Child sexual abuse and employment earnings in adulthood: a prospective Canadian cohort study.

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ABSTRACT

Introduction: Child sexual abuse remains a worldwide concern with devastating consequences on an individual's life. This longitudinal study investigates associations of child sexual abuse (official reports vs. retrospective self-reports) and subgroups by perpetrator identity (intra, extrafamilial), severity (penetration/attempted penetration, fondling/touching, non-contact), and chronicity (single, multiple episodes) and employmen t earnings in adulthood in a cohort followed for over 30 years.

Methods: The Quebec Longitudinal Study of Kindergarten Children database was linked to child protection services (official reports of sexual abuse) and to Canadian government tax returns (earned income). The sample included 3020 individuals in Quebec French-language school kindergartens in 1986/1988, followed until 2017 and assessed with retrospective self-reports at age 22. Tobit regressions were used for associations with earnings (ages 33-37), adjusting for sex and family socioeconomic characteristics in 2021-2022.

Results: Individuals who experienced child sexual abuse had lower annual earnings. Those with retrospective self-reported sexual abuse (*n*=340) earned US$4031 (95%CI:-7134;-931) less annually at ages 33-37 than non-abused individuals (*n*=1320), with pronounced differences for those with official reports (*n*=20), earning US$16,042 (95%CI:-27,465; -4618) less. Individuals self-reporting intrafamilial sexual abuse earned US$4696 (-9316; -75) less than those who experienced extrafamilial sexual abuse while those self-reporting penetration/attempted penetration earned US$6188 (95%CI:-12,248; -129) less than those who experienced non-contact sexual abuse.

Conclusions: Earnings gaps were highest for severest child sexual abuse (official reports, intrafamilial, penetrative). Future studies should investigate underlying mechanisms. Improving support for victims of child sexual abuse could yield socioeconomic returns.

KEYWORDS: Child sexual abuse, sexual abuse, annual income, income gap, earnings, penetrative sexual abuse, intrafamilial sexual abuse, child protection services, Quebec Longitudinal Study of Kindergarten Children

INTRODUCTION

Child sexual abuse – defined as any completed/attempted sexual act/contact or non-contact sexual interaction with a child[1] – is a worldwide concern, as it is associated with a range of adverse outcomes through life.[1-4] In Canada, and elswhere,[5] sexual abuse is common with self-reported prevalence of 14.4% for women and 5.8% for men,[6] although fewer instances of abuse are reported to authorities.[7]

Long-term studies show that adverse childhood experiences[8] or child maltreatment (e.g., abuse or neglect)[5] are associated with poor socioeconomic outcomes in adulthood, but few studies have focused specifically on sexual abuse. A recent systematic review of child sexual abuse and adult socioeconomic outcomes (e.g., employment status, annual earnings, welfare) identified only 5 studies examining associations, but findings were inconsistent[9] and undermined by methodological limitations. First, most studies of child sexual abuse have measured socioeconomic outcomes in early-adulthood,[10-12] an age characterized by financial instability and occupational uncertainty, especially for women.[13] Consequently, any association of child sexual abuse with socioeconomic outcomes may manifest only later in adulthood, after the establishment of stable employment. Second, to our knowledge, all studies[10,11,14-16] have been limited by a loss of participants over time – especially vulnerable participants – leading to potential underestimation of the true association. Third, studies have mainly examined self-reported socioeconomic outcomes, which are prone to reporting bias.[17] Fourth, most studies have relied on single unvalidated measures of sexual abuse,[10,12,16] with no consideration of subgroups such as severity, chronicity, or perpetrator identity. Intrafamilial abuse, for instance, is known to be associated with poorer mental health than extrafamilial abuse.[18] One study based on a sample

of 248 women found that penetrative sexual abuse was associated with a decline in socioeconomic status, as compared to non-contact sexual abuse.[14] Finally, most studies[10,11,16] have assessed sexual abuse using retrospective questionnaires, overlooking differential associations between officially reported or unrecognized sexual abuse with socioeconomic outcomes. Given that poor socioeconomic status is a well-known risk factor for mental and physical health problems,[1-3,19] and future intergenerational transmission of sexual abuse,[20] it is essential to document the breadth of long-term consequences using robust methods.

This study sought to fill these gaps using the Quebec Longitudinal Study of Kindergarten Children (QLSKC), a large population-based cohort linked with administrative data that provides a unique opportunity to document long-term associations into middle-age. It includes sexual abuse reported to authorities, as well as retrospective self-reports indicating perpetrator, chronicity, and severity of abuse. Linking the QLSKC database to federal taxation databases provides objective measures of income from 18-37 years. The use of administrative income data improves sample representativeness, data accuracy, and helps to overcome limitations of previous studies. To our knowledge, this is the first longitudinal study to investigate associations of child sexual abuse (official reports vs. retrospective self-reports) and subgroups by perpetrator (intra- vs. extrafamilial), severity (penetration/attempted penetration vs. fondling/touching vs. non-contact), and chronicity (single vs. multiple episodes) and employment earnings using tax records in adulthood.

Results can inform public health departments and policymakers about the economic disparities associated with child sexual abuse and underscore the need for sound investment to support survivors of child sexual abuse.

METHODS

Study Population

A database linkage study with the QLSKC was conducted, using participant's identifying information, such as name and birthdate, linking cohort participants to Quebec Child and Youth Protection Services databases and to Canadian government tax return records. Official reports of sexual abuse (ages 0-18, as filed with child protection services) and retrospective self-reports (age 22) were examined and associations of child sexual abuse with employment earnings at ages 33-37 were investigated.

The QLSKC is a longitudinal cohort of 3020 children recruited in kindergarten in French-language public schools in Quebec, Canada, during the 1986-87 and 1987-88 school years and followed until 2017.[21] Of these, 2000 children (1001 boys (50.5%) and 999 girls (49.9%)) were representative of Quebec kindergarten schoolchildren (random sample) and 1020 children (600 boys (58.8%) and 420 girls (41.2%)) were oversampled for disruptive behaviour, as defined by a score ≥80th percentile on the Disruptive Behaviour Scale of the Social Behaviour Questionnaire.[22] Cohort membership (disruptive sample vs. not) was used as a control variable.[23] Ethics approval was obtained from the University of Montreal Research Ethics Board and Statistics Canada. Participants or their parents, provided written informed consent at each QLSKC assessment period.

Measures

Official reports of child sexual abuse before age 18 were extracted from database linkage with Quebec Child and Youth Protection Services (i.e., receiving all reports concerning children who

may be in need of protection, evaluate them, and ensure protection). For the purposes of this study, all notifications of sexual abuse to youth protection services were included, regardless of substantiation (*n*=20).

Self-reported incidence of child sexual abuse (collected at age 22) were obtained directly from the QLSKC database. Participants retrospectively answered five questions adapted from the Adverse Childhood Experiences Questionnaire[24,25] and the Sexually Victimized Children Questionnaire.[26] Questions included any unwanted sexual acts in the form of exhibitionism, sexual fondling/touching, penetration/attempted penetration by bribe, threats or force, or by drugs and/or alcohol before age 18; e.g., "Did someone show you their sexual parts or force you to show them your sexual parts when you did not want to?" If participants responded "yes", they were asked about their relationship to the perpetrator (within the family, within the extended family, acquaintance from school, or stranger) and the frequency of abuse (one time or more). Three variables were created characterizing abuse: 1) type (perpetrator): intrafamilial (parents, siblings, relative) vs. extrafamilial (stranger, acquaintance from school); 2) severity: penetration/attempted penetration vs. sexual fondling/touching vs. non-contact (exhibitionism, voyeurism); and 3) chronicity: one episode vs. multiple episodes.

Employment earnings were obtained annually from ages 18-37 years (1998-2017) from federal government income tax returns (Statistics Canada) and linked to the QLSKC cohort.[27] For the purpose of the present study, only income from ages 33-37 was used. Pre-tax wages, salaries, and commissions were included, excluding income from capital gains. To control for random yearly variations in present-day earnings, the mean of the 5 most recent tax returns (ages 33-37)

was used. For ease of comparability, all financial data were converted to US dollars prior to analysis, using the current purchasing power parity exchange rate (1CAD=0.83USD).

Childhood socioeconomic characteristics known to be associated with child sexual abuse[11,28,29] and later socioeconomic outcomes;[30] namely, parental earnings, parental education level, parental age at childbirth (average of maternal and paternal ages), family unit (single-parent vs. two-parent family), child's sex, and child's disruptive behaviour (being part of "disruptive" sample) were controlled for. Data on parental earnings for the years 1982-1987 (child ages 2-7) was obtained from Canadian government tax returns. Other characteristics in the QLSKC database were collected through questionnaires completed by the mother at participant age 6.

Statistical Analysis

Data were analyzed using SPSS version 24 (IBM Corporation, Armonk/NY) and R version 3.6.2 (R Core Team, R Foundation for Statistical Computing, Vienna/Austria) in 2021/22. The prevalence of sexual abuse and childhood socioeconomic correlates of child sexual abuse in the sample (N=3020) was investigated, using four non-overlapping categories: (1) no official reports or retrospective self-reports of sexual abuse; (2) no officially reported sexual abuse and "missing" retrospective self-report; (3) no officially reported sexual abuse but retrospective self-reports; (4) officially reported sexual abuse. Next, Tobit regressions were used to investigate associations between child sexual abuse and average employment earnings in the last 5 years (ages 33-37), left-censored at $0. To reduce the effect of extreme outliers, income scores at or above the 99th percentile were winsorized. Sex of the child, disruptive sample membership, and socioeconomic characteristics in childhood were controlled for, using three models: (1)

unadjusted; (2) adjusted for sex; and (3) adjusted for childhood socioeconomic characteristics. All models controlled for being in the disruptive sample.

Missing values on childhood characteristics ranged from 0% (sex) to 30% (family unit). To avoid losing participants, missing values on potential confounders were imputed using multiple imputation by chained equations;[31] analyses were conducted across 50 pooled imputed datasets.

All analyses for associations of abuse with economic outcome were examined for official and/or self-reported abuse, as well as for perpetrator, severity, and chronicity of abuse in individuals with retrospective self-reports of abuse.

RESULTS

Of the 3020 participants, 1320 (43.7%) reported no sexual abuse and 1340 (44.3%) had no official report but were missing retrospective questionnaires (e.g., could not be contacted, traced, or refused). 340 (11.3%) had no official report but had retrospectively self-reported sexual abuse, and 20 (0.7%) had official reports to youth protection services (with/without retrospective self-reports), including 10 individuals with concurrent retrospective reports including abuse characteristics (type, severity, and chronicity; **Appendix Table 1**).

For self-reported abuse, about twice as many of the 350 participants reported extrafamilial than intrafamilial abuse **(Appendix Table 1)**. The prevalence of penetration/attempted penetration was about the same as that of fondling/sexual touching (38-40% each); the prevalence of non-contact sexual abuse was less. Most abuse was single-episode (82%). Participants who were

sexually abused were more likely to come from underprivileged homes with lower parental education and earnings than those who were not sexually abused **(Appendix Table 2)**. Participants with intrafamilial vs. extrafamilial sexual abuse more often had a father with no college education. Participants who suffered penetration vs. fondling/touching vs. non-contact sexual abuse were more likely to come from slightly lower-income families **(Appendix Table 3)**.

The association between child sexual abuse and later employment earnings at ages 18 to 37 years is illustrated in **Figures 1 and 2**. Participants who experienced sexual abuse earned less than non-abused participants; those with officially reported sexual abuse had the lowest earnings, over the entire follow-up period. The average annual earned income in the last 5 years (ages 33-37) was US$32,800 ± 24,840. Analyses controlling for sex, disruptive behaviour, and socioeconomic characteristics in childhood are shown in **Table 1**. Individuals with self-reported sexual abuse earned an average US$4031/year less (95%CI:-7134;-931) than those not abused. Individuals with official reports earned US$16,042/year less (95%CI:-27,465;-4618) than those not abused. Individuals with no official report and missing a retrospective report also had lower annual earnings, but this decrease was not statistically significant: US$1906/year (95%CI:-3912;98).

As illustrated in **Figures 2A and 2B,** participants who experienced intrafamilial abuse or penetration/attempted penetration earned less from young to mid-adulthood than those who experienced extrafamilial abuse or non-contact sexual abuse, respectively. No difference was observed for chronicity of abuse (**Figure 2C**). Fully adjusted analyses at 33-37 years (**Table 2**) showed that individuals who experienced intrafamilial abuse earned on average US$4696/year

(95%CI:-9316;-75) less than those with extrafamilial abuse. Individuals who experienced penetration/attempted penetration earned US$6188/year (95%CI:-12,248;-129) less than those with non-contact sexual abuse. No significant differences in earnings were observed for sexual touching vs. non-contact abuse and for chronicity. Results based on non-imputed values were similar in essence to main results (**Appendix Table 4** and **Appendix Table 5)**.

To verify the robustness of the results, three sensitivity analyses were conducted. First, 1350 participants with missing information on retrospectively reported abuse were excluded; associations of official and retrospective sexual abuse with earnings remained unchanged **(Appendix Table 6)**. Second, models examining characteristics of sexual abuse with earning were stratified by sex. As shown in **Appendix Table 7**, associations were seen in females, but not in males. Third, self-reported physical abuse was controlled for (retrospectively assessed at 22 years using the Parent-Child Conflict Tactics Scale).[33,34] This did not abolished associations of official and retrospective abuse **(Appendix Table 8 and Table 9)**.

DISCUSSION

To our knowledge, this is the first longitudinal study to investigate associations between child sexual abuse and long-term employment earnings by mid-adulthood. Linking data from government income tax returns to a representative population-based cohort of over 3,000 participants, it was found that individuals who experienced child sexual abuse endured adverse long-term economic consequences in adulthood. Both officially reported and retrospectively self-reported child sexual abuse were investigated. It was found that adults who retrospectively self-reported having experienced intrafamilial sexual abuse, penetration/attempted penetration or

official reports earned less at ages 33-37 than individuals not sexually abused. The estimates were robust, even after adjustment for a host of childhood confounders including parental earnings gathered from tax records, and physical abuse, assessed retrospectively.

The results are in line with some studies[8,16,35-38] but not others.[10-12] Previous studies had examined outcomes either in early-adulthood[12] or at mixed ages;[10] or else on populations with all forms of child abuse confounded, not delimited as sexual.[8,39,40] Our results suggest that the earnings gap between individuals sexually abused and non-abused in childhood widens in the period from early-adulthood to mid-adulthood.

The study highlights that associations with employment earnings are most noticeable in the severest forms of child sexual abuse, namely those involving penetration/attempted penetration or an intrafamilial perpetrator. Such subgroup analyses could not have been done in earlier studies that used a single self-reported measure of abuse,[10,12,16] which might explain why no effect was found. For instance, participants abused by a family member earned about US$4,000/year less at ages 33-37 than those abused by a non-family member. This finding is in line with another study using the same cohort showing that the risk of attempted suicide at age 22 was 5-fold for sexual abuse by a family member compared to a non-family member.[41]

The largest income difference was observed in adults with an official report of child sexual abuse. Their mean annual earnings at ages 33-37 were about US$16,000 less than that of their non-abused counterparts. However, these results should be interpreted with caution: only 20 participants had official reports, with most experiencing other types of maltreatment.

Nonetheless, this finding confirms results from a previous prospective cohort study of 807 males and females, with official records of child maltreatment and self-reported socioeconomic outcomes, showing that sexual abuse was associated with an income gap of US$8,000 at age 41 (in 2003-2004) and that abused individuals were less likely to be employed, be a skilled worker, own stock, or purchase their own vehicle or home.[36] Note, however, that notification of maltreatment to child protection services typically represents severe instances of abuse,[42] often in conjunction with neglect and physical abuse.[7,43]

Key confounding factors in childhood were taken into account, including parental household earnings. In a prior longitudinal study,[11] associations between child sexual abuse and gross income was lost after adjustment for childhood socioeconomic factors. Our results remained robust.

It would be of interest to elucidate intermediary pathways that could lead to actionable targets for prevention and intervention. Deficits in cognitive abilities and educational attainment,[44] poor physical health (obesity,[3] gastrointestinal symptoms,[45] headaches[46]) and poor mental health (depression,[47] anxiety,[48] substance use,[45] suicide attempts[32]) could be potential mediators. In a longitudinal study of 496 individuals,[49] the effect of maltreatment on subsequent financial strain for sexual abuse survivors (self-reporting and prospective) was partially explained by depressive symptoms in adolescence. In contrast, in the 1958 British Birth Cohort, associations between retrospective reports of child abuse on financial insecurity and income-related support at age 50 were not mediated by cognitive abilities and mental health in adolescence.[16] Further studies are

needed to deepen our understanding of underlying mechanisms and to clarify inconsistent findings.

Limitations

This study has major strengths, primarily a large, representative, population-based cohort followed prospectively for almost four decades. Second, cohort and administrative databases were linked to obtain accurate information on employment earnings and sexual abuse, thus eliminating bias related to self-reporting (memory recall, desirability).[50,51] By adding retrospective self-reports of sexual abuse, large amounts of sensitive data were collected[50] and captured cases otherwise unreported.[52] In Quebec, only 0.48 incidents for every 1,000 children are reported annually, and indeed only 20 participants had official reports.[7] The retrospective reports, although prone to bias, enabled subgroup analysis on perpetrator, severity, and chronicity of abuse. Our adjusted models further controlled for key childhood confounders, including accurate parental earnings.

There were several methodological limitations. First, as about one-third of participants did not complete the sexual abuse questionnaire, true associations with employment earnings may have been underestimated. However, results remained in sensitivity analyses removing participants that were missing on the questionnaire. Second, child and parental mental health was not controlled for, thus income gaps may not be due solely to sexual abuse. Third, retrospective physical abuse was controlled for in sensitivity analyses, information on other types of maltreatment was not available. Fourth, despite a large cohort of over 3000, only 20 participants had official youth protection reports of sexual abuse, widening confidence intervals and pre-empted further subgroup analysis. For characteristics of abuse, associations were only found in

females, however as fewer males were victims of child sexual abuse (60 males vs. 280 females), results should be interpreted with caution. Replication with a larger at-risk sample is recommended. Future studies are needed to assess the putative causal impact of child sexual abuse and employment earnings by using quasi-experimental design, such propensity scores weighting.

CONCLUSIONS

In summary, our findings suggest that child sexual abuse is associated with socioeconomic inequalities by mid-adulthood, particularly for severe forms of child sexual abuse (official reports, intrafamilial abuse, and penetration/attempted penetration). As earned income is a marker for healthy aging[53] and longevity,[54] and as optimal income can be protective against intergenerational continuity of abuse,[55] it is imperative to help victims reach their maximal economic potential. Prevention and therapeutic support would contribute to resilient functioning and yield significant social and economic returns for individuals and for society as a whole.

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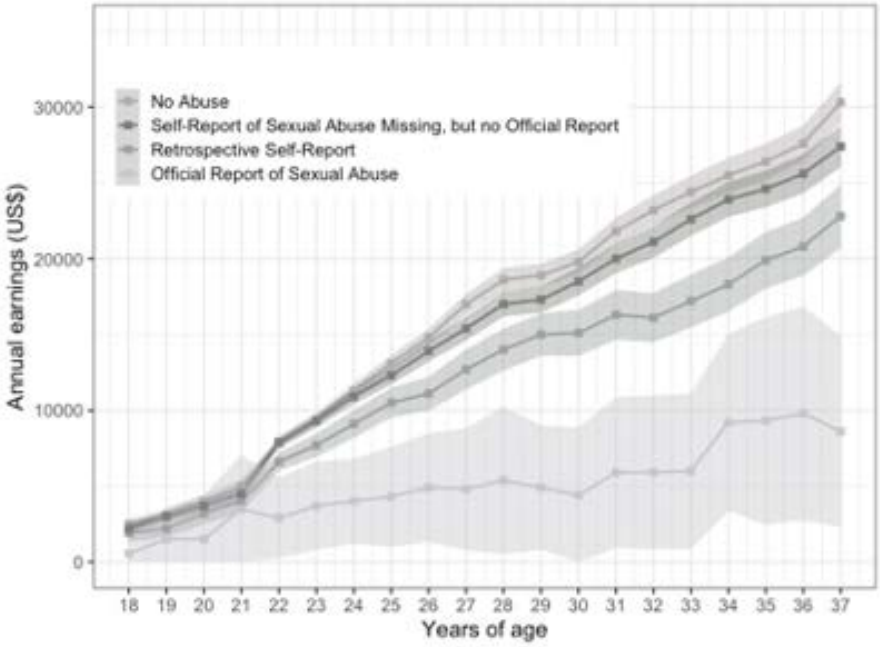
FIGURE TITLES

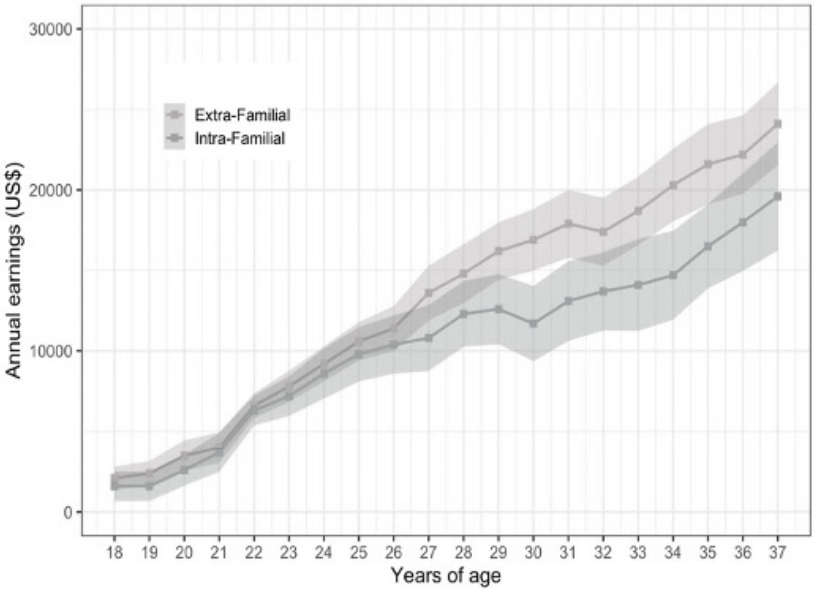
Figure 1. Employment earnings from ages 18 to 37 years, by presence or lack of sexual abuse (N = 3020).



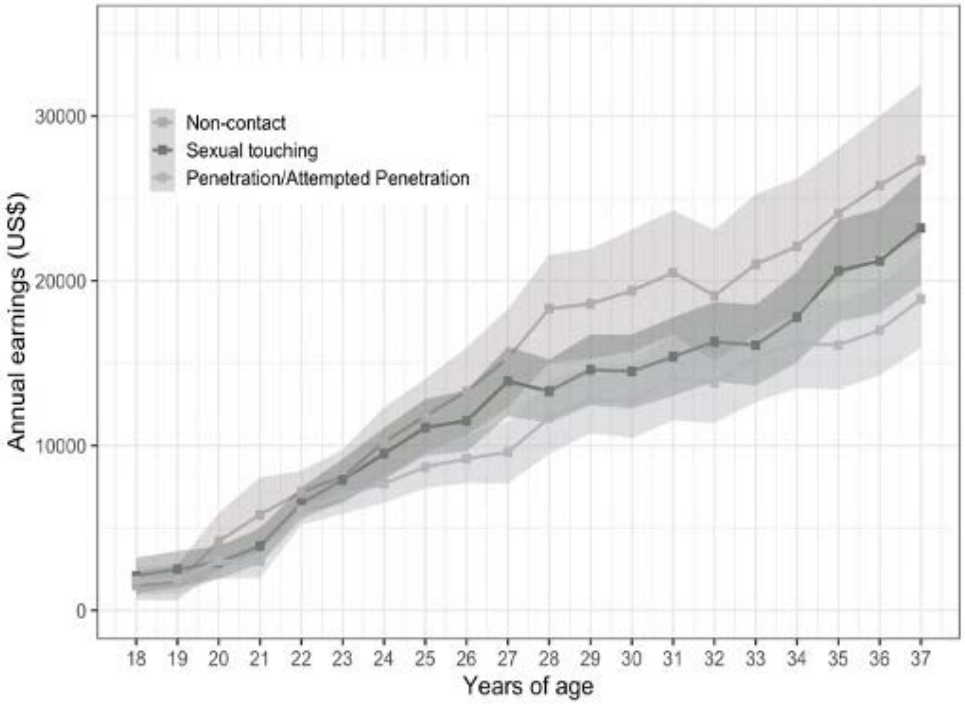
Note. In accordance with Statistics Canada data protection requirements, displayed counts are rounded to base 10; employment earnings are rounded to the nearest 100. Dollar amounts have not been adjusted for inflation.

Figure 2. Employment earnings from ages 18 to 37 years, by sexual abuse characteristics (*n* = 350).

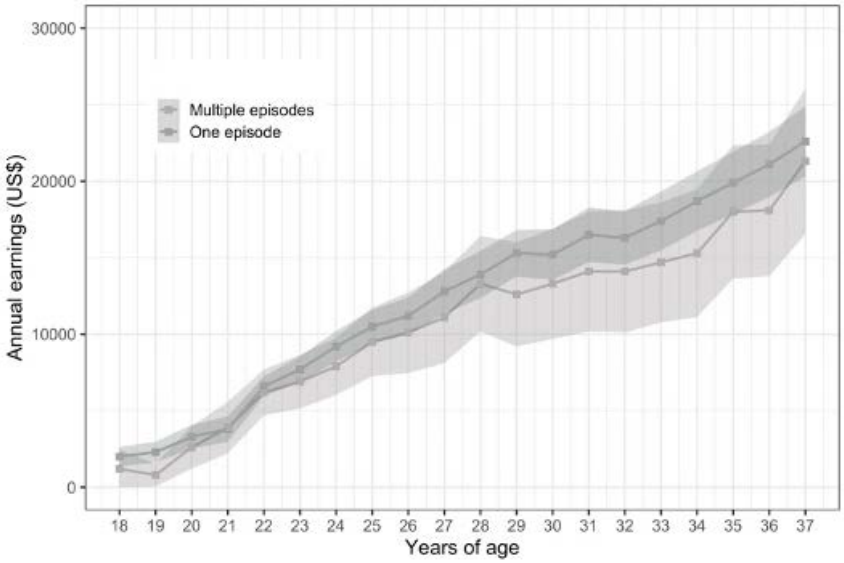
A. Type of abuse



B. Severity of abuse



C. Chronicity of abuse



Note. In accordance with Statistics Canada data protection requirements, displayed counts are rounded to base 10; employment earnings are rounded to the nearest 100. Dollar amounts have not been adjusted for inflation.

Table 1. Association of child sexual abuse with annual employment earnings at mid-adulthood (33-37 years).

	Differences in average annual employment earnings[a] (N = 3020)		
	Unadjusted[b]	Adjusted for sex[b]	Adjusted for family socioeconomic characteristics[b,c]
Group			
No official report, missing retrospective report	**-3181** [-5236 to -1127]	**-4132** [-6157 to -2107]	-1906 [-3912 to 98]
No official report, retrospective self-reported sexual abuse	**-9107** [-12,274 to -5940]	**-5513** [-8688 to -2336]	**-4031** [-7134 to -931]
Officially reported sexual abuse (with/without retrospective report)	**-26,993** [-38,929 to -15,055]	**-23,284** [-35,000 to -11,570]	**-16,042** [-27,465 to -4618]

Note. Boldface indicates statistical significance ($P < 0.05$).
Reference category = no abuse.

[a] Based on imputed values. All amounts are in US dollars. Dollar amounts have not been adjusted for inflation.
[b] Estimates are beta coefficients from Tobit regression, with 95% confidence intervals. All three models were adjusted for cohort membership (disruptive vs. representative sample).
[c] Adjusted for characteristics including child's sex, maternal and paternal education, parental earnings, parental mean age at childbirth, and family unit (single- or two-parent family).

Table 2. Association of characteristics of child sexual abuse with annual employment earnings at mid-adulthood (33-37 years)

	Differences in average annual employment earnings[a] (n = 350)		
Abuse characteristics	Unadjusted[b]	Adjusted for sex[b]	Adjusted for family socioeconomic characteristics[b,c]
Type			
Intrafamilial (vs. extrafamilial abuse)	**-6898** [-11,823 to -1973]	**-6416** [-11,275 to -1557]	**-4696** [-9316 to -75]
Severity			
Fondling/sexual touching (vs. non-contact)	-5603 [-11,934 to 726]	-4502 [-10,813 to 1807]	3515 [-9456 to 2427]
Penetration/attempted penetration (vs. non-contact)	**-10,471** [-16,764 to -4179]	**-8517** [-14,916 to -2118]	**-6188** [-12,248 to -129]
Chronicity			
Multiple episodes (vs. one episode)	-3010 [-9414 to 3391]	-1518 [-7886 to 4847]	-2081 [-8056 to 3892]

Note. Boldface indicates statistical significance ($P < 0.05$).

[a] Based on imputed values. All amounts are in US dollars. Dollar amounts have not been adjusted for inflation.

[b] Estimates are beta coefficients from Tobit regression, with 95% confidence intervals. All three models were adjusted for cohort membership (disruptive vs. representative sample).

[c] Adjusted for characteristics including child's sex, maternal and paternal education, parental earnings, parental mean age at childbirth, and family unit (single- or two-parent family).

Child sexual abuse and employment earnings in adulthood: a prospective Canadian cohort study.

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American Journal of Preventive Medicine

Appendix Table 1. Prevalence and characteristics of child sexual abuse.

Child sexual abuse, No. (%)	Total (N = 3020)
No sexual abuse	1320 (43.7)
No official report, retrospective self-report missing	1340 (44.3)
No official report, but retrospective self-reported sexual abuse	340 (11.3)
Officially reported sexual abuse (with/without retrospective report)	20 (0.7)
Retrospective self-reported child sexual abuse, No. (%)	(n = 350)
Type	
Intrafamilial	140 (40.0)
Extrafamilial	210 (60.0)
Severity	
No contact	80 (22.8)
Sexual fondling/touching	130 (37.2)
Penetration/attempted penetration	140 (40.0)
Chronicity	
One episode	290 (82.8)
More than one episode	60 (17.1)

Note. In accordance with Statistics Canada data protection requirements, displayed counts are rounded to base 10.

Appendix Table 2. Child sexual abuse group and socioeconomic characteristics in childhood and mid-adulthood (33-37 years).

	Not sexually abused (n = 1320)	No official report; retrospective report missing (n = 1340)	No official report; retrospective self-reported abuse (n = 340)	Officially reported sexual abuse (n = 20)	*P* value[b]
Childhood (6 years; confounders)					
Female sex (%)[a]	630 (47.7)	500 (37.3)	280 (82.3)	20 (100)	**<0.001**
Maternal education, mean (SD), years	12.17 (2.60)	11.21 (2.62)	11.84 (2.42)	10.15 (2.08)	**<0.001**
Paternal education, mean (SD), years	12.29 (3.34)	11.29 (3.38)	12.22 (3.48)	9.62 (3.16)	**<0.001**
Parental mean age, mean (SD), years	27.93 (4.24)	27.69 (4.62)	27.93 (4.39)	26.37 (5.13)	0.24
Parental earnings in US dollars,[c] mean (SD)	27,100 (13,970)	22,600 (15,510)	23,400 (14,380)	10,800 (10,190)	**<0.001**
Family unit (single-parent), No. (%)[a]	120 (5.6)	110 (5.3)	30 (1.5)	< 5	0.99
Adulthood (33-37 years; outcome)					
Employment earnings, mean (SD)[c]	26,100 (18,000)	24,000 (19,100)	19,500 (15,500)	7800 (11,500)	**<0.001**

Note. Based on total sample N = 3020 (n = 2136 to 2998).

[a] In accordance with Statistics Canada data protection requirements, displayed counts are rounded to base 10.

[b] Boldface indicates statistical significance ($P < 0.05$).

[c] Rounded to the nearest $100, as per Statistics Canada data protection regulations. Dollar amounts have not been adjusted for inflation.

Appendix Table 3. Characteristics of child sexual abuse and socioeconomic characteristics in childhood and mid-adulthood (33-37 years).

Characteristics	Type of Abuse			Severity of Abuse				Chronicity		
	Intrafamilial (n = 140)	Extrafamilial (n = 210)	*P* value[b]	Non-contact (n = 80)	Fondling/ Touching (n = 130)	Penetration/ Attempted Penetration (n = 140)	*P* value[b]	Single Episode (n = 290)	Multiple Episodes (n = 60)	*P* value[b]
Childhood (6 years; confounders)										
Female sex (%)[a]	110 (78.5)	170 (80.9)	.291	50 (62.5)	110 (84.6)	130 (92.8)	**<.001**	230 (79.3)	60 (100.0)	**<.05**
Maternal education, years, mean (SD)	11.54 (2.32)	11.93 (2.52)	0.158	12.00 (2.46)	11.84 (2.60)	11.61 (2.30)	0.527	11.78 (2.50)	11.78 (2.23)	0.995
Paternal education, years, mean (SD)	11.48 (3.04)	12.06 (3.70)	**0.007**	12.64 (3.53)	12.46 (3.70)	11.67 (3.22)	0.110	12.20 (3.52)	12.10 (3.43)	0.842
Parental mean age, years, mean (SD)	27.55 (4.38)	28.13 (4.51)	0.248	28.33 (4.04)	27.66 (4.21)	27.92 (4.90)	0.586	27.84 (4.42)	28.25 (4.67)	0.510
Parental earnings in US dollars,[c] mean (SD)	21,300 (13440)	24,300 (14,930)	0.057	26,000 (15,810)	24,100 (13,860)	20,700 (14,430)	**0.022**	23,000 (14,630)	23,800 (13,510)	0.670
Family unit (single-parent), No. (%)[a]	10 (39.4)	20 (60.6)	0.847	10 (18.2)	10 (33.3)	20 (48.5)	0.712	30 (81.8)	10 (18.2)	0.709
Adulthood (33-37 years; outcome)										
Employment earnings, mean (SD)[c]	28,755 (18,139)	32,805 (20,153)	**0.05**	35,100 (21,350)	32,535 (18,713)	27,945 (18,726)	**0.022**	31, 050 (19,750)	32,130 (18,236)	0.670

Note. Based on participants with retrospectively self-reported abuse (n = 260 to 350).
[a] In accordance with Statistics Canada data protection requirements, displayed counts are rounded to base 10.
[b] Boldface indicates statistical significance ($P < 0.05$).
[c] Rounded to the nearest $100, as per Statistics Canada data protection regulations. Dollar amounts have not been adjusted for inflation.

Appendix Table 4. Associations of child sexual abuse with annual employment earnings at mid-adulthood (33-37 years), using non-imputed values.

	Differences in average annual employment earnings[a] (n = 1740)		
	Unadjusted[b]	Adjusted for sex[b]	Adjusted for family socioeconomic characteristics[b,c]
Personal earnings			
No official report, missing retrospective report	**-3389** [-5458 to -1323]	**-4382** [-6412 to -2350]	23.02 [-2596 to 2641]
No official report, retrospective self-reported sexual abuse	**-9148** [-12,339 to -5960]	**-5375** [-8568 to -2181]	-3375 [-7385 to 634]
Officially reported sexual abuse (with/without retrospective report)	**-26,978** [-38,970 to -14,985]	**-23,174** [-34,923 to -11,426]	**-16,515** [-32,827 to -203]

Note. Boldface indicates statistical significance ($P < 0.05$).
Reference category = no abuse.

[a] Based on non-imputed values. All amounts are in US dollars. Dollar amounts have not been adjusted for inflation.
[b] Estimates are beta coefficients from Tobit regression, with 95% confidence intervals. All three models were adjusted for cohort membership (disruptive vs. representative sample).
[c] Adjusted for characteristics including child's sex, maternal and paternal education, parental earnings, parental mean age at childbirth, and family unit (single- or two-parent family).

Appendix Table 5. Associations of characteristics of child sexual abuse with employment earnings at mid-adulthood (33-37 years), using non-imputed values.

	Differences in average annual employment earnings[a] (n = 200)		
	Unadjusted[b]	Adjusted for sex[b]	Adjusted for family socioeconomic characteristics[b,c]
Type			
Intrafamilial (vs. extrafamilial)	**-6886** [-11,781 to -1992]	**-6297** [-11,117 to -1478]	-4264 [-10,539 to 2010]
Severity			
Fondling/sexual touching (vs. non-contact)	-5585 [-11,882 to 711]	-4401 [-10,670 to 1867]	**-8479** [-16,506 to -450]
Penetration/attempted penetration (vs. non-contact)	**-10,783** [-17,055 to -4513]	**-8587** [-14,960 to -2214]	**-10,357** [-18,362 to -2351]
Chronicity			
Multiple episodes (vs. one episode)	-3375 [-9721 to 2968]	-1699 [-8004 to 4604]	-2706 [-10,939 to 5525]

Note. Bold face indicates statistical significance ($P < 0.05$).

[a] Based on non-imputed values. All amounts are in US dollars. Dollar amounts have not been adjusted for inflation.
[b] Estimates are beta coefficients from Tobit regression, with 95% confidence intervals. All three models were adjusted for cohort membership (disruptive vs. representative sample).
[c] Adjusted for characteristics including child's sex, maternal and paternal education, parental earnings, parental mean age at childbirth, and family unit (single- or two-parent family).

Appendix Table 6. Association of child sexual abuse with employment earnings at mid-adulthood (33-37 years), excluding individuals missing on the retrospective questionnaire.

	Differences in average annual employment earnings[a] (N = 1700)
	Adjusted for sex and family socioeconomic characteristics[b,c]
Group	
No official report, retrospective self-reported sexual abuse	**-3882** [-6861 to -901]
Officially reported sexual abuse (with/without retrospective report)	**-15,943** [-26,789 to -5098]

Note. Boldface indicates statistical significance ($P < 0.05$).
Reference category = no abuse.

[a] Based on imputed values. All amounts are in US dollars. Dollar amounts have not been adjusted for inflation.
[b] Estimates are beta coefficients from Tobit regression, with 95% confidence intervals. Models were adjusted for cohort membership (disruptive vs. representative sample).
[c] Adjusted for characteristics including child's sex, maternal and paternal education, parental earnings, parental mean age at childbirth, and family unit (single- or two-parent family).

Appendix Table 7. Association of characteristics of child sexual abuse with employment earnings at mid-adulthood (33-37 years), by sex.

	Differences in average annual employment earnings for boys[a] (n = 60)		Differences in average annual employment earnings for girls[a] (n = 280)	
Abuse characteristics	Unadjusted[b]	Adjusted for family socioeconomic characteristics[c]	Unadjusted[b]	Adjusted for family socioeconomic characteristics[c]
Type				
Intrafamilial (vs. extrafamilial abuse)	6093 [-8157 to 20,345]	7466 [-5540 to 20,472]	**-9038** [-14,005 to -4017]	**-7184** [-11,943 to -2423]
Severity				
Fondling/sexual touching (vs. non-contact)	-2194 [-17,300 to 12,912]	-75 [-14,156 to 14,004]	-5926 [-12,857 to 1006]	-4400 [-10,967 to 2167]
Penetration/attempted penetration (vs. non-contact)	-546 [-18,894 to 17,801]	633 [-10,270 to 22,936]	**-10,511** [-17,298 to -3724]	**-8443** [-14,921 to -1965]
Chronicity				
Multiple episodes (vs. one episode)	22,558 [-7208 to 52,325]	17,991 [-10,783 to 46,765]	-3508 [-9730 to 2713]	-3547 [-9418 to 2324]

Note. Boldface indicates statistical significance ($P < 0.05$).

[a] Based on imputed values. All amounts are in US dollars. Dollar amounts have not been adjusted for inflation.
[b] Estimates are beta coefficients from Tobit regression, with 95% confidence intervals. Models were adjusted for cohort membership (disruptive vs. representative sample).
[c] Adjusted for characteristics including, maternal and paternal education, parental earnings, parental mean age at childbirth, and family unit (single- or two-parent family).

Appendix Table 8. Associations of child sexual abuse with employment earnings at mid-adulthood (33-37 years), controlling for physical abuse.

	Differences in average annual employment earnings[a] (n = 3020)
	Adjusted for sex, family socioeconomic characteristics and physical abuse[b,c]
Personal earnings	
No official report, missing retrospective report	**-2295** [-4408 to -182]
No official report, retrospective self-reported sexual abuse	**-3928** [-7051 to -805]
Officially reported sexual abuse (with/without retrospective report)	**-16,368** [-27,809 to -4926]

Note. Boldface indicates statistical significance ($P < 0.05$).
Reference category = no abuse.

[a] Based on imputed values. All amounts are in US dollars. Dollar amounts have not been adjusted for inflation.
[b] Estimates are beta coefficients from Tobit regression, with 95% confidence intervals. Models were adjusted for cohort subset (disruptive vs. representative sample).
[c] Adjusted for characteristics including child's sex, maternal and paternal education, parental earnings, parental mean age at childbirth, and family unit (single- or two-parent family), and retrospective reports of physical abuse.

Appendix Table 9. Associations of the characteristics of retrospectively reported child sexual with adult employment earnings at mid-adulthood (33-37 years), controlling for physical abuse.

	Differences in average annual employment earnings[a] (n = 350)
	Adjusted for sex, family socioeconomic characteristics and physical abuse[b,c]
Type	
Intrafamilial (vs. extrafamilial abuse)	**-4772** [-9357 to -186]
Severity	
Fondling/sexual touching (vs. non-contact)	-3794 [-9714 to 2126]
Penetration/attempted penetration (vs. non-contact)	**-6847** [-12,959 to -735]
Chronicity	
Multiple episodes (vs. one episode)	-2522 [-8565 to 3520]

Note. Bold face indicates statistical significance ($P < 0.05$).

[a] Based on non-imputed values. All amounts are in US dollars. Dollar amounts have not been adjusted for inflation.
[b] Estimates are beta coefficients from Tobit regression, with 95% confidence intervals. Models were adjusted for cohort membership (disruptive vs. representative sample).
[c] Adjusted for characteristics including child's sex, maternal and paternal education, parental earnings, parental mean age at childbirth, and family unit (single- or two-parent family) and retrospective reports of physical abuse.