Results from the logit trend analyses for the three activities are shown in the upper panel of Table III. A significant nonlinear trend, with no sex interaction, was found for assault. For both sexes, assault increased between 1993 and 1997 and has declined

since, with a substantive drop between 1999 (18.5%) and 2001 (11.5%). Weapon carrying showed a significant decreasing linear trend, with no sex interaction. Since 1993, this behaviour has been steadily declining for both males and females, from 15.4% in 1993 to 9.0% in 2001. Gang fighting showed a significant nonlinear trend-by-sex interaction effect. Males show little fluctuation over the decade, with a minor dip in 1993 to 7.8% and climbing back up to sta-

ble rates at around 10%. Females remained steady between 1991 and 1999 at around 3% to 4%, but declined substantially in 2001 to less than 1%.

Long-term trends among 11th-Graders, 1983-2001

Table II and Figure 2 present the percentage of 11th-graders reporting assault and gang fighting between 1983 and 2001, broken down by sex. In 2001, 9.5% of

11th-graders reported assaulting someone; 8.5% reported weapon carrying; and 2.8% reported gang fighting.

The lower panel of Table III presents our long-term logit trend analyses. Both activities showed significant sex effects, with males being more likely to engage in each. A significant nonlinear trend, with no sex interaction, was found for assault. The pattern reflects a peak in 1991 (19.1%) and again in 1999 (20.1%), with a substantive drop in 2001 (9.5%). A significant year-by-sex interaction effect was found for gang fighting. Females show a linear decrease over the long term, from 4.4% in 1983 to less than 1% in 2001. Gang fighting among males increased between 1983 (6.7%) and 1997 (13.9%), and subsequently began to decrease to an all-time low of 4.9% in 2001.

DISCUSSION

The purpose of this study was to assess the nature of short-term and long-term trends in self-reported violence among Ontario adolescents. We found no dramatic increases in violence between 1991 and 2001, with the exception of assault between 1993 and 1997. In fact, the prevalences of assault, weapon carrying, and gang fighting are currently on downward trajectories, with each reaching all-time lows in 2001.

Over the long term, assault increased between 1985 and 1999 among 11th-graders, but significantly declined in 2001. Gang fighting among 11th-grade males increased during the later 1980s and again during the mid-1990s, but declined dramatically between 1997 and 2001. Gang fighting among females remained stable and low over the long term. These trends are generally consistent with American high school survey data,¹² and Canadian youth crime statistics,^{6,8} although our data show more recent decreases.

Although it is premature to consider the recent decline in reported aggression between only two time points a dominant trend, we can still suggest several explanations. One may be the introduction of Ontario's "Safe Schools Act" in 2000, which includes a zero-tolerance policy toward violence, a code of conduct, and prevention programs. Another reason may be the increase in public attention and a

TABLE III
Logit Trend Analysis

	Year	Year ²	Sex	Year x Sex	Year ² x Sex
Short-term: 1991-2001 (Grade 7, 9, 11, OAC)					
Assault (N=10,262)	-0.064	-0.048*	0.947***	0.059	0.029
Weapon Carrying† (N=9,751)	-0.149**	-0.015	1.371***	0.013	0.010
Gang Fighting (N=10,940)	-0.092	-0.077*	0.993***	0.105	0.094*
Long-term: 1983-2001 (Grade 11 only)					
Assault (N=6,284)	0.030	-0.029**	1.303***	0.044	-0.007
Gang Fighting (N=6,005)	-0.093	0.008	1.820***	0.120*	-0.038

Notes: Table entries are logit coefficients. All analyses were based on the full-adjusted models.

† Analyses based on 1993-2001

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: nonlinear trend for total sample, $p < 0.01$

Note: linear trend-by-sex interaction, $p < 0.05$

Figure 2. Percentage Reporting Violent Activities During the Past 12 Months, OSDUS 1983-2001 (Grade 11 only)

shift in societal attitudes towards less tolerance for childhood aggression (e.g., bullying in schools).¹⁸ Finally, this decline in youth violence may just reflect the decrease in the violent crime rate over the late 1990s among Canadian adults.¹⁹

Given the correlation between violence and substance use,^{11,20-22} it is striking that changes in reports of violent behaviour vary from substance use over the same period. Among all students, past-year prevalence of most drugs showed a strong upward trend between 1991 and 1999,²³ whereas assault, weapon carrying, and gang fighting have shown weak, if not downward, movement. Similarly, the long-term trends for violence and drug use also diverged, mainly during the 1980s when drug use decreased and violent behaviour generally increased. American survey data also point to diverging trends between substance use (i.e., cannabis, cocaine) and some violence indicators over the 1990s.²⁴

This divergence suggests that, although these two behaviours share many common determinants (e.g., childhood abuse),²⁵⁻²⁸ they also likely have unique factors influencing their wax and wane. For example, the economic boom of the mid-1990s may have had a countervailing effect, given that violence tends to decrease in prosperous times,^{28,29} yet disposable income is more readily available to purchase recreational drugs.³⁰ As well, societal attitudes surrounding recreational drug use have become more lax, especially for cannabis, whereas tolerance for violence seems to be decreasing.^{14,31}

Of course, study limitations must be noted. First, our data rely on self-reports that may be influenced by both memory and disclosure error. Indeed, both underreporting and overreporting of delinquency have been noted.^{10,32} Nevertheless, any bias should not affect trend estimates if it remains stable over time. Moreover, the anonymous self-report method is frequently used in delinquency research and has been found to have good reliability and validity.³³

Second, we cannot rule out the possibility of reduced reporting due to increased stigma surrounding violence. Third, results are not generalizable to school drop-outs, institutionalized youth, or homeless youth for whom delinquent activity may be more prevalent.^{34,35}

Because cross-sectional data do not allow for causal inferences, further research is needed to assess potential explanations for the recent decline in youth violence, and, indeed, future monitoring is necessary to reveal whether this decline – seen especially between 1999 and 2001 – is an ephemeral dip, or the beginning of a more robust downward trajectory. Either finding will have important ramifications for community well-being.

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RÉSUMÉ

Objectif : Les auteurs examinent les tendances générales de la violence parmi les élèves de l'Ontario entre 1983 et 2001 et les différences selon le sexe.

Méthode : À l'aide de 10 échantillons (de 1983 à 2001) du Sondage sur la consommation de drogues parmi les élèves de l'Ontario, on a étudié des comptes rendus personnels de voies de fait, de port d'armes et d'échauffourées entre gangs. Les répondants étaient des élèves des 7^e, 9^e, 11^e et 13^e années qui ont rempli des questionnaires anonymes pendant les heures de classe. Après avoir ajusté les données pour tenir compte du plan complexe du sondage, on a fait des analyses logistiques des tendances.

Résultats : Les tendances à court terme (1991-2001) montrent que les voies de fait, le port d'armes et les échauffourées entre gangs ont diminué depuis le milieu des années 1990. Chez les garçons comme chez les filles, la plus faible incidence de ces problèmes a été observée en 2001. Les tendances à long terme (1983-2001) parmi les élèves de la 11^e année montrent que les voies de fait ont augmenté entre 1985 et 1989, mais diminué en 2001. Les échauffourées entre gangs composés de garçons ont augmenté à la fin des années 1980 et au milieu des années 1990, mais elles ont diminué entre 1997 et 2001. Les échauffourées entre gangs composés de filles sont restées à un niveau constant et bas.

Discussion : Il faut encore des études pour déterminer la solidité de la baisse de la violence observée parmi les adolescents.

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Coming Events / Activités à venir

To be assured of publication in the next issue, announcements should be received by **June 1, 2003** and valid as of **August 31, 2003**. Announcements received after **June 1, 2003** will be inserted as time and space permit.

Pour être publiés dans le prochain numéro, les avis doivent parvenir à la rédaction avant le **1^{er} juin 2003** et être valables à compter du **31 août 2003**. Les avis reçus après le **1^{er} juin 2003** seront insérés si le temps et l'espace le permettent.

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Contact/Contacter :

A. Les McDonald
Executive Director/Directeur général
Canadian Network For Asthma Care /
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Tel: 416-224-9221 Fax/Téléc : 416-224-9220
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