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Original quantitative research

Stressors and symptoms associated with a history of adverse childhood experiences among older adolescents and young adults during the COVID-19 pandemic in Manitoba, Canada

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Abstract

Introduction: The COVID-19 pandemic has had major economic, social and psychological consequences for adolescents and young adults. It is unclear whether those with a history of adverse childhood experiences (ACEs) were particularly vulnerable. We examined whether a history of ACEs was associated with financial difficulties, lack of emotional support, feeling stressed/anxious, feeling down/depressed, increased alcohol and/or cannabis use and increased conflict with parents, siblings and/or intimate partners among 16- to 21-year-olds during the pandemic.

Methods: Data were collected in November and December 2020 from respondents aged 16 to 21 years (n = 664) participating in the longitudinal and intergenerational Well-being and Experiences Study (Wave 3) conducted in Manitoba, Canada. Age-stratified associations between ACEs and pandemic-related stressors/symptoms were examined with binary and multinomial logistic regression.

Results: A history of ACEs was associated with pandemic-related financial difficulties (adjusted relative risk ratio [aRRR] range: 2.44–7.55); lack of emotional support (aRRR range: 2.13–26.77); higher levels of feeling stressed/anxious and down/depressed (adjusted odds ratio [aOR] range: 1.78–5.05); increased alcohol and cannabis use (aOR range: 1.99–8.02); and increased relationship conflict (aOR range: 1.98–22.59). Fewer associations emerged for older adolescents and these were not to the same degree as for young adults.

Conclusion: Adolescents and young adults with a history of ACEs reported increased odds of pandemic-related stressors and symptoms, and may need more resources and greater support compared to peers without an ACE history. Differences in results for adolescents and young adults suggest that interventions should be tailored to the needs of each age group.

Keywords: *SARS-CoV-2, child abuse, neglect, substance use, mental health, emotional support, interpersonal conflict, financial hardship*

Highlights

- The COVID-19 pandemic has exacerbated financial, social and psychological difficulties for young people.
- Older adolescents and young adults with a history of adverse childhood experiences (ACEs) were more vulnerable to pandemic-related stressors and symptoms compared to their peers without an ACEs history.
- Young adults with a history of ACEs may need additional resources that provide financial assistance, address mental health concerns, foster emotional support, reduce substance use and facilitate positive relationships.
- Older adolescents with a history of ACEs may benefit from interventions that improve feelings of depression and foster emotional support and healthy relationships with parents.
- Psychological first aid that provides practical and emotional support may be a suitable approach for supporting recovery from the pandemic.

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Introduction

The first COVID-19 case was identified in Manitoba, Canada, on 12 March 2020, and on 20 March 2020 the province declared a state of emergency.[1] Several public health measures were implemented to mitigate SARS-CoV-2 transmission, including restrictions on public gatherings and closures of schools and non-essential businesses.[1] After 1 May 2020, new cases diminished substantially and restrictions eased.[1] Infection rates increased again in August 2020, and by November 2020 critical-level disease containment restrictions were enacted.[1] Gathering sizes were extremely limited and non-essential businesses were ordered to close.

Stressors resulting from these public health measures, such as unemployment, have disproportionately impacted young populations.[2] The economic, social and psychological consequences of the COVID-19 pandemic have been particularly problematic for adolescents and young adults.[2-5] Those who were exposed to child maltreatment and other adversities in childhood may have been especially vulnerable.

Adverse childhood experiences (ACEs) are stressful, potentially traumatic events that threaten a child's sense of living in a safe, stable and nurturing environment.[6] ACEs typically refer to abuse (physical, sexual and emotional); neglect (physical and emotional); exposure to intimate partner violence (IPV); and household challenges (substance abuse and mental illness in the household, parental separation or divorce, and parental incarceration or problems with police).[6] ACEs may also include spanking, parental gambling, foster care or child protection involvement, living in an unsafe community, poverty and peer victimization.[7,8]

ACEs research has uncovered an extensive range of outcomes that can have repercussions across the lifespan.[9] For example, meta-analytic results indicate robust associations between ACEs and poor mental (e.g. depression, anxiety, substance abuse) and physical health.[10] An ACEs history can also hinder the formation of healthy relationships, and has been associated with lower perceived social support[11] and a higher risk for interpersonal conflict.[12] In addition, ACEs can negatively impact socioeconomic status in adulthood, including education, employment and income.[13] Consequently, a childhood adversity history presents a substantial burden on health and well-being; it is important to determine if this burden was exacerbated during the COVID-19 pandemic.

Vulnerability to the effects of stressful life events, such as the pandemic, among people with a history of ACEs is hypothesized to arise via a mechanism known as stress sensitization.[14] It is theorized that physiological changes occur in response to childhood adversities (conceptualized as "toxic stress"[15]) as an adaptive mechanism to help the child survive in their adverse environment.[16] These adaptations, however, can disrupt physiological systems and functioning including neural, neuroendocrine, metabolic and immune functioning.[16] For instance, alterations to brain structure and activity are linked to dysregulation of stress responses, fear learning, emotion regulation, executive functioning and reward processing.[16] In the face of chronic exposure to toxic stress during childhood, regulatory functions are increasingly sensitized to subsequent stressors. Individuals with a history of ACEs have lower thresholds of stress tolerance that are associated with increased risk of potentially harmful physiological, emotional and behavioural responses.[14,16] Several studies have observed stress sensitization among survivors of childhood adversity, whose risk of psychopathology after traumatic events is high compared with people without histories of adversity.[17-20]

The literature on how individuals with a history of ACEs are faring during the COVID-19 pandemic is sparse. Three studies conducted in China early in the pandemic (February and March 2020)—two with post-secondary student samples and one with a sample of rural adolescents—found significant associations between ACEs and self-reported symptoms of acute stress, anxiety and depression.[21-23] To our knowledge, no studies have investigated associations between a history of ACEs and pandemic-related financial difficulties, emotional support, substance use or interpersonal conflict. It is also possible that any associations between ACEs and pandemic-related impacts differ by age group. The transition from adolescence to emerging adulthood typically involves greater independence from parents/caregivers as well as added responsibility.[24] Young adults may experience more life stressors than adolescents and may have less access to and/or reliance on family resources.

The objectives of our study were to estimate the associations between a history of ACEs and self-reported stressors and symptoms (financial difficulties; lack of emotional support; high levels of feeling stressed/anxious and down/depressed; increased alcohol consumption and cannabis use; and increased conflict with parents*, siblings and/or an intimate partner) during the pandemic among older adolescents and young adults.

Methods

Data and sample

A community sample of older adolescents (aged 16 or 17 years) and young adults (aged 18–21 years) was drawn from the longitudinal and intergenerational Well-being and Experiences (WE) Study, conducted in Manitoba, Canada. Baseline recruitment for Wave 1 in 2017–18 (N = 1002; aged 14–17 years) involved random digit dialling (21%), referrals (40.6%) and community advertisements (38.4%) to contact parents or caregivers and adolescents from Winnipeg and surrounding rural areas. Sampling method differences were not detected for sex, age, ethnicity and several ACEs.[25] Postal codes (Forward Sortation Area) and demographic characteristics were monitored to ensure the adolescent sample resembled the Winnipeg population based on characteristics of age, sex, household income and ethnicity.[8]

The adolescents were recontacted to participate in Wave 2 in 2019 (n = 748) and in Wave 3 from November to December 2020 (n = 664; 66.3% of the original adolescent cohort; aged 16–21 years), with online questionnaires administered by text or email. Compared to Wave 1 respondents, a larger proportion of Wave 3 respondents were female and had a higher household income; no differences were detected in respondent age.

* While the question about conflict specifically asked about parents only, responses may have included other guardians or parental figures.

Written informed consent was obtained from all participants. The University of Manitoba Health Research Ethics Board granted ethics approval (#HS24159/H2020:359).

Measures

Adverse childhood experiences

Sixteen ACEs were assessed: seven child maltreatment ACEs; peer victimization; and eight household challenges ACEs. Most ACEs were assessed at Wave 3 and pertained to respondents' experiences before they were 16 years old; exceptions are noted below. Because of mandatory child abuse reporting laws for minors, assessments of child maltreatment ACEs differed depending on respondent age at Wave 3. For adults, physical abuse, sexual abuse, emotional abuse, physical neglect and emotional neglect were measured using the Childhood Trauma Questionnaire (CTQ).[26] These ACEs were scored according to CTQ instructions and dichotomized according to established cut-points.[8]

For adolescents, emotional neglect was also measured using the CTQ. Emotional abuse was assessed using a single item adapted from the Childhood Experiences of Violence Questionnaire (CEVQ)[27]: "How many times has a parent or guardian said hurtful or mean things to you?" Responses of "once a month" or more frequently were coded "yes."

For adults, exposure to physical IPV was assessed with a question adapted from the CEVQ[27]: "How many times did you see or hear any one of your parents, step-parents or guardians hit each other or another adult in your home?" Responses of "3 to 5 times" or more were coded "yes." For adolescents, exposure to verbal IPV was also assessed with a question adapted from the CEVQ[27]: "How often have you seen or heard adults say hurtful or mean things to another adult in your home?" Responses of "once a month" or more frequently were coded "yes."

Spanking was assessed at Wave 1 with one question adapted from the CEVQ[27] referring to a typical year when the respondent was aged 10 years or younger: "How often do you remember an adult spanking you with their hand on your bottom (bum)?" Responses of "2 to 3 times a year" or more were coded "yes."

For adolescents and young adults separately, each child maltreatment ACE was combined into a single dichotomous variable indicating exposure to "any" child maltreatment ACE. The remaining ACEs were assessed in the same way for all respondents.

Peer victimization was measured at Waves 1 and 2, with seven items assessing the frequency of past-year exposure to physical, verbal, social and cyber victimization as well as three types of discriminatory victimization. A response of "once a month" or more frequently at either wave was coded "yes." The seven items were then combined into a single dichotomous variable for exposure to "any" peer victimization.

Measurement of household challenges ACEs included problems with alcohol and/or drugs (two items); mental health problems such as depression or anxiety (one item); parental separation or divorce (one item); parental problems with police (one item); parental problems with gambling (one item); foster care placement and/or contact with a child protective organization (two items); household running out of money for rent/mortgage and/or basic necessities such as food or clothing (a proxy for poverty; two items); and living in an unsafe community (one item). Poverty and unsafe community were assessed at Wave 1. Because of a low prevalence of several household challenges items in the sample, a single dichotomous variable was computed to indicate exposure to "at least one." The ACEs measures are outlined in Table 1, and additional details are available elsewhere.[8,28]

COVID-19 pandemic impacts

Self-reported stressors and symptoms experienced during the COVID-19 pandemic were identified at Wave 3. Financial hardship was assessed with the question "Have you or your family experienced financial difficulties because of the COVID-19 pandemic?" We recoded the five ordinal response options as "not at all/a little," "some" and "quite a bit/a lot." Emotional support was assessed with the question "Have you felt emotionally supported during the COVID-19 pandemic?" with the same response options recoded as "not at all," "a little," "some" and "quite a bit/a lot." Stress/anxiety and depression were each assessed with one question asking whether the respondent felt "stressed or anxious…" or "down or depressed because of the COVID-19 pandemic"; response options were dichotomized as "quite a bit/a lot" versus "some/a little/not at all." Changes in alcohol consumption and cannabis use were assessed with two questions (e.g. "Has your consumption of alcohol changed due to the COVID-19 pandemic?"). The response options for each question were "increased," "remained the same" and "decreased"; these response options were dichotomized as "increased" versus "remained the same/decreased." Changes in conflict with parents, siblings and intimate partners were assessed with three questions (e.g. "Has conflict with your parents changed due to the COVID-19 pandemic?"). The response options for each question were also dichotomized as "increased" versus "remained the same/decreased."

Covariates

Sociodemographic characteristics were respondent age at Wave 3, stratified by older adolescents (16 or 17 years) and young adults (18–21 years); male and female sex at Wave 1; race/ethnicity reported at Wave 1; parents' highest level of education at Wave 1; and household income reported by the parent at Wave 1.

Data analysis

Descriptive statistics for sociodemographic characteristics, COVID-19 pandemic stressors and symptoms, and ACEs were computed for the total sample and by age group. Associations between ACEs and financial hardship and emotional support were assessed with multinomial logistic regression; associations between ACEs and feeling stressed/anxious and down/depressed, increased alcohol consumption and cannabis use, and increased conflict with parents, siblings and intimate partners were assessed with binary logistic regression. We stratified models by age group because of the potential differences in adolescents' and young adults' life stages as well as differences in the measurement of ACEs. Models were first unadjusted and then adjusted for sex, age and household income. Analyses were conducted in Stata version 16.1 (StataCorp LLC, College Station, TX, US). Of note, exponentiated coefficients are computed in Stata as relative risk ratios in multinomial logistic regression, whereas odds ratios are computed in binary logistic regression.

TABLE 1
Measures of adverse childhood experiences

ACE	Source	Age of respondent, years	WE Study wave
Child maltreatment ACE			
Physical abuse	CTQ[26]	18–21	3
Sexual abuse	CTQ[26]	18–21	3
Emotional abuse	CTQ[26]	18–21	3
	CEVQ[27]	16–17	3
Physical neglect	CTQ[26]	18–21	3
Emotional neglect	CTQ[26]	All ages	3
Exposure to physical IPV	Adapted from the CEVQ[27]	18–21	3
Exposure to verbal IPV	Adapted from the CEVQ[27]	16–17	3
Spanking	Adapted from the CEVQ[27]	All ages	1
Peer victimization	Manitoba Youth Health Survey[29]; Ontario Child Health Survey[30]	All ages	1, 2
Household challenges ACE			
Household problems with alcohol and/or drugs	Adapted from the ACE Questionnaire[31]	All ages	3
Household mental illness	Adapted from the ACE Questionnaire[31]	All ages	3
Parental separation or divorce	Adapted from the ACE Questionnaire[31]	All ages	3
Parental problems with police	Adapted from the ACE Questionnaire[31]	All ages	3
Parental problems with gambling	Developed for this questionnaire	All ages	3
Foster care placement and/or contact with a child protective organization	Developed for this questionnaire	All ages	3
Household running out of money (proxy for poverty)	Developed for this questionnaire	All ages	1
Living in an unsafe community	Manitoba Youth Health Survey[29]	All ages	1

Abbreviations: ACE, adverse childhood experience; CEVQ, Childhood Experiences of Violence Questionnaire; CTQ, Childhood Trauma Questionnaire; IPV, intimate partner violence; WE Study, Well-being and Experiences Study.

Results

The Wave 3 sample (n = 664) comprised 60.5% (n = 401) young adults and 39.5% (n = 262) older adolescents. Compared to older adolescents, young adults had greater odds of reporting "quite a bit/a lot" of financial difficulties (odds ratio [OR] = 1.83, 95% confidence interval [CI]: 1.04–3.20) and lower odds of reporting conflict with siblings (OR = 0.60; 95% CI: 0.38–0.95) (see Table 2). No other age group differences were detected.

Age-stratified associations between ACEs and self-reports of pandemic-related financial difficulties were adjusted for age, sex, race/ethnicity, parental education and household income. The biserial correlation between household income and financial difficulties (r_{bis} = −0.34; standard error = 0.04) was determined to be sufficiently low for inclusion in the model.[32] Among young adults, all ACEs (except spanking) were associated with increased relative risk of reporting "quite a bit/a lot" of financial difficulties rather than "not at all/a little" (adjusted relative risk ratio [aRRR] range: 2.59–4.99). Older adolescents with a history of emotional abuse, being spanked, any child maltreatment ACE and any household challenge ACE had increased relative risk of "some" financial difficulties rather than "not at all/a little" (aRRR range: 2.44–7.55) (see Table 3).

Among young adults, all ACEs (except spanking) were associated with increased relative risk of feeling emotionally supported "not at all" rather than "quite a bit/a lot" (aRRR range: 4.11–26.77). Among older adolescents, all child maltreatment ACEs and peer victimization were associated with increased relative risk of feeling less emotionally supported (aRRR range: 2.36–26.11) (see Table 4).

Emotional abuse (adjusted OR [aOR] = 1.78; 95% CI: 1.03–3.08) and physical neglect (aOR = 1.90; 95% CI: 1.06–3.41) among young adults were associated with increased odds of feeling stressed/anxious "quite a bit/a lot." Greater odds of feeling down/depressed "quite a bit/a lot" were found among young adults with histories of emotional abuse, physical neglect and any household challenge ACE (aOR range: 1.95–2.67) and among older adolescents with histories of emotional abuse, emotional neglect, exposure to verbal IPV, any child maltreatment ACE and peer victimization (aOR range: 1.89–5.05) (see Table 5).

In the sample, 80% of young adults and 50% of older adolescents consumed alcohol (data not shown). For young adults, physical abuse, sexual abuse, emotional abuse, emotional neglect and peer victimization histories were associated with greater odds of reporting increased pandemic-related alcohol consumption (aOR range: 2.27–6.27). No associations between ACEs and increased alcohol consumption emerged among older adolescents (see Table 5).

Close to half (52%) of young adults and one-third (33%) of older adolescents in the sample used cannabis (data not shown). For young adults, all ACEs except physical abuse and spanking were associated with greater odds of increased pandemic-related cannabis use (aOR range:

TABLE 2
Sociodemographic characteristics, pandemic-related stressors and symptoms, and ACEs, in the total sample and by age group

Characteristic, stressor/symptom, ACE	Sample, % (n)			OR[a] (95% CI)
	Total (n = 664)	Older adolescents aged 16 or 17 years (n = 262)	Young adults aged 18–21 years (n = 401)	
Characteristic				
Mean age (SD), years	17.97 (1.22)	16.73 (0.45)	18.79 (0.80)	–
Sex[b]				
Male (reference)	45.3 (299)	50.0 (130)	42.3 (169)	1.00
Female	54.7 (361)	50.0 (130)	57.8 (231)	1.37 (1.00–1.87)
Household income, CAD[b]				
≤49 999 (reference)	15.1 (100)	14.9 (39)	15.3 (61)	1.00
50 000–99 999	36.5 (241)	35.5 (93)	37.1 (148)	1.02 (0.63–1.64)
100 000–149 999	23.5 (155)	24.4 (64)	22.8 (91)	0.91 (0.54–1.52)
≥150 000	20.9 (138)	21.4 (56)	20.6 (82)	0.94 (0.55–1.58)
No response	4.1 (27)	3.8 (10)	4.3 (17)	1.09 (0.45–2.62)
Pandemic-related stressors and symptoms				
Financial difficulties				
Not at all/a little (reference)	74.3 (459)	79.0 (188)	71.3 (271)	1.00
Some	14.6 (90)	13.0 (31)	15.5 (59)	1.32 (0.82–2.12)
Quite a bit/a lot	11.2 (69)	8.0 (19)	13.2 (50)	1.83 (1.04–3.20)*
Felt emotionally supported				
Quite a bit/a lot (reference)	48.0 (303)	48.2 (120)	47.9 (183)	1.00
Some	24.4 (154)	22.5 (56)	25.7 (98)	1.15 (0.77–1.71)
A little	19.0 (120)	19.3 (48)	18.9 (72)	0.98 (0.64–1.51)
Not at all	8.6 (54)	10.0 (25)	7.6 (29)	0.76 (0.42–1.36)
Feeling stressed/anxious “quite a bit/a lot”				
No (reference)	52.7 (343)	56.6 (146)	50.1 (197)	1.00
Yes	47.3 (308)	43.4 (112)	49.9 (196)	1.30 (0.95–1.78)
Feeling down/depressed “quite a bit/a lot”				
No (reference)	63.8 (410)	65.1 (166)	62.9 (244)	1.00
Yes	36.2 (233)	34.9 (89)	37.1 (144)	1.10 (0.79–1.53)
Increased alcohol consumption (n = 434)				
No (reference)	81.8 (346)	80.8 (97)	82.2 (249)	1.00
Yes	18.2 (77)	19.2 (23)	17.8 (54)	0.91 (0.53–1.57)
Increased cannabis use (n = 278)				
No (reference)	64.9 (174)	67.1 (53)	64.0 (121)	1.00
Yes	35.1 (94)	32.9 (26)	36.0 (68)	1.15 (0.66–2.00)
Increased conflict with parents				
No (reference)	77.8 (439)	74.8 (160)	79.7 (279)	1.00
Yes	22.2 (125)	25.2 (54)	20.3 (71)	0.75 (0.50–1.13)
Increased conflict with siblings (n = 592)				
No (reference)	83.7 (462)	79.2 (164)	86.4 (298)	1.00
Yes	16.3 (90)	20.8 (43)	13.6 (47)	0.60 (0.38–0.95)*
Increased conflict with partner in intimate relationship (n = 288)				
No (reference)	73.7 (193)	72.3 (60)	74.3 (133)	1.00
Yes	26.3 (69)	27.7 (23)	25.7 (46)	0.90 (0.50–1.62)

Continued on the following page

TABLE 2 (continued)
Sociodemographic characteristics, pandemic-related stressors and symptoms, and ACEs, in the total sample and by age group

Characteristic, stressor/symptom, ACE	Sample, % (n)			OR[a] (95% CI)
	Total (n = 664)	Older adolescents aged 16 or 17 years (n = 262)	Young adults aged 18–21 years (n = 401)	
ACE				
Physical abuse				
No	–	–	89.8 (343)	–
Yes	–	–	10.2 (39)	–
Sexual abuse				
No	–	–	81.7 (316)	–
Yes	–	–	18.4 (71)	–
Emotional abuse				
No	73.8 (475)	64.3 (162)	79.9 (313)	–
Yes	26.2 (169)	35.7 (90)	20.2 (79)	–
Physical neglect				
No	–	–	82.6 (322)	–
Yes	–	–	17.4 (68)	–
Emotional neglect				
No (reference)	86.2 (556)	85.6 (219)	86.6 (337)	1.00
Yes	13.8 (89)	14.5 (37)	13.4 (52)	0.91 (0.58–1.44)
Exposure to IPV (physical or verbal)				
No	84.7 (533)	70.3 (175)	94.2 (358)	–
Yes	15.3 (96)	29.7 (74)	5.8 (22)	–
Spanking[b]				
No (reference)	70.2 (436)	71.7 (177)	69.3 (259)	1.00
Yes	29.8 (185)	28.3 (70)	30.8 (115)	1.12 (0.79–1.60)
Any child maltreatment ACE				
No	43.3 (270)	40.1 (99)	45.5 (171)	–
Yes	56.7 (353)	59.9 (148)	54.5 (205)	–
Peer victimization[b,c]				
No (reference)	60.8 (351)	56.3 (129)	63.8 (222)	1.00
Yes	39.2 (226)	43.7 (100)	36.2 (126)	0.73 (0.52–1.03)
Any household challenge ACE				
No (reference)	34.4 (195)	35.3 (78)	33.8 (117)	1.00
Yes	65.6 (372)	64.7 (143)	66.2 (229)	1.07 (0.75–1.52)

Abbreviations: ACE, adverse childhood experience; CAD, Canadian dollar; CI, confidence interval; IPV, intimate partner violence; OR, odds ratio.

Note: Age group differences were not tested for the ACEs that differed in measurement depending on the age of the respondent at Wave 3 (i.e. physical abuse, sexual abuse, physical neglect, exposure to IPV and any child maltreatment ACE).

[a] Adolescents are the reference group.

[b] Collected at Wave 1.

[c] Collected at Wave 2.

$^{*}p < 0.05$.

$^{**}p < 0.01$.

$^{***}p < 0.001$.

1.99–5.14). Among older adolescents, emotional neglect was associated with increased cannabis use (aOR = 8.02; 95% CI = 1.26–51.17) (see Table 5).

Among young adults, emotional abuse, physical neglect, any child maltreatment ACE and peer victimization were associated with greater odds of increased conflict with parents (aOR range: 1.98–2.60) and siblings (aOR range: 2.16–2.61); a history of sexual abuse was also associated with increased sibling conflict (aOR = 2.56; 95% CI: 1.20–5.45) (see Table 6).

Among older adolescents, emotional abuse, emotional neglect, exposure to verbal IPV, any child maltreatment ACE and peer victimization were associated with higher odds of increased conflict with parents (aOR range: 3.39–8.79); peer victimization was associated with increased sibling

TABLE 3
Associations between ACEs and self-reported financial difficulties due to the COVID-19 pandemic, by age group

ACE	Financial difficulties, aRRR[a] (95% CI)	
	"Some" versus "not at all/a little"	"Quite a bit/a lot" versus "not at all/a little"
Young adults aged 18–21 years		
Physical abuse	1.39 (0.53-3.65)	2.59 (1.04–6.49)*
Sexual abuse	1.70 (0.82–3.54)	3.33 (1.52–7.30)**
Emotional abuse	1.47 (0.70–3.08)	4.99 (2.36-10.58)***
Physical neglect	1.69 (0.78–3.68)	4.57 (2.14–9.77)***
Emotional neglect	1.02 (0.40–2.56)	4.14 (1.84–9.30)**
Exposure to physical IPV	1.32 (0.32–5.39)	4.35 (1.46–12.94)**
Spanking[b]	1.00 (0.51–1.96)	1.37 (0.67–2.79)
Any child maltreatment ACE	1.08 (0.58–2.02)	2.69 (1.28–5.64)**
Peer victimization[b,c]	1.14 (0.58–2.23)	3.38 (1.60–7.13)**
Any household challenge ACE	1.68 (0.82–3.44)	4.39 (1.58–12.18)**
Older adolescents aged 16 or 17 years		
Emotional abuse	2.44 (1.02–5.81)*	0.94 (0.27–3.29)
Emotional neglect	1.62 (0.55–4.82)	2.56 (0.67–9.76)
Exposure to verbal IPV	1.78 (0.73–4.32)	1.09 (0.33–3.64)
Spanking[b]	2.45 (1.00–6.01)*	0.89 (0.25–3.17)
Any child maltreatment ACE	3.15 (1.18–8.45)*	2.25 (0.63–7.99)
Peer victimization[b,c]	2.18 (0.84–5.68)	1.12 (0.33–3.84)
Any household challenge ACE	7.55 (1.97–29.02)**	2.14 (0.45–10.14)

Abbreviations: ACE, adverse childhood experience; aRRR, adjusted relative risk ratio; CI, confidence interval; IPV, intimate partner violence.

[a] Adjusted for age, sex, race/ethnicity, parental education and household income.

[b] Collected at Wave 1.

[c] Collected at Wave 2.

*$p < 0.05$.

**$p < 0.01$.

***$p < 0.001$.

conflict (aOR = 3.09; 95% CI: 1.41–6.77) (see Table 6).

About half (53%) of young adults and 41% of older adolescents were in an intimate relationship (data not shown). Young adults with histories of physical, sexual and emotional abuse, physical and emotional neglect, exposure to physical IPV, any child maltreatment ACE and any household challenge ACE had higher odds of reporting increased conflict with their partner (aOR range: 2.72–8.15); this was also the case for older adolescents with any household challenge ACE (aOR = 22.59; 95% CI: 1.94–263.30) (see Table 6).

Discussion

The current findings demonstrated an association between a history of ACEs and several self-reported stressors and symptoms related to the COVID-19 pandemic. These findings support the stress sensitization hypothesis, which suggests that individuals with ACEs are particularly susceptible to negative outcomes after exposure to subsequent life stressors.[14,16-20] The COVID-19 pandemic has been an acutely stressful life event that has exacerbated and prolonged financial, social and psychological difficulties, particularly for young people.[2,3,5] As hypothesized, this study indicates that ACEs increased vulnerability among older adolescents and young adults.

The findings are consistent with and contribute to the scant existing literature.[21-23] The analysis identified pandemic-related stressors and symptoms associated with a history of ACEs that have not been examined previously. Furthermore, while studies conducted in the early months of the COVID-19 pandemic are important, it is possible that experiences changed over time. The current study was conducted 8 to 9 months after the declaration of the COVID-19 pandemic and demonstrates its enduring impact. Importantly, as well as experiencing more problems during the pandemic, adolescents and young adults with an ACE history may have greater difficulty recovering when it is over. The results of this study indicate that older adolescents and young adults with an ACE history may need increased supports and resources that provide financial assistance, address mental health concerns, foster emotional support, reduce substance use and facilitate positive relationships.

Psychological first aid (PFA) is a recommended intervention for providing practical, social and emotional support in the context of crisis events.[33] Components of PFA outlined by the World Health Organization include providing non-intrusive practical care and support to address basic needs, promote safety and a sense of calm and provide connections to additional resources.[33] Emerging evidence, summarized in a recent review, indicated several strengths of PFA to support children and families, though there was a notable lack of studies involving youth populations.[34] Investigations of the effectiveness of PFA for addressing COVID-19 pandemic–related stressors and mental health symptoms among older adolescents and young adults with an ACE history are warranted. In addition to providing immediate support in response to the pandemic, upstream strategies for primary prevention of ACEs as well as interventions to treat the psychological effects of ACEs are needed. Such strategies will be important to support young people to better cope with future stressful situations, including the possibility of future epidemics or pandemics.

Different trends in the findings for older adolescents and young adults indicate the need for age group–specific interventions. For young adults, associations were observed between ACEs and reporting financial difficulties, not feeling emotionally supported, reporting increased alcohol and cannabis use, and increased conflict with siblings and an intimate partner. Associations were not observed to the same degree among older adolescents.

TABLE 4
Associations between ACEs and self-reported emotional support during the COVID-19 pandemic, by age group

ACE	Felt emotionally supported, aRRR[a] (95% CI)		
	"Some" versus "quite a bit/a lot"	"A little" versus "quite a bit/a lot"	"Not at all" versus "quite a bit/a lot"
Young adults aged 18–21 years			
Physical abuse	1.41 (0.50–4.03)	2.66 (1.03–6.89)*	4.28 (1.27–14.35)**
Sexual abuse	0.86 (0.39–1.87)	2.72 (1.33–5.55)**	4.38 (1.56–12.31)**
Emotional abuse	3.55 (1.55–8.12)**	9.10 (4.12–20.07)***	10.76 (3.83–30.23)***
Physical neglect	2.43 (1.03–5.70)*	5.09 (2.24–11.52)***	12.23 (4.51–33.16)***
Emotional neglect	5.17 (1.69–15.80)**	12.05 (4.05–35.88)***	26.77 (7.69–93.22)***
Exposure to physical IPV	1.30 (0.27–6.22)	3.93 (1.11–13.98)*	5.74 (1.21–27.31)*
Spanking[b]	0.70 (0.37–1.31)	1.18 (0.63–2.22)	2.40 (0.97–5.93)
Any child maltreatment ACE	1.36 (0.78–2.36)	3.11 (1.67–5.81)***	6.88 (2.21–21.40)***
Peer victimization[b,c]	1.07 (0.57–2.00)	2.13 (1.11–4.06)*	5.50 (2.13–14.16)***
Any household challenge ACE	1.28 (0.70–2.34)	2.26 (1.12–4.59)*	4.11 (1.25–13.49)*
Older adolescents aged 16 or 17 years			
Emotional abuse	1.92 (0.88–4.16)	2.67 (1.26–5.68)*	6.47 (2.35–17.82)***
Emotional neglect	6.80 (1.87–24.71)**	7.52 (2.20–25.75)**	26.11 (6.78–100.48)***
Exposure to verbal IPV	2.78 (1.24–6.24)*	2.36 (1.07–5.22)*	2.28 (0.84–6.19)
Spanking[b]	1.53 (0.68–3.45)	2.57 (1.16–5.71)*	1.08 (0.36–3.23)
Any child maltreatment ACE	1.85 (0.90–3.80)	5.45 (2.23–13.33)***	5.84 (1.76–19.35)**
Peer victimization[b,c]	1.15 (0.55–2.42)	2.59 (1.20–5.61)*	2.44 (0.86–6.94)
Any household challenge ACE	1.63 (0.75–3.58)	2.75 (1.03–7.36)*	1.57 (0.51–4.87)

Abbreviations: ACE, adverse childhood experience; aRRR, adjusted relative risk ratio; CI, confidence interval; IPV, intimate partner violence.

[a] Adjusted for age, sex, race/ethnicity, parental education and household income.

[b] Collected at Wave 1.

[c] Collected at Wave 2.

*$p < 0.05$.

**$p < 0.01$.

***$p < 0.001$.

The strong associations between ACEs and COVID-19 challenges observed in young adults indicate a need to prioritize additional supports for this age group. By contrast, fewer associations between ACEs and feeling down/depressed and increased conflict with parents emerged among young adults than among older adolescents. Although fewer associations were found for older adolescents overall and not to the same degree as for young adults, the results emphasize interventions that foster emotional support, healthy relationships with parents, and improve feelings of depression as key target areas for supporting older adolescents during and after the COVID-19 pandemic.

Reports of financial difficulties as a result of the measures implemented to contain the pandemic, particularly among young adults with an ACE history, are consistent with research conducted prior to the pandemic.[13] Recent research has indicated that material hardship due to financial strain is associated with poor self-rated health, sleep problems, depression and suicidal thoughts in early adulthood.[35] Young workers disproportionately experienced underemployment and unemployment during the COVID-19 pandemic.[2,36] Support that alleviates financial strain during and after the pandemic is imperative for this age group.

Furthermore, increased odds of elevated alcohol and cannabis use in young adults with a history of ACEs is concerning. The present study did not examine reasons for increased substance use, but coping motives for increased alcohol consumption among college students during the pandemic have been reported.[37,38] Substance use is a common, but potentially harmful, means of coping.[39] For instance, excessive consumption may result in injury and death, addiction and long-term physical and mental health conditions.[40] Public health strategies aimed at reducing substance use among young adults are needed.

Young adults and older adolescents with an ACE history reported elevated interpersonal conflict. Conflict with parents, siblings and intimate partners can be normative. However, research has also found that such conflict increases the risk of internalizing and externalizing problems.[41-45] Family conflict in adolescence has also been associated with a lack of closeness in relationships with parents and with romantic partners in adulthood.[46] Findings from this work indicate that several child maltreatment ACEs are related to increased conflict among

TABLE 5
Associations between ACEs and feeling stressed/anxious and down/depressed "quite a bit/a lot" and self-reported increase in alcohol and cannabis use due to the COVID-19 pandemic, by age group

ACE	aOR[a] (95% CI)			
	Feeling stressed/anxious "quite a bit/a lot"	Feeling down/depressed "quite a bit/a lot"	Increased alcohol consumption	Increased cannabis use
Young adults aged 18 to 21 years				
Physical abuse	1.12 (0.54–2.33)	1.50 (0.72–3.11)	5.34 (2.09–13.64)***	2.06 (0.79–5.42)
Sexual abuse	1.46 (0.83–2.57)	1.43 (0.82–2.51)	2.27 (1.05–4.93)*	3.80 (1.71–8.43)**
Emotional abuse	1.78 (1.03–3.08)*	1.98 (1.16–3.38)*	6.27 (2.94–13.37)***	2.58 (1.25–5.35)*
Physical neglect	1.90 (1.06–3.41)*	1.95 (1.09–3.47)*	1.73 (0.74–4.04)	5.14 (2.31–11.43)***
Emotional neglect	1.27 (0.67–2.39)	1.49 (0.80–2.80)	4.37 (1.91–10.01)***	3.02 (1.31–7.01)**
Exposure to physical IPV	1.69 (0.63–4.55)	1.74 (0.66–4.56)	3.07 (0.87–10.81)	4.61 (1.26–16.86)*
Spanking[b]	0.78 (0.49–1.26)	0.78 (0.47–1.28)	0.94 (0.45–1.97)	1.00 (0.48–2.11)
Any child maltreatment ACE	1.11 (0.72–1.72)	1.44 (0.91–2.28)	2.20 (1.12–4.35)*	2.68 (1.33–5.39)**
Peer victimization[b,c]	1.43 (0.89–2.29)	1.46 (0.90–2.38)	2.27 (1.18–4.38)*	1.99 (1.02–3.88)*
Any household challenge ACE	1.59 (0.97–2.61)	2.67 (1.54–4.62)***	1.44 (0.69–2.98)	4.07 (1.64–10.05)**
Older adolescents aged 16–17 years				
Emotional abuse	1.15 (0.65–2.03)	1.89 (1.02–3.51)*	0.96 (0.32–2.92)	1.18 (0.37–3.69)
Emotional neglect	1.41 (0.67–2.97)	5.05 (2.15–11.86)***	4.48 (0.96–20.99)	8.02 (1.26–51.17)*
Exposure to verbal IPV	0.88 (0.48–1.60)	2.03 (1.07–3.88)*	0.47 (0.13–1.72)	1.89 (0.62–5.71)
Spanking[b]	0.94 (0.51–1.73)	1.36 (0.70–2.65)	1.10 (0.34–3.62)	1.04 (0.30–3.64)
Any child maltreatment ACE	1.27 (0.72–2.22)	2.32 (1.22–4.42)*	0.92 (0.29–2.96)	1.84 (0.47–7.23)
Peer victimization[b,c]	1.75 (0.98–3.14)	2.16 (1.13–4.15)*	0.55 (0.18–1.65)	0.43 (0.13–1.47)
Any household challenge ACE	1.06 (0.56–2.00)	1.72 (0.84–3.51)	0.81 (0.19–3.39)	0.74 (0.19–2.78)

Abbreviations: ACE, adverse childhood experience; aOR, adjusted odds ratio; CI, confidence interval; IPV, intimate partner violence.

[a] Adjusted for age, sex, race/ethnicity, parental education and household income.

[b] Collected at Wave 1.

[c] Collected at Wave 2.

*$p < 0.05$.

**$p < 0.01$.

***$p < 0.001$.

parents, siblings and intimate partners for young adults and increased conflict among parents for older adolescents. The home environment and relationships with parents, siblings and partners during the pandemic should be considered along with post-pandemic recovery strategies. Interventions designed to help young people effectively deal with interpersonal conflict and facilitate positive relationships are recommended.

Strengths and limitations

Strengths of the current study include (1) the measurement of child maltreatment using an instrument that has demonstrated good psychometric properties, and (2) the examination of individual ACEs, with the exception of household challenges ACEs. This analysis was based on a community sample from Manitoba, Canada. The sample was comparable to the population from which it was drawn, but not necessarily representative of older adolescents and young adults. In addition, some differences were noted between the baseline and Wave 3 samples that suggest non-random attrition. It is possible that individuals experiencing stressors and symptoms were underrepresented. However, it is important to note that 66.3% of the original adolescent cohort from baseline was maintained at Wave 3. Owing to the nature of the data, causal inferences cannot be made. Even so, the ACEs occurred before respondents were 16 years of age, which for young adults aged 18 to 21 years, preceded onset of the COVID-19 pandemic. Another shortcoming is that older adolescents were not asked about all ACEs. As well, pandemic-related stressors and symptoms were identified based on respondents' self-reports rather than on validated tools; however, these self-reports were specific to the pandemic. It was also not possible to develop a standardized COVID-19 instrument before administration of the Well-being and Experiences (WE) Study: Wave 3. Data on living situations during the pandemic were not available, and we were unable to determine whether this accounted for some of the differences observed between adolescents and young adults. Finally, the sample size was relatively small, and when stratified, yielded a low prevalence of some ACEs. As a result, power was limited and aggregation of household challenge ACEs was necessary. For this same reason, it was

TABLE 6
Associations between ACEs and self-reported increase in relationship conflict due to the COVID-19 pandemic, by age group

ACE	Increased conflict, aOR[a] (95% CI)		
	With parents	With siblings	With a partner
Young adults aged 18–21 years			
Physical abuse	2.11 (0.88–5.03)	1.68 (0.60–4.71)	8.15 (2.80–23.69)***
Sexual abuse	1.12 (0.55–2.26)	2.56 (1.20–5.45)*	3.68 (1.63–8.34)**
Emotional abuse	2.12 (1.13–3.99)*	2.16 (1.05–4.47)*	5.43 (2.29–12.84)***
Physical neglect	1.98 (1.00–3.90)*	2.58 (1.23–5.41)*	2.72 (1.14–6.47)*
Emotional neglect	1.68 (0.80–3.50)	1.07 (0.43–2.69)	6.41 (2.33–17.61)***
Exposure to physical IPV	0.59 (0.16–2.24)	1.04 (0.27–4.11)	5.06 (1.13–22.62)*
Spanking[b]	1.14 (0.62–2.13)	1.15 (0.57–2.34)	1.74 (0.81–3.73)
Any child maltreatment ACE	2.10 (1.15–3.84)*	2.58 (1.25–5.32)**	3.25 (1.37–7.75)**
Peer victimization[b,c]	2.60 (1.40–4.81)**	2.61 (1.28–5.31)**	1.91 (0.85–4.28)
Any household challenge ACE	1.55 (0.79–3.05)	1.73 (0.80–3.72)	2.80 (1.03–7.58)*
Older adolescents aged 16 or 17			
Emotional abuse	3.39 (1.65–6.98)**	1.16 (0.54–2.49)	0.55 (0.15–2.07)
Emotional neglect	8.79 (3.42–22.60)***	1.03 (0.36–2.99)	1.49 (0.35–6.41)
Exposure to verbal IPV	4.15 (1.93–8.91)***	1.47 (0.66–3.27)	0.97 (0.26–3.58)
Spanking[b]	1.18 (0.55–2.55)	1.03 (0.46–2.30)	2.61 (0.72–9.44)
Any child maltreatment ACE	4.17 (1.78–9.75)**	0.95 (0.43–2.07)	2.00 (0.48–8.29)
Peer victimization[b,c]	3.63 (1.71–7.73)**	3.09 (1.41–6.77)**	1.12 (0.32–3.92)
Any household challenge ACE	1.42 (0.62–3.26)	2.51 (0.95–6.60)	22.59 (1.94–263.30)*

Abbreviations: ACE, adverse childhood experience; aOR, odds ratio; CI, confidence interval; IPV, intimate partner violence.

[a] Adjusted for age, sex, race/ethnicity, parental education and household income.

[b] Collected at Wave 1.

[c] Collected at Wave 2.

*$p < 0.05$.

**$p < 0.01$.

***$p < 0.001$.

not possible to examine interactions by sex or stratify by sex.

Conclusion

Research has shown that the COVID-19 pandemic has taken a heavy toll on older adolescents and young adults.[2-5] The current study found that the impact was even greater for those with a history of childhood adversity. Differences between the experiences of older adolescents and young adults suggest that interventions be tailored to the needs of each age group. ACEs were found to be associated with many pandemic-related impacts among 18- to 21-year-olds, which suggests that young adults with a history of ACEs may be a group that could benefit from additional resources including both practical and emotional support. Fewer associations between ACEs and pandemic-related impacts emerged among 16- and 17-year-olds. Nonetheless, interventions that foster emotional support and healthy relationships with parents and improve feelings of depression are warranted for older adolescents during and after the pandemic. PFA may be a suitable approach for supporting recovery from the COVID-19 pandemic.

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Conflicts of interest

Tracie O. Afifi is an Associate Scientific Editor with *Health Promotion and Chronic Disease Prevention in Canada*, but has recused herself from the review process for this article.

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Authors' contributions and statement

TOA conceptualized and designed the study, and supervised data collection and data analysis.

SS conducted the data analysis and drafted the initial manuscript.

TLT conducted data coding.

All authors reviewed and revised the manuscript. All authors approved the final manuscript as submitted.

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