

Associations Between Peer Victimization and Suicidal Ideation and Suicide Attempt During Adolescence: Results From a Prospective Population-Based Birth Cohort

Marie-Claude Geoffroy, PhD, Michel Boivin, PhD, Louise Arseneault, PhD, Gustavo Turecki, MD, PhD, Frank Vitaro, PhD, Mara Brendgen, PhD, Johanne Renaud, MD, FRCPC, Jean R. Séguin, PhD, Richard E. Tremblay, PhD, Sylvana M. Côté, PhD

Objective: To test whether adolescents who are victimized by peers are at heightened risk for suicidal ideation and suicide attempt, using both cross-sectional and prospective investigations.

Method: Participants are from the Quebec Longitudinal Study of Child Development, a general population sample of children born in Quebec in 1997 through 1998 and followed up until 15 years of age. Information about victimization and serious suicidal ideation and suicide attempt in the past year was obtained at ages 13 and 15 years from self-reports (N = 1,168).

Results: Victims reported concurrently higher rates of suicidal ideation at age 13 years (11.6–14.7%) and suicide attempt at age 15 years (5.4–6.8%) compared to those who had not been victimized (2.7–4.1% for suicidal ideation and 1.6–1.9% for suicide attempt). Being victimized by peers at 13 years predicted suicidal ideation (odds ratio [OR] = 2.27; 95% CI = 1.25–4.12) and suicide attempt (OR = 3.05, 95% CI = 1.36–6.82) 2 years later,

even after adjusting for baseline suicidality and mental health problems and a series of confounders (socioeconomic status, intelligence, family's functioning and structure, hostile-reactive parenting, maternal lifetime suicidal ideation/suicide attempt). Those who were victimized at both 13 and 15 years had the highest risk of suicidal ideation (OR = 5.41, 95% CI = 2.53–11.53) and suicide attempt (OR = 5.85, 95% CI = 2.12–16.18) at 15 years.

Conclusion: Victimization is associated with an increased risk of suicidal ideation and suicide attempt over and above concurrent suicidality and prior mental health problems. The longer the history of victimization, the greater the risk.

Key words: suicidal ideation, suicide attempt, adolescence, peer victimization, bullying

J Am Acad Child Adolesc Psychiatry 2016;55(2):99–105.

Suicide is among the top causes of mortality worldwide, especially in adolescents and young adults.^{1–3} According to recent US epidemiological data, 12.1% of adolescents (aged 13–18 years) “seriously thought about killing themselves” and 4.1% “tried to kill themselves” in their lifetimes.⁴ In Canada, in 2008 through 2009, 7.4% of adolescents aged 14 to 15 years “seriously considered attempting suicide” and 3.3% “attempted suicide” in the past year.⁵ Adolescents who have attempted suicide are at high risk for mortality and for psychological and social adjustment problems in adulthood,^{6–8} indicating that efforts need to be directed toward preventing the onset of suicide behaviors in adolescence.

Over the last few years, considerable attention has been given to the possible link between peer victimization and suicidal ideation and/or suicide attempt. Victimization by peers is highly prevalent in adolescence, with rates ranging from 11% to 40% across 25 countries,⁹ and it has been associated with concurrent suicidal ideation and suicide

attempt.^{10–12} Surprisingly, however, few prospective studies have tested whether peer victimization increases the risk that adolescents will later develop suicidal ideation or attempt suicide.^{13–17} In fact, most prospective studies have generally focused on self-harm^{17–19}; however, adolescents who self-harm do not necessarily want to take their own lives. Previous prospective studies pertaining to suicidal ideation are inconsistent: a few studies indicate that peer victimization predicts suicidal ideation,^{13,15–17} but at least 1 study did not find such an association.¹⁴ For example, in a large sample of Norwegian adolescents, peer victimization at 14 years was not predictive of suicidal ideation 1 year later after baseline suicidality was controlled for.¹⁴ Meanwhile, in the Avon Longitudinal Study of Parents and Children (ALSPAC) cohort, peer victimization assessed between 4 and 10 years across different informants was prospectively associated with suicidal ideation in preadolescents after adjusting for confounders.¹⁷ Importantly, few cross-sectional¹⁰ and only 1 prospective survey in early adulthood²⁰ have looked at the association between peer victimization and suicide attempt.

Understanding the predictive role of peer victimization in suicidal ideation and attempt in a general population of adolescents could provide important information about



Clinical guidance is available at the end of this article.

suicide risk factors and suicide prevention strategies. The purpose of the present study was to investigate among a representative cohort of individuals born in 1997 through 1998 in the Canadian province of Quebec whether adolescents who are victimized by peers are at heightened risk for later suicidal ideation and suicide attempt. We expected peer victimization to co-occur with and to predict suicidal ideation and suicide attempt. As victims may exhibit pre-existing risk for suicide and mental health problems, we tested whether victimization increased the risk for suicidal ideation and suicide attempt above and beyond baseline suicidality, mental health problems, and other potential sources of influence.

METHOD

Sample

The Quebec Longitudinal Study of Child Development (QLSCD) is a representative cohort of 2,120 youths born in the Canadian province of Quebec in 1997 through 1998. Data were collected annually or biannually from 1998 through 2013.

In the present study, we included 1,168 participants for whom measures of peer victimization and suicidality were collected at both 13 and 15 years of age, for 55% of the original cohort. To adjust for attrition, we conducted analyses with and without inverse probability weights, representing participants' probabilities of being included in the study sample ($N = 1,168$) conditional on variables related to attrition: males (46% versus 57%, $\chi^2 = 25.68, p < .001$) and participants of nonwhite ethnicity (4.8% versus 13.8%, $\chi^2 = 52.36, p < .001$), high maternal depressive symptoms (1.48 versus 1.34, $t_{1968.69} = 2.43, p = .015$), and low socioeconomic status (0.11 versus $-0.15, t_{2093} = -5.98, p < .001$) were underrepresented in the study sample. The results with and without weights did not differ; the latter are presented here. In addition, we tested whether restriction of analyses to a sample of participants with assessments of both victimization and suicidality outcomes at ages 13 and 15 would affect our results. Therefore, we repeated our analyses in a larger sample of participants with assessment of suicidality outcomes at 15 years only (imputed $n = 1,446$, representing 69% of the surviving cohort); patterns of results remained unchanged.

Ethics Consideration

Ethical approval was given by the Quebec Institute of Statistics and the St-Justine Hospital Research Centre. Informed written consent was obtained from all participating parents at each assessment and from adolescents at the 15-year assessment. Adolescents were assured confidentiality, which is essential to ensure reliability of self-reports.²¹ All adolescents and their parents were provided with a list of resources in case of needing help. If they rated highly on the

suicidal behavior scale, a pop-up appeared on screen to encourage them to seek help.

Measures

Past-Year Suicidal Ideation and Suicide Attempt. Suicidal ideation was assessed with 1 question administered to participants at 13 and 15 years: "in the past 12 months, did you ever seriously think of attempting suicide"; answering "don't know" or refusal was coded as 0. If they answered affirmatively, they were asked: "in the past 12 months, how many times did you attempt suicide," dichotomized as 0 versus ≥ 1 .

Peer Victimization. Peer victimization was assessed at 13 and 15 years using 7 items (4 of which are based on the Self-report Victimization Scale²²). These items were selected on the basis of their reflecting various physical, verbal, direct, and indirect instances of victimization, including the new forms of cyber-victimization, through answering questions such as: how many times it happened (since the beginning of this school year) that another student in school had done the following: called you names/said mean things; didn't let you play in his/her group; pushed/hit/kicked you; said bad things behind your back; teased you in a mean way; made you pay/give something so they would leave you alone; insulted/threatened/intimidated you on the Internet and cell phone. Items were administered in the second half of the school year (February to June) and were rated on a 4-point scale (never = 0; rarely = 1; often = 2; very often = 3; don't know/refusal coded 0). This peer victimization scale is analogous to that used successfully in previous work²³ and has shown good internal consistency (Cronbach alphas were 0.81 at age 13 years and 0.82 at age 15 years). Because of the skewed distribution, victimization was treated categorically. Participants were identified as being victimized by peers if they answered "often" or "very often" to at least 1 of the 7 questions in accordance of the conventional definition.

Prior Mental Health Problems. Oppositional/defiance and inattention/hyperactivity symptoms were rated by school teachers when participants were 6, 7, 8, 10, and 12 years of age. Questions were derived from the Canadian National Longitudinal Study of Children and Youth,²⁴ which incorporates items from the Child Behavior Checklist,²⁵ the Ontario Child Health Study Scales,²⁶ and the Preschool Behavior Questionnaire.²⁷ Oppositional/defiance was assessed with 4 items (e.g., defiant/refused to comply; punishment didn't change behavior), and inattention/hyperactivity was assessed with 9 items (e.g., could not sit still; was unable to concentrate) rated on a 3-point scale (0 = never or not true; 1 = sometimes or somewhat true; 2 = often or very true). Cronbach alphas ranged from 0.81 to 0.84 for opposition/defiance and from 0.89 to 0.91 for hyperactivity/inattention. Scores were averaged across ages. Scales demonstrated adequate sensitivity and external validity in this cohort.²⁸ Depression was self-reported at 12 years using 10 items from

TABLE 1 Prevalence of Suicidal Ideation and Suicide Attempt in the Last 12 Months and Peer Victimization at 13 and 15 Years^a

Variable	Total		Females		Males	
	13 y	15 y	13 y	15 y	13 y	15 y
Suicidal ideation, % (n)	4.5 (56)	5.9 (86)	5.3 (35)	8.6 (65)	3.7 (21)	3.0 (21)
Suicide attempt, % (n)	2.4 (30)	2.8 (40)	2.7 (18)	4.5 (34)	2.1 (12)	0.9 (6)
Peer victimization, % (n)	21.0 (258)	17.4 (251)	16.7 (111)	17.5 (132)	25.8 (147)	17.2 (119)

Note: $n = 1,234$ at 13 y and $n = 1,446$ at 15 y.
^aBased on maximum available sample.

the Children Depression Inventory (CDI),^{29,30} assessing symptoms of the past 2 weeks on a 3-point scale. The CDI has shown good reliability and discriminative validity consistent with clinical assessment of depression³¹; the Cronbach alpha was 0.81. For analysis purposes, we generated 3 variables tapping into mental health problems, for which a score of the 90th or higher percentile of symptoms was identified as an elevated symptom level.

Other Confounding Influences. Potential confounders at different ages were identified a priori from the literature.³ Covariates were measured at 13 and 15 years unless otherwise indicated. At 2.5 years, mothers completed the Parental Depression Questionnaire.³² Mothers who reported they had been depressed for most of the time for 2 weeks or more in their lifetimes were asked whether they ever thought of or attempted suicide. At 10 years, participants' verbal intelligence was estimated using the Peabody Picture Vocabulary Test, standardized for age in months at administration.^{33,34} Other environmental factors included family socioeconomic status (SES; aggregate of annual gross income, parental education level, and occupational prestige), based on the scheme of Willms and Shields³⁵; family structure (biological parents/blended/single); family functioning, assessed with 8 items (i.e. communication, problem resolution, and control of disruptive behaviors); and hostile-reactive parenting, assessed with 4 items (i.e., corporal punishment, raising voice). All questionnaires are available online (<http://www.jesusjesera.stat.gouv.qc.ca>).

Statistical Analyses

In cross-sectional analyses, we used logistic regressions to test whether suicidal ideation and suicide attempt were associated with frequent victimization.

Using logistic regressions in longitudinal analyses, we tested whether victimization at 13 years was associated with suicidal ideation and suicide attempt 2 years later. The associations were adjusted for suicidality at baseline (suicidal ideation or suicide attempt at age 13 years), for 3 mental health problems by age 12 years (depression, oppositional/defiance, and inattention/hyperactivity problems), and for 6 additional confounders (i.e., socioeconomic status, intelligence, family functioning and structure, hostile-reactive parenting, and maternal suicidality history).

The temporality of longitudinal association was further examined in sensitivity analyses of incident cases of suicidal ideation and suicide attempt. Logistic regressions were conducted in which participants who reported suicidal ideation and suicide attempt at

baseline were excluded from the analyses. The results were similar to those presented here, but analyses were based on small numbers of incident cases. Finally, we examined whether the prospective association between victimization and later suicidality varied as a function of the chronicity of the victimization experience in adolescence (i.e., being victimized at both 13 and 15 years; being victimized at 13 or 15 years versus never being victimized) using logistic regression.

To minimize further data loss, missing information on covariates was imputed using multiple imputations by chained equations³⁶ method, and analyses were run across the 10 imputed data sets.

RESULTS

The overall prevalence of suicidal ideation slightly increased from 4.5% at age 13 years to 5.9% at age 15 years. The prevalence of suicidal ideation was higher and increased for females (5.3–8.6%) compared to males (3.7–3.0%) (Table 1). The prevalence of suicide attempt increased between 13 and 15 years for females (2.7–4.5%) and decreased for males (2.1–0.9%) (Table 1). The prevalence of peer victimization was 16.7% for females and 25.8% for males at age 13 and 17.5% for females and 17.2% for males at age 15 years; 8.2% (n = 95) of the sample reported being victimized at both ages. Although the prevalence of suicidality and victimization differed by sex, the associations between victimization and suicidality did not differ by sex. Hence we present results for both sexes combined, with adjustment for sex (see Table 2 footnote). Associations were examined with and without adjustment for confounders and prior mental health problems.

Cross-sectional analyses indicate that victimization was associated with suicidal ideation and suicide attempt at both 13 and 15 years (Table 2). The associations were attenuated but remained significant after adjusting for confounders and prior mental health problems. Being frequently victimized was concurrently associated with suicidal ideation at 13 years (odds ratio [OR] = 3.40; 95% CI = 1.82–6.37) and 15 years (OR = 3.74; 95% CI = 2.19–6.38), as well as with suicide attempt at 13 years (OR = 2.28; 95% CI = 0.97–5.38) and 15 years (OR = 3.16; 95% CI = 1.19–6.69), in a fully

TABLE 2 Cross-Sectional Associations of Peer Victimization by Suicidality Outcomes (n = 1,168)

	Peer Victimization ^a		Suicidality Outcomes		
	Yes % (n)	No % (n)	Model 1 OR (95% CI)	Model 2 OR (95% CI)	Model 3 OR (95% CI)
Suicide ideation					
13 y	11.6 (30)	2.7 (26)	5.12 (2.89–9.09)	4.40 (2.44–7.93)	3.40 (1.82–6.37)
15 y	14.7 (37)	4.1 (49)	4.28 (2.58–7.08)	4.12 (2.44–6.94)	3.74 (2.19–6.38)
Suicide attempt					
13 y	5.4 (14)	1.6 (16)	4.02 (1.88–8.63)	3.16 (1.45–6.91)	2.28 (0.97–5.38)
15 y	6.8 (17)	1.9 (23)	3.84 (1.91–7.69)	3.59 (1.74–7.38)	3.16 (1.49–6.69)

Note: Model 1 is adjusted for sex. Model 2 is additionally adjusted for socioeconomic status (13 or 15 y); family structure (biological/blended/single; 13 or 15 y) and functioning (13 or 15 y); hostile-reactive parenting (13 or 15 y); intelligence (10 y); and maternal lifetime suicidal ideation/suicide attempt. Model 3 is additionally adjusted for depression (12 y); opposition/defiance (6–12 y); inattention/hyperactivity (6–12 y) problems; p for sex interaction = .337 and .532 for suicidal ideation at 13 and 15 y, respectively; and .990 and .459 for suicide attempt at 13 and 15 y, respectively. OR = odds ratio.

^aBased on maximum available sample; n = 1,234 at 13 y and n = 1,446 at 15 y.

adjusted model (i.e., adjusted for mental health and confounders).

Longitudinal models showed that the experience of frequent victimization at 13 years predicted both subsequent suicidal ideation and suicide attempt 2 years later (Table 3), even after taking into account suicidality at baseline. Associations were attenuated after adjustment for confounders and prior mental health problems: victimization at 13 years increased the risk of suicidal ideation at 15 years by 2.27 times (95% CI = 1.25–4.12) and attempt by 3.05 times (95% CI = 1.36–6.82).

Finally, as shown in Table 4, we found that only youths who experienced chronic victimization had an increased risk of suicidal ideation at age 15 (OR = 5.41; 95% CI = 2.53–11.53) and suicide attempt (OR = 5.85; 95% CI = 2.12–16.18), in models adjusting for prior suicidality, mental health problems, and other confounders.

DISCUSSION

During adolescence, the peer group becomes increasingly important. Thus, being victimized by peers (i.e., being frequently teased/called names or excluded from social groups and activities) can represent a major source of stress, with potentially damaging consequences.^{37,38} In this population-based sample, such victimization experiences were common, with 17–21% of 13- to 15-year-old adolescents reporting being often or very often victimized by their peers. Such victimized adolescents concurrently reported a higher likelihood of past 12-month suicidal ideation and suicide attempt. Furthermore, adolescents who were frequently victimized by their peers at age 13 years were more likely to develop suicidal ideation and make a suicide attempt 2 years later. More importantly, adolescents who reported having been frequently victimized both at 13 and 15 years had the highest risk of suicidal ideation and suicide attempt at 15 years.

This is the first study to show a predictive association between victimization and suicidal ideation and suicide attempt in mid-adolescence while taking into account a variety of factors, including previous suicidality, mental health problems (by age 12 years) such as depression, opposition/defiance, and inattention/hyperactivity problems, as well as family adversity. According to prior studies, peer victimization often occurs within the context of other

risk factors, such as mental health problems and familial adversity,³⁹ which may contribute to suicidality.³ Thus, our study was able to distinguish the role of peer victimization from these co-occurring factors to more clearly establish its contributions as a distinct predictor of suicidality. The rates of suicidal ideation and suicide attempt typically increased in late adolescence⁴⁰; thus our study suggested that victimization represents a risk factor for the relatively early emergence of suicidality.

Our findings are in line with those of many other cross-sectional and the few longitudinal studies on bullying/suicidality association.^{10,11,15-17} However, in a prior Norwegian study,¹⁴ the predictive association from peer victimization in adolescence to suicidal ideation (not confounded by depressive symptoms) 1 year later became nonsignificant after taking into account suicidal ideation at baseline. Reasons for these discrepant findings could relate to differences in measurement of suicidal ideation and length of follow-up. Specifically, suicidal ideation included more passive and indirect thoughts (e.g., life is not worth living; my family would be better off without me) than those used in the present study (e.g., ever seriously think of attempting suicide).

Several possible explanations exist for the observed association between peer victimization and suicidality. First, 1 etiological pathway may involve mental health, especially depression. In 1 study on self-harm, being victimized in childhood was associated directly with an increased risk of self-harm in late adolescence, but also indirectly via subsequent depression.¹⁸ In the present study, we showed that being victimized by peers in adolescence could lead to suicidality while accounting for prior levels of depression. However, we could not test the possibility that depression mediated the association of peer victimization with suicidality. Still, not all victimized adolescents will exhibit higher rates of suicidal ideation and suicide attempt. Hence, it has been suggested that peer victimization may trigger mental health problems or suicidality in interaction with genetic vulnerability to psychopathology. For instance, a recent study found that peer victimization increased the risk of depression in girls who carried 2 copies of the short allele at the promoter region of the serotonin transporter gene, but not in those without 2 copies.⁴¹ Second, the experience of peer victimization may lead to biological alteration with lasting effects on psychopathology and suicidality, as

TABLE 3 Longitudinal Associations of Peer Victimization at 13 Years Predicting Suicidality Outcomes 2 Years Later (n = 1,168)

	OR (95% CI)		
	Model 1	Model 2	Model 3
Peer victimization at 13 y			
Suicidal ideation at 15 y ^a	2.60 (1.50-4.51)	2.53 (1.43-4.47)	2.27 (1.25-4.12)
Suicide attempt at 15 y ^b	3.64 (1.78-7.43)	3.58 (1.69-7.56)	3.05 (1.36-6.82)

Note: Model 1 is adjusted for sex. Model 2 is additionally adjusted for socioeconomic status (13 y); family structure (biological/blended/single; 13 y) and functioning (13 y); parental hostile-reactive parenting (13 y); intelligence (10 y); and maternal lifetime suicidal ideation/suicide attempt. Model 3 is additionally adjusted for depression (12 y); opposition/defiance (6–12 y); and inattention/hyperactivity (6–12 y). OR = odds ratio.

^aAdjusted for suicidal ideation at 13 y.

^bAdjusted for suicide attempt at 13 y.

TABLE 4 Longitudinal Associations of Duration of Victimization and Suicidality Outcomes at 15 Years (n = 1,168)

	OR (95% CI)		
	Model 1	Model 2	Model 3
Duration of peer victimization (vs. not victimized at 13 and 15 y)			
Was victimized at 13 or 15 y			
Suicidal ideation at 15 y ^a	2.06 (1.12–3.79)	1.94 (1.03–3.63)	1.88 (1.00–3.55)
Suicide attempt at 15 y ^b	1.77 (0.75–4.21)	1.76 (0.73–4.25)	1.70 (0.69–4.18)
Was victimized at 13 and 15 y			
Suicidal ideation at 15 y ^a	5.90 (2.93–11.87)	5.92 (2.88–12.14)	5.41 (2.53–11.53)
Suicide attempt at 15 y ^b	7.56 (3.18–17.98)	7.52 (2.99–18.92)	5.85 (2.12–16.18)

Note: Model 1 is adjusted for sex. Model 2 is additionally adjusted for socioeconomic status (13 y); family structure (biological/blended/single; 13 y) and functioning (13 y); hostile-reactive parenting (13 y); intelligence (10 y); and maternal lifetime suicidal ideation/suicide attempt. Model 3 is additionally adjusted for depression (12 y); opposition/defiance (6–12 y); and inattention/hyperactivity (6–12 y) problems. OR = odds ratio.

^aAdjusted for suicidal ideation at 13 y.

^bAdjusted for suicide attempt at 13 y.

follows: victimized children have shown dysregulation of the hypothalamic-pituitary-adrenal axis,⁴² and such dysregulations have been involved in the development of psychopathology⁴³ and suicidality⁴⁴; and victimized children were also shown to have elevated C reactive protein at mid-life, a marker for neuro-inflammation in their bloodstream,⁴⁵ and inflammation markers have been associated with increased risk of developing depression.⁴⁶

This representative birth cohort provided a unique opportunity to examine the temporal relation between victimization by peers and the relatively early onset of suicidal ideation and suicide attempt in a contemporary sample of Canadian adolescents. Indeed, the study's main strengths are its prospective design, with suicidality measured at 2 time points during adolescence to identify incident cases, self-reported and teacher-reported assessments of prior mental health problems, and inclusion of various familial adversity factors and intelligence. Another strength includes repeated assessments of peer victimization based on 7 items covering a variety of behaviors from verbal (such as teasing/calling names) to cyberbullying. Moreover, unlike previous studies, we focused on serious suicidal ideation and suicide attempt, which are of clinical significance.⁴³ Nevertheless, the present findings should be interpreted in light of their limitations. There were some missing data, with 56% of the original sample with assessment of bullying and suicidality at both 13 and 15 years. To avoid further loss of data, missing data were imputed using multiple imputation following current guidelines.⁴⁷ Sensitivity analysis using the larger sample of those with information at 15 years (n = 1,446, representing 69% of the original sample) and using sample weights to adjust for attrition suggests that results reported here are robust. Second, as in most studies of victimization and suicide, the present study relied on self-reports. A potential limitation of self-reported victimization is that it reflects a perception potentially biased by the self-system and mental health status.^{23,48} The use of self-report for both victimization and suicide may also have induced shared method variance and inflated effect sizes. However, in this population-based survey, no clinical interviews were conducted, and adolescents were the only informants, as

after childhood, parents are generally less aware of their offspring's personal experiences, especially suicidal ideation^{24,49} and peer victimization.⁵⁰ Furthermore, we were not able to examine the separate influence of cyberbullying on suicidality because of the small numbers of cyberbullied adolescents. A recent meta-analysis suggested that cyberbullying is more strongly related to suicidal ideation than traditional bullying.¹¹ There were no deaths due to suicide in our study. Thus, the relation of peer victimization and suicidal ideation and nonfatal suicide attempt may differ for completed suicide. One observational study based on coroner records reported that only 6% of suicides in youths could be attributed to peer victimization,⁵¹ whereas 2 prospective studies reported increased rates of suicide mortality in adulthood among those who had been victimized by peers in early childhood.^{20,52} In addition, unmeasured confounders might explain associations such as perpetration of bullying,⁵³ but in this study, victimizing others was not associated with subsequent suicidality. Another limitation is low statistical power, particularly for investigating sex differences in associations, because of the small number of males reporting suicidal ideation and/or suicide attempt. Also, it is important to underline that the present findings document the directionality of associations but do not prove causality. Finally, as the follow-up was only 2 years, we do not know whether the consequences of victimization on suicidality persist as participants enter adulthood.

The association between being victimized by peers and suicidal ideation and suicide attempt in adolescence, distinct from prior suicidality, mental health problems, and family adversity, has implications for practice. Universal prevention of peer victimization is paramount to reduce the rate of suicidal ideation and suicide attempt in adolescence. A recent systematic review of 44 anti-bullying programs found, on average, that school-based programs are effective in reducing victimization by 17% to 20%.⁵⁴ Future studies are urgently needed to test whether reducing the occurrence of bullying translates into a reduction in suicidal ideation and suicide attempt. Other strategies that do not aim directly at reducing bullying can also be beneficial. For instance, parental support has been shown to attenuate the negative

effect of bullying on suicidality,⁵⁵ and actions to improve school climate⁵⁶ can potentially prevent bullying. In clinical settings, health professionals should consider screening for peer victimization. Although our study and many others suggest that peer victimization co-occurs with suicidality, we are not aware of any evidence-based prevention intervention for peer victimization in clinical settings. Effective intervention may require a multidisciplinary effort involving parents, schoolteachers, and principals, as well as mental health professionals.⁵⁷

In sum, our findings, along with those of other studies, highlight that victimization is a form of adversity that could leave significant scars, including suicidal ideation and attempt, which urgently need to be addressed. &



Clinical Guidance

- Being victimized is a common experience for many adolescents.
- The odds of developing suicidal ideation and attempting suicide at 15 years among youth who were chronically victimized (i.e., lasting at least 2 school years) are 5 to 6 times the odds of those who were never victimized, independent of previous suicidality and mental health problems.
- Evidenced-based prevention interventions in clinical settings need to be addressed; however, effective management may require a multidisciplinary effort involving parents, schoolteachers and principals, and mental health professionals.

Accepted November 20, 2015.

Drs. Geoffroy and Turecki are with McGill University, Montreal and the McGill Group for Suicide Studies at the Douglas Mental Health University Institute, Montreal. Dr. Geoffroy is also with the Research Unit on Children's

Psychosocial Maladjustment at University of Montreal. Dr. Boivin is with Laval University, Quebec, the Research Unit on Children's Psychosocial Maladjustment at Laval University, and the Institute of Genetic, Neurobiological, and Social Foundations of Child Development at the Tomsk State University, Tomsk, Russian Federation. Dr. Arseneault is with the Institute of Psychiatry, Psychology and Neuroscience at King's College London. Drs. Vitaro and Séguin are with the University of Montreal, the Research Unit on Children's Psychosocial Maladjustment at the University of Montreal, and the Sainte-Justine Hospital Research Centre, Montreal. Dr. Brendgen is with the University of Quebec in Montreal, the Research Unit on Children's Psychosocial Maladjustment at the University of Montreal, and the Sainte-Justine Hospital Research Centre. Dr. Renaud is with McGill University, and with the McGill Group for Suicide Studies and the Manulife Centre for Breakthroughs in Teen Depression and Suicide Prevention at the Douglas Mental Health University Institute. Dr. Tremblay is with the University of Montreal, the University College Dublin, and the Institute of Genetic, Neurobiological, and Social Foundations of Child Development at the Tomsk State University, the Research Unit on Children's Psychosocial Maladjustment at the University of Montreal, and the Sainte-Justine Hospital Research Centre.

This study was conducted with help from the Canadian Institutes of Health Research (grants OGE#111395 and MOP#114984 awarded to M.B. and S.M.C. and R.E.T.) and Manulife research fund in teen depression (J.R.). The larger Quebec Longitudinal Study of Child Development (QLSCD) study was also supported by funding from the Québec Government's Ministry of Health and Ministry of Family Affairs, The Lucie and André Chagnon Foundation, the Québec Health Research Fund (FQRS), The Québec Research Fund for Society and Culture (FQRSC), Canada's Social Science and Humanities Research Council, the Canadian Institutes for Health Research, the StJustine Research Centre, and the Québec Statistics Institute (ISQ) (R.E.T.). S.M.C. is a senior research fellow of the FQRS. <http://www.msss.gouv.qc.ca/en/> <http://fondationchagnon.org/en/index.aspx> <http://www.frqs.gouv.qc.ca/en/> <http://www.frqsc.gouv.qc.ca/fr/accueil.php> <http://www.sshrc-crsh.gc.ca/homeaccueileng.aspx> <http://www.stat.gouv.qc.ca>.

The authors thank David Gunnell, PhD, of the University of Bristol for his contribution to the paper and all the participants of the QLSCD.

Disclosure: Drs. Geoffroy, Boivin, Arseneault, Turecki, Vitaro, Brendgen, Renaud, Séguin, Tremblay, and Côté report no biomedical financial interests or potential conflicts of interest.

Correspondence to Marie-Claude Geoffroy, PhD, McGill Group for Suicide Studies, Douglas Mental Health University Institute, Frank B. Common Pavilion, 6875 LaSalle Boulevard, Montreal, Canada H4H 1R3; email: Marie-claude.geoffroy@mcgill.ca

0890-8567/\$36.00/©2016 American Academy of Child and Adolescent Psychiatry

<http://dx.doi.org/10.1016/j.jaac.2015.11.010>

REFERENCES

1. Skinner R, McFall S. Suicide among children and adolescents in Canada: trends and sex differences, 1980–2008. *Can Med Assoc J.* 2012;184:1029-1034.
2. McLoughlin AB, Gould MS, Malone KM. Global trends in teenage suicide: 2003-2014. *Q J Med.* 2015;108:765-780.
3. Hawton K, Saunders KEA, O'Connor RC. Self-harm and suicide in adolescents. *Lancet.* 2012;379:2373-2382.
4. Nock MK, Green JG, Hwang I, *et al.* Prevalence, correlates, and treatment of lifetime suicidal behavior among adolescents: results from the National Comorbidity Survey Replication Adolescent Supplement. *JAMA psychiatry.* 2013;70:300-310.
5. McMartin SE, Kingsbury M, Dykxhoorn J, Colman I. Time trends in symptoms of mental illness in children and adolescents in Canada. *Can Med Assoc J.* 2014;186:E672-E678.
6. Mars B, Heron J, Crane C, *et al.* Clinical and social outcomes of adolescent self harm: population based birth cohort study. *BMJ.* 2014; 349:g5954.
7. Finkelstein Y, Macdonald EM, Hollands S, *et al.* Long-term outcomes following self-poisoning in adolescents: a population-based cohort study. *Lancet Psychiatry.* 2015;2:532-539.
8. Goldman-Mellor SJ, Caspi A, Harrington H, *et al.* Suicide attempt in young people: a signal for long-term health care and social needs. *JAMA Psychiatry.* 2014;71:119-127.
9. Nansel TR, Craig W, Overpeck MD, Saluja G, Ruan WJ. Cross-national consistency in the relationship between bullying behaviors and psychosocial adjustment. *Arch Pediatr Adolesc Med.* 2004;158:730-736.
10. Holt MK, Vivolo-Kantor AM, Polanin JR, *et al.* Bullying and suicidal ideation and behaviors: a meta-analysis. *Pediatrics.* 2015;135:e496-e509.
11. Van Geel M, Vedder P, Tanilon J. Relationship between peer victimization, cyberbullying, and suicide in children and adolescents: a meta-analysis. *JAMA Pediatrics.* 2014;168:435-442.
12. Herba CM, Ferdinand RF, Stijnen T, *et al.* Victimization and suicide ideation in the TRAILS study: specific vulnerabilities of victims. *J Child Psychol Psychiatry.* 2008;49:867-876.
13. Kim YS, Leventhal BL, Koh Y-J, Boyce WT. Bullying increased suicide risk: prospective study of Korean adolescents. *Arch Suicide Res.* 2009; 13:15-30.
14. Undheim AM. Involvement in bullying as predictor of suicidal ideation among 12- to 15-year-old Norwegian adolescents. *Eur Child Adolesc Psychiatry.* 2013;22:357-365.

15. Bannink R, Broeren S, van de Looij-Jansen PM, de Waart FG, Raat H. Cyber and traditional bullying victimization as a risk factor for mental health problems and suicidal ideation in adolescents. *PLoS One*. 2014;9:e94026.
16. Heikkilä H-K, Väänänen J, Helminen M, Fröjd S, Marttunen M, Kaltiala-Heino R. Involvement in bullying and suicidal ideation in middle adolescence: a 2-year follow-up study. *Eur Child Adolesc Psychiatry*. 2013;22:95-102.
17. Winsper C, Lereya T, Zanarini M, Wolke D. Involvement in bullying and suicide-related behavior at 11 years: a prospective birth cohort study. *J Am Acad Child Adolesc Psychiatry*. 2012;51:271-283.
18. Lereya ST, Winsper C, Heron J, *et al*. Being bullied during childhood and the prospective pathways to self-harm in late adolescence. *J Am Acad Child Adolesc Psychiatry*. 2013;52:608-618.
19. Fisher HL, Moffitt TE, Houts RM, Belsky DW, Arseneault L, Caspi A. Bullying victimisation and risk of self harm in early adolescence: longitudinal cohort study. *BMJ*. 2012;344:e2683.
20. Klomek AB, Sourander A, Niemelä S, *et al*. Childhood bullying behaviors as a risk for suicide attempts and completed suicides: a population-based birth cohort study. *J Am Acad Child Adolesc Psychiatry*. 2009;48:254-261.
21. Lothen-Kline C, Howard DE, Hamburger EK, Worrell KD, Boekeloo BO. Truth and consequences: ethics, confidentiality, and disclosure in adolescent longitudinal prevention research. *J Adolesc Health*. 2003;33:385-394.
22. Ladd GW, Kochenderfer-Ladd B. Identifying victims of peer aggression from early to middle childhood: analysis of cross-informant data for concordance, estimation of relational adjustment, prevalence of victimization, and characteristics of identified victims. *Psychol Assess*. 2002;14:74-96.
23. Boivin M, Brendgen M, Vitaro F, *et al*. Strong genetic contribution to peer relationship difficulties at school entry: findings from a longitudinal twin study. *Child Dev*. 2013;84:1098-1114.
24. Statistics Canada and Human Resources Development Canada. National Longitudinal Survey of Children and Youth: Overview of Survey Instruments for 1994–1995 Data Collection Cycle 1. Ottawa, ON: Statistics Canada and Human Resources Development Canada; 1995.
25. Achenbach TM, Edelbrock C, Howell CT. Empirically based assessment of the behavioral/emotional problems of 2- and 3- year-old children. *J Abnorm Child Psychol*. 1987;15:629-650.
26. Offord DR, Boyle MH, Racine Y. Ontario Child Health Study: correlates of disorder. *J Am Acad Child Adolesc Psychiatry*. 1989;28:856-860.
27. Tremblay RE, Desmarais-Gervais L, Gagnon C, Charlebois P. The Preschool Behaviour Questionnaire: stability of its factor structure between cultures, sexes, ages and socioeconomic classes. *Int J Behav Dev*. 1987;10:467-484.
28. Galéra C, Pingault J-B, Michel G, *et al*. Clinical and social factors associated with attention-deficit hyperactivity disorder medication use: population-based longitudinal study. *Br J Psychiatry*. 2014;205:291-297.
29. Allgaier A-K, Frühe B, Pietsch K, Saravo B, Baethmann M, Schulte-Körne G. Is the Children's Depression Inventory Short version a valid screening tool in pediatric care? A comparison to its full-length version. *J Psychosom Res*. 2012;73:369-374.
30. Kovacs M. The Children's Depression Inventory (CDI). *Psychopharmacol Bull*. 1984;21:995-998.
31. Stockings E, Degenhardt L, Lee YY, *et al*. Symptom screening scales for detecting major depressive disorder in children and adolescents: a systematic review and meta-analysis of reliability, validity and diagnostic utility. *J Affect Disord*. 2015;174:447-463.
32. Roy CA, Zoccolillo M, Gruber R, Boivin M, Perusse D, Tremblay RE. Construct validity of an instrument to assess major depression in parents in epidemiologic studies. *Can J Psychiatry*. 2005;50:784-791.
33. Dunn LM, Dunn LM. Peabody Picture Vocabulary Test-Revised (PPVT-R). Circle Pines, MN: American Guidance Services; 1981.
34. Dunn LM, Theriault-Whalen CM, Dunn LM. Échelle de Vocabulaire en Images Peabody. Adaptation française du Peabody Picture Vocabulary Test-Revised. Manuel pour les formes A et B. Toronto, ON: PsyScan; 1993.
35. Willms DJ, Shields M. A measure of socioeconomic status for the National Longitudinal Study of Children. Fredericton, NB: Atlantic Center for Policy Research in Education, University of New Brunswick and Statistics Canada; 1996:9607.
36. Azur MJ, Stuart EA, Frangakis C, Leaf PJ. Multiple imputation by chained equations: what is it and how does it work? *Int J Methods Psychiatr Res*. 2011;20:40-49.
37. Vitaro F, Boivin M, Bukowski WM. The role of friendship in child and adolescent psychosocial development. In: Rubin K, Bukowski W, Laursen B, eds. *Handbook of Peer Interactions, Relationships, and Groups*. New York: Guilford Press; 2009:568-588.
38. Boivin M, Hymel S, Hodges EV. Toward a process view of peer rejection and harassment. In: Juvonen J, Graham S, eds. *Peer Harassment in School: the Plight of the Vulnerable and Victimized*. New York: Guilford Press; 2001:265-289.
39. Fergusson DM, Woodward LJ, Horwood LJ. Risk factors and life processes associated with the onset of suicidal behaviour during adolescence and early adulthood. *Psychol Med*. 2000;30:23-39.
40. Arseneault L, Bowes L, Shakoor S. Bullying victimization in youths and mental health problems: 'much ado about nothing'? *Psychol Med*. 2010;40:717-729.
41. Benjet C, Thompson RJ, Gotlib IH. 5-HTTLPR moderates the effect of relational peer victimization on depressive symptoms in adolescent girls. *J Child Psychol Psychiatry*. 2010;51:173-179.
42. Ouellet-Morin I, Danese A, Bowes L, *et al*. A discordant monozygotic twin design shows blunted cortisol reactivity among bullied children. *J Am Acad Child Adolesc Psychiatry*. 2011;50:574-582.
43. Geoffroy M-C, Hertzman C, Li L, Power C. Prospective association of morning salivary cortisol with depressive symptoms in mid-life: a life-course study. *PLoS One*. 2013;8:e77603.
44. Coryell W, Schlessler M. The dexamethasone suppression test and suicide prediction. *Am J Psychiatry*. 2001;158:748-753.
45. Takizawa R, Danese A, Maughan B, Arseneault L. Bullying victimization in childhood predicts inflammation and obesity at mid-life: a five-decade birth cohort study. *Psychol Med*. 2015;1-11.
46. Howren MB, Lamkin DM, Suls J. Associations of depression with C-reactive protein, IL-1, and IL-6: a meta-analysis. *Psychosom Med*. 2009;71:171-186.
47. Sterne JAC, Cox DR, Smith GD. Sifting the evidence—what's wrong with significance tests? Another comment on the role of statistical methods. *BMJ*. 2001;322:226-231.
48. Boivin M, Vitaro F, Gagnon C. A reassessment of the Self-Perception Profile for Children: factor structure, reliability, and convergent validity of a French version among second through sixth grade children. *Int J Behav Dev*. 1992;15:275-290.
49. Foley DL, Goldston DB, Costello EJ, Angold A. Proximal psychiatric risk factors for suicidality in youth: the Great Smoky Mountains Study. *Arch Gen Psychiatry*. 2006;63:1017-1024.
50. Radford L, Corral S, Bradley C, Fisher HL. The prevalence and impact of child maltreatment and other types of victimization in the UK: findings from a population survey of caregivers, children and young people and young adults. *Child Abuse Negl*. 2013;37:801-813.
51. Sinyor M, Schaffer A, Cheung AH. An observational study of bullying as a contributing factor in youth suicide in Toronto. *Can J Psychiatry*. 2014;59:632-638.
52. Geoffroy MC, Gunnell D, Power C. Prenatal and childhood antecedents of suicide: 50-year follow-up of the 1958 British Birth Cohort study. *Psychol Med*. 2014;44:1245-1256.
53. Copeland WE, Wolke D, Angold A, Costello EJ. Adult psychiatric outcomes of bullying and being bullied by peers in childhood and adolescence. *JAMA Psychiatry*. 2013;70:419-426.
54. Ttofi MM, Farrington DP. Effectiveness of school-based programs to reduce bullying: a systematic and meta-analytic review. *J Exp Criminol*. 2011;7:27-56.
55. Elgar FJ, Napoletano A, Saul G, *et al*. Cyberbullying victimization and mental health in adolescents and the moderating role of family dinners. *JAMA Pediatr*. 2014;168:1015-1022.
56. Bradshaw CP. Translating research to practice in bullying prevention. *Am Psychol*. 2015;70:322-332.
57. Lamb J, Pepler DJ, Craig W. Approach to bullying and victimization. *Can Fam Physician*. 2009;55:356-360.