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Cumulative Childhood Adversity and Problematic Substance Use Among Youth Involved in the Child Welfare System

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Abstract

Background: Childhood adversity has been consistently linked to long-term negative outcomes, including problematic substance use (PSU). Youth involved with the child welfare system experience considerable adversity; however, research exploring links between adversity and PSU within this population is limited. **Objective:** This study builds on previous adverse childhood experience (ACE) models to investigate associations between individual and cumulative adversity factors and PSU within a sample of 226 child welfare-involved youth. **Method:** Data extracted from youth records retrospectively were analyzed using multivariable logistic regression. **Results:** Cumulative adversity was positively associated with PSU. The individual adversity factors most strongly and positively associated with PSU included sexual abuse, maternal history of PSU, social/material deprivation, and placement instability. However, psychological and physical abuse demonstrated a 2-3 fold decreased risk of PSU. **Conclusions:** Findings add to the literature investigating childhood adversity and PSU among child welfare populations and emphasize the importance of early intervention for children most at risk.

Key words: Children and adolescents, child welfare, substance abuse, adversity factors

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Introduction

The experience of childhood adversity has been consistently linked to long-term negative physical, psychological, emotional, and behavioural outcomes[1],[2],[3]. Felitti and colleagues[4], in their pioneering study, were the first to investigate the long-term, cumulative impacts of adverse childhood experiences (ACEs) on negative health outcomes in adulthood. They identified the cumulative effects of seven categories of ACEs (i.e., physical, psychological, sexual abuse, violence against mother, household members who have experienced mental illness or suicidality, substance abuse, incarceration) on predicting risky health behaviours and disease.

Beyond numerous replications of the original ACE study[5],[6], researchers have made methodological and conceptual advancements[7] and expanded the original categories with maltreatment (e.g., neglect), parent (e.g., separation or divorce,

death), and environment categories (e.g., peer victimization, exposure to community violence, low socioeconomic status) [1],[8]. Childhood adversity studies have linked ACEs to increased negative mental health outcomes, risky behaviours, violence, and hazardous patterns of substance use such as frequent or heavy drinking[1].

Initiation to substance use is common during adolescence[9]. Its use and abuse involve both individual and environmental risk factors, and can lead to long-term harmful consequences[10],[11],[12],[13]. Dube and colleagues[14] found that all ten of their ACE variables (related to childhood abuse, neglect, and household dysfunction) significantly predicted illicit drug use by age 14, as well as continued use into adulthood. Childhood sexual and physical abuse have both been found to predict polysubstance use in adolescence[15],[16]. Parent substance use, divorce, mental illness, and death have been associated with increased risk for problematic substance use (PSU) in offspring[17],[18],[19],[20]. Findings on the role of socioeconomic status (SES) are mixed, with some studies reporting low SES to be a risk factor for adolescent substance use, and others reporting the same for high SES[21],[22]. Residential mobility (i.e., frequent household moves) during childhood, often linked to low SES[23], has been associated with increased risk for mental health problems and substance use[24],[25],[26].

Youth involved with the child welfare system (CWS) experience considerable adversity and are at particularly elevated risk for the development of PSU[27],[28],[29] compared with the general adolescent population[30],[31],[32]. Studies investigating risk factors have estimated that between 50% and 70% of youth involved in CWS will have experienced four or more ACEs (four considered a cut-off signifying elevated risk[33]) before the age of 18[27],[28], compared to 13% in the general adolescent population[1]. Results from the second National Survey of Child and Adolescent Wellbeing revealed that hospitalization, neglect, and domestic violence were among the most prevalent ACEs reported by youth involved with CWS[34].

Out-of-home placement (i.e., foster, kinship, residential care) is intended to protect youth by removing them from unsafe environments; however, many youths experience multiple relocations before finding a permanent home or returning to their families[35]. While short-term or limited placements may indicate stability and be viewed as beneficial experience for the youth, multiple, unstable, or disrupted placements—often referred to as 'placement instability'—have been linked to increased internalizing and externalizing behavior problems[36],[37]. Some authors suggest that avoiding placement altogether appears to be protective against substance use[38],[39]. Increased odds of experiencing placement instability have been found among children with five or more ACEs[40], and may be considered a unique form of adversity itself.

Given this population's inherent vulnerability and heightened exposure to adversity, it is not surprising that CWS-involved youth, particularly adolescents, appear to be at heightened risk for PSU[41]. While ACEs have been shown to predict substance use across diverse populations[14],[42], research specifically investigating the cumulative impacts of early adversity on PSU among CWS-involved youth is limited. Snyder and Smith[16] explored risk and protective factors for substance use among a sample of American CWS-involved youth; however, their study focused on physical abuse and parental substance use, excluding other potentially relevant predictors. Exploration of the individual and cumulative effects of various types of adversity on PSU risk is crucial in understanding the unique mental health needs of CWS-involved youth. Moreover, as not all youth within this population develop PSU, increased understanding and early identification of those most at risk can support the development of targeted interventions and help to mitigate long-term negative outcomes.

The present study builds on previous ACE models to explore the association between cumulative adversity and PSU, as well as to identify specific predictors of substance use within a unique sample of youth involved with CWS in Montreal, Canada. This work also builds on prior research by our groups that demonstrated high levels of mental health service utilization[43], including Emergency department use[44] among this sample. This study aimed to (1) examine the prevalence of problematic substance use (PSU) and cumulative adversity rates, (2) assess whether cumulative adversity significantly predicts PSU and, (3) examine specific categories of adversity in order to identify individual predictors of substance use risk within this population.

Methods

Study Design and Sample

This study was conducted using a retrospective chart and case file review. The sample included 226 youth aged 11-17 who received child welfare services between 2013 and 2015 from one of the two sole child protection institutions serving Montreal's English- and French-speaking populations (French, $n = 142$; English, $n = 84$). These agencies offer a wide range of services, including psychosocial support, family intervention, rehabilitation, placement, adoption, and court-related services for youth who have experienced abuse, neglect, or serious behavioral difficulties. Files were selected based on parental postal codes corresponding to two distinct service catchment areas that were part of a broader youth mental health reform initiative launched in 2015[45].

Data collection was continuous from each youth's initial involvement with child welfare services until 2019 or until they aged out of care at 18. Aside from age-related eligibility, no additional inclusion or exclusion criteria were applied.

Ethics approval was obtained solely from the Ethic Committee of the Research Center (Centre Jeunesse de Montréal-Institut Universitaire) affiliated with both child welfare agencies, as all data were extracted exclusively from child protection case files.

Data source

Data was collected from charts and from administrative data sources. Research assistants gathered data from welfare records, as well as from medical and psychosocial records held by child welfare agencies. Upon intake, CWS workers collect a full history of physical and mental health, referrals to services, service use, parental histories, and other information, dating from the child's birth to present. When available, police, medical and school records are included in the charts. Charts are updated throughout youths' involvement with CWS.

Data extracted from the charts comprised descriptive information, mental health symptoms and diagnoses, assessments, reports of substance use, and service use. Information regarding parent mental illness and substance use history was also collected. To ensure coding accuracy, 10% of all charts were independently reviewed with high inter-rater reliability (mean Cohen's kappa $\kappa = .71$, range 0.54-0.82[46]). These data were also verified in weekly team meetings with senior authors.

To complement chart review, data from the administrative electronic files were retrieved, including youth and parent demographic information, maltreatment history, and out-of-home placement history. Additional details are available in prior publications from our group[43],[44].

Measures

Dependent variable. Youth were classified in the PSU group if they 1) were identified by case workers or family members as using drugs or alcohol at clinically concerning levels, 2) had a diagnosis related to alcohol or substance use, or 3) had received treatment services for alcohol or substance use. PSU was treated as a dichotomous variable (PSU vs. noSU).

Independent variables. Fifteen adversity variables were grouped into four categories reflecting maltreatment, parent, environment, and placement factors.

Maltreatment variables included experiences of unwanted sexual contact, coercion, or exploitation *(sexual abuse)*; isolation, indifference, denigration, emotional rejection, threats, excessive control, or exposure to domestic violence *(psychological abuse)*; intentionally inflicted physical injury, threats of harm, or unreasonable corporal punishment *(physical abuse);* and failure by a parent to meet the youth's physical, emotional, educational, or medical needs *(neglect)*.

Parent variables captured lifetime or current parental problematic substance use *(mother PSU; father PSU)*; lifetime or current parental mental illness (MI) as indicated by a diagnosis, psychiatric hospitalization, or caseworker clinical impression *(mother MI; father MI)*; parental involvement with the CWS during their own youth *(mother's CWS involvement; father's CWS involvement)* (available only for parents who had resided in Montreal, as records from outside the city were inaccessible); marital conflict or separation *(parent marital conflict)*; and a history of suicide or suicide attempts in the mother and/or father *(parent suicide or attempt)*.

Environmental adversity variables included experiencing six or more residential moves during childhood *(residential mobility)* and high social and material disadvantage associated with the youth's family-of-origin address *(social/ material deprivation)*. This variable was derived by mapping participants' postal codes onto an index developed by the Institut national de santé publique du Québec, which links census data on six health outcome indicators for all residential areas across Quebec. For our analyses, these indexes were divided into quintiles, with the two highest (i.e., most disadvantaged areas) representing high deprivation

Finally, the **placement** variable reflected the experience of two or more different placements while involved in the child welfare system *(placement instability)*.

These 15 adversity variables were compiled to create a cumulative adversity index. As in previous cumulative ACE models[4],[5],[6], each adversity variable contributed one point to a total possible score ranging from 0 to 15. Parent variables with $n < 10$ were combined to increase power and reduce number of predictors in our models.

Statistical Analyses

Descriptive analyses were performed for the full sample, and for the youth with and without a history of reported PSU. To estimate the predictive effect of cumulative adversity on PSU, cumulative adversity index scores—along with assigned sex and immigration status as control variables—were entered into a binary logistic regression model.

Individual Predictors

This analysis aimed to identify the strongest predictors of PSU. Correlation, crosstab, and t-test first identified bivariate relationships between adversity factors (i.e., the constructs used to create the cumulative adversity index) and PSU.

Bivariate Analysis. Bifactor correlations and verification of the Tolerance (TOL) and Variance Inflation Factor (VIF) were conducted to check for multicollinearity. Crosstabulation analyses and t-tests determined which variables significantly differed between youth flagged for problematic substance use (PSU group) and those with no substance use (noSU group). To focus on the most discriminant predictors of PSU among the sample, and to avoid producing an overfit regression model, only significant variables ($p < .05$) were retained in the subsequent regression analyses.

Logistic Regression. The predictive power of each group (maltreatment, parent, environment, and placement) was examined, and the individual relation between each factor within each group and PSU was assessed. A demographic block including sex and immigration history were added to control for their potential effects on PSU. Sequential logistic regression analysis was conducted in which variables belonging to each block were entered together using a sequential "enter" procedure. All analyses were performed using IBM SPSS version 27.

Results

Sample Characteristics

Table 1 shows the overall sample characteristics, as well as those of the PSU and noSU groups. Of the 226 youths, seven were excluded from analyses due to insufficient data. Among the remaining 219 youths, 119 were female, 73 were either born outside of Canada or had a parent who immigrated to Canada, and just under half were Caucasian. Age at first contact with the CWS ranged from less than a year to 16; this information was missing for four youths. Among those flagged for PSU in adolescence, three were also flagged before age 13.

There was no multicollinearity within our data, and the PSU group (n=117) did not significantly differ from the noSU group (n=102) on any demographic variables. As shown in Table 2, the 2 groups differed on several adversity factors. The PSU group contained significantly higher proportions of youths who had been sexually abused, who had a parent with a history of problematic substance abuse, had a parent with history of suicide or suicide attempt, had a mother with a history of child welfare involvement, had experienced high social/ material deprivation, had experienced residential mobility and had experienced two or more placements.

Table 1. *Bivariate analysis of descriptive characteristics by group*

Variables	Total Sample (n=219) % or M *(SD)*	Problematic Substance Use (n=117) % or M *(SD)*	No Problematic Substance Use (n=102) % or M *(SD)*	*p* or *t*
Assigned sex				.867
Female	54.3	53.8	54.9	
Male	45.7	46.2	45.1	
Parent or child born outside of Canada	33.3	28.2	39.2	.085
Language spoken at home[a]				.101
French	50.7	59.5	40.4	
English	39.1	31.9	47.5	
Other	10.4	8.8	12.0	
Mean number father figures	1.8 *(1.2)*	1.8 *(1.2)*	1.9 *(1.3)*	.678
Mean number siblings	2.1 *(1.6)*	2.1 *(1.7)*	2.1 *(1.4)*	.843
Mean age at first contact with child welfare	8.6 *(4.9)*	8.4 *(5.2)*	8.8 *(4.5)*	.486
Number different placements	4.2 *(3.2)*	4.9 *(3.5)*	2.9 *(2.1)*	.001

Note. **Pearson chi-square performed for binary variables and independent samples t-test performed for continuous variables.**
[a] **n = 215**

Table 2. *Bivariate analysis of adversity factors by group*

Variables	Total Sample (n=219) %	Problematic Substance Use (n=117) %	No Problematic Substance Use (n=102) %	*p* or *t*
Maltreatment				
1. Sexual abuse	27.9	34.2	20.6	.025
2. Psychological abuse	56.2	43.6	70.6	.001
3. Physical abuse	55.7	48.7	63.7	.026
4. Neglect	83.6	83.8	83.3	.932
Parents				
5. Mother PSU[a]	41.1	51.3	29.4	.001
6. Father PSU	38.8	45.3	31.4	.035
7. Mother MI[b]	53.4	53.0	53.9	.891
8. Father MI	17.8	20.5	14.7	.263
9. Mother's CWS[c] involvement	17.8	24.8	9.8	.004
10. Father's CWS involvement	8.7	9.4	7.8	.683
11. Parent marital conflict	22.4	19.7	25.5	.302
12. Parent suicide or attempt	14.2	19.7	7.8	.012
Environment				
13. Social/material deprivation	45.2	76.9	63.7	.032
14. Residential mobility	21.0	26.5	14.7	.033
Placement				
15. Placement instability	60.7	77.8	41.2	.001

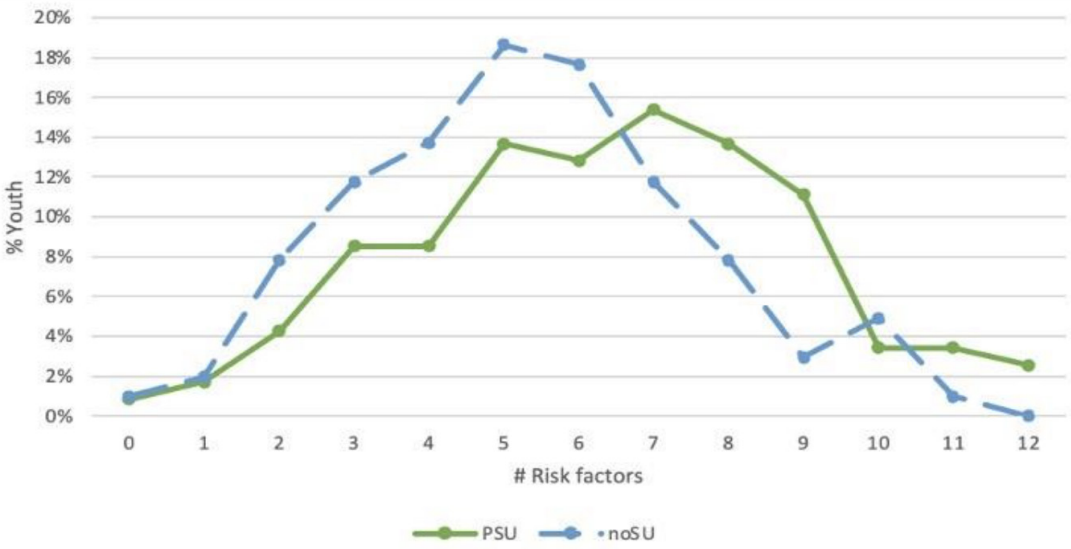
Note. **Pearson chi-square performed for binary variables and independent samples t-test performed for continuous variables.**
[a] PSU = problematic substance use
[b] MI = mental illness
[c] CWS = child welfare services

Cumulative Adversity

At least one adversity factor was reported for 99.5% of the full sample (*M*=5.9, *SD*=2.5; only one individual did not have any recorded adversity factors). At least four factors were reported for 82% of the sample. Six or more factors were reported for 55% of the sample (above the 50th percentile), and eight or more for 26% of the sample (above the 75th percentile).

Figure 1 shows proportions of youth in the PSU and noSU groups by their cumulative number of adversity factors. Among the PSU group, 62% reported six or more adversity factors, and 34% reported eight or more (*M*=6.4, *SD*=2.7); compared to 47% and 17% respectively for noSU group (*M*=5.4, *SD*=2.2).

Figure 1. *Proportions of youth by cumulative number of risk factors*



Binary logistic regression results (Table 3) revealed that the cumulative adversity index score significantly predicted membership in the PSU group ($p < .05$). With each additional adversity factor, youth were 17% more likely to be in the PSU group. An increased Nagelkerke R2 coefficient of .02 to .06 indicated that 4% of the variance in PSU could be explained by the addition of the cumulative adversity index to the model. The model correctly predicts 56.2% of group membership.

Table 3. *Cumulative risk for problematic substance use*

Variables	Model 1	Model 2
	Odds ratio [95% confidence intervals	
Demographics		
Immigration (1=parent or child born outside Canada)	0.61 [.34, 1.07]	0.81 [.44, 1.49]
Assigned sex (1=female)	0.93 [.54, 1.59]	0.82 [.47, 1.42]
Cumulative Adversity Index		1.17* [1.04, 1.33]
Total Nagelkerke R^2	0.02	0.06

*$p < .05$.

Individual Predictors

The final analysis aimed to identify significant predictors of substance use by entering 10 binary adversity variables and two binary demographic variables into a sequential logistic regression (Table 4). Individual regression models revealed the *Placement instability* variable to be highly predictive of substance use among the sample; for this reason, this variable was entered individually into a single block in the final model (Model 5).

Table 4. *Sequential logistic regression investigating problematic substance use in relation to adversity variables among child welfare-involved youth*

Predictor binary variables	Model 1	Model 2	Model 3	Model 4	Model 5
Demographics					
Immigration (1 = born outside Canada)	0.61•	0.63	1.09	1.16	1.18
Assigned sex (1 = female)	0.93	0.92	0.82	0.73	0.82
Maltreatment					
Sexual abuse		2.07*	2.07*	2.11*	1.89•
Psychological abuse		0.35**	0.38**	0.36**	0.38**
Physical abuse		0.73	0.66	0.65	0.47*
Parent					
Mother PSU[a]			1.97*	2.12*	2.02•
Father PSU			1.39	1.53	1.38
Mother's CWS[b] involvement			2.25•	2.07	1.59
Parent suicide/attempt			2.22•	1.92	2.03
Environment					
Social/material deprivation				2.28*	2.11*
Residential mobility				1.20	0.97
Placement					
Placement instability					4.95***
Predictive accuracy (%)	56.6	66.7	69.4	72.1	75.8
Total Nagelkerke R^2	0.018	0.145***	0.23***	0.26***	0.36***

Note. For models 1-5, odds ratios [Exp(ß)] are reported. •$p < .1$, *$p < .05$, **$p < .01$, *** $p < .001$.
[a] PSU = problematic substance use
[b] CWS = child welfare services

Results reflected that each additional model increased in predictive accuracy, with the greatest increase after addition of the Maltreatment variables.

Neither of the demographic variables *(Immigration history, Assigned sex)* were statistically significant. However, *Immigration history* was marginally associated with a decreased risk of PSU. This model reflected relatively low predictive accuracy. Inclusion of the Maltreatment variables in Model 2 revealed that *Sexual abuse* was significantly associated with increased risk of PSU (just over two-fold); whereas *Psychological* abuse predicted a decreased risk of about two-thirds. These remained significant with inclusion of the Parent variables in Model 3. *Mother PSU* also indicated significantly increased risk of PSU (nearly two-fold). *Mother's CWS involvement* and *Parent suicide or attempts* were both marginally associated with increased risk of PSU, in Model 3 only. Inclusion of the Environment variables in Model 4 revealed that *Social/material deprivation* was positively associated with increased risk of PSU (more than two-fold). *Sexual abuse, Psychological abuse,* and *Mother PSU* also remained significantly predictive.

The final model (Model 5), which included the *Placement instability* variable, accounts for 36% of the variance in PSU. Results showed that this variable significantly predicted increased risk of PSU (nearly five-fold). *Psychological abuse* and *Social/material deprivation* remained significant in this model. However *Sexual abuse* and *Mother PSU* were no longer predictive. *Physical abuse* was shown to be slightly negatively associated with PSU among the sample. The model correctly predicts 76% of group membership.

Overall, results indicate that adversity factors associated with the greatest likelihood of membership in the PSU group include *Sexual abuse, Mother PSU, Social/material deprivation,* and *Placement instability. Mother's CWS involvement,* or *Parent suicide or attempts* were also associated with PSU, however, these variables were no longer significant after the addition of the Environment variables. *Psychological* and *Physical abuse* were both significantly associated with a reduced risk of PSU.

Discussion

The goal of this study was to build upon the well-known ACE model to explore adversity in youth in child welfare. Specifically, we investigated cumulative adversity in relation to PSU. In addition, we explored individual predictors to identify those most strongly associated with PSU. Although based on theorized variables from an existing dataset (vs. traditional ACEs[4]), it is important to note that our findings align with existing literature describing similar CWS populations[27],[28],[29],[32]. Our adversity index reflects a range of adversity factors faced by these youths and contributes to a better understanding of associated risk.

Our study provides several key findings. Consistent with previous child welfare literature[27],[28],[29],[32], the present sample demonstrated high levels of adversity overall, with 82% having experienced at least four adversity factors and over half having experienced six. These rates exceed those reported by general youth populations, where four or more ACEs are estimated to have been experienced by only 13 percent of youth[1],[30]. Our sample also showed high levels of PSU (53%) - roughly triple the lifetime estimates reported among the general adolescent population[30].

Our results further indicate that cumulative adversity is positively associated with increased likelihood of having experienced PSU. This finding is consistent with broader ACE literature[14]. For example, in their systematic review and meta-analysis of adversity within the general population, Hughes and colleagues[1] found that experiencing multiple ACEs constituted a major risk for numerous health-related problems including alcohol and substance use. Given that, by definition, all CWS-involved youths have experienced at least one form of adversity in their lives, our findings highlight the universal importance of early and continual adversity screening as youth move through CWS.

Of the ten adversity factors included in our final model, *Placement instability* emerged as the strongest predictor of PSU, with a nearly five-fold increase in risk compared to youth with zero or one placement. While these findings align with broader research associating placement instability with

substance use risk[47], they are notable given that data regarding placements are commonly left out of literature that specifically examines ACEs[1]. Our findings may be interpreted in several ways. The experience of placement can be emotionally difficult, and it has been shown that mental health symptoms and behavioural problems increase in the 12 months following placement[48],[49]. Thus, placement instability may exacerbate pre-existing mental health problems, prompting SU as a means of coping. Alternately, problematic externalizing behaviours that are related to SU[50] may themselves be responsible for increased placement changes[36],[51]. Blake and colleagues[51] found that externalizing behaviours mediated the relation between cumulative risk and SU among adoptees; however, their study did not investigate individual predictors. Finally, it is possible that an increased number of placements facilitates surveillance bias, leading to a greater probability of being flagged for PSU. Future studies should continue to explore the directional influence of placement instability in relation to PSU.

The apparent positive associations between PSU and *Mother PSU, Social/material deprivation,* and (marginally) *Sexual abuse* are all consistent with recent literature describing risk for negative health-related consequences; however, they are unique in this context for their specificity to PSU within the Montreal CWS population. *Mother's CWS involvement* (but not father) also predicted PSU within our sample, although this effect became insignificant with the addition of the Environment and Placement variables. Possibly, experiences of more severe deprivation and placement instability dissipate effects of maternal CWS involvement in youth due to decreased exposure to maternal influence overall. Nevertheless, an association between maternal CWS involvement and PSU in offspring highlights potential intergenerational impacts and provides support for the urgency in breaking this cycle.

Interestingly, we found that *Social/material deprivation,* but not *Residential mobility*, predicted PSU. Although research linking SES to substance use appears to vary based on sample age, definition of SES, and study methodology, there is evidence to suggest that heavy alcohol and drug use clusters in certain geographic areas[52]. As our measure of SES (i.e., social/material deprivation) was based on living in socially and materially disadvantaged neighbourhoods, our results support that neighborhood deprivation contributes to PSU risk for CWS-involved youth[53],[54],[55].

Finally, our results provide further support for the injurious impacts of sexual abuse and shed light on the influence that this experience may have on risk for PSU. Once again, considering that sexual abuse is more common among CWS-involved youth than in the general population[56], the association between sexual abuse and PSU risk is particularly concerning within this context.

While our findings regarding *Sexual abuse* were consistent with our expectations based on previous literature[15],[16], those regarding *Physical* and *Psychological abuse* were not. Unexpectedly, both physical and psychological abuse were associated with decreased risk for PSU. These findings were surprising given the well-established ACE literature linking all types of abuse to various negative consequences, including PSU. It is possible that our results reflect different trajectories associated with each form of abuse. Kisely and colleagues[57] found no association between physical abuse and alcohol use disorder in young adults, offering an alternate explanation that physical abuse may be more readily detectable than other forms of abuse, leading to faster remediation and reducing long-term negative impacts. In the context of CWS, this explanation may be even more pertinent due to elevated levels of child supervision and surveillance. Regarding psychological abuse, one study found that among a sample of trauma-exposed youth, individuals with histories of psychological abuse had more severe trauma and post-traumatic stress symptoms as compared to those with histories of physical or sexual abuse alone[58]. Like physical abuse, severe symptoms of traumatic stress may be more rapidly attended to, leaving substance abuse overlooked or naturally reduced via trauma intervention.

This study contributes to previous ACE models by incorporating important factors specific to the CWS context. To our knowledge, it is the first to investigate the direct and cumulative impacts of the above adversity factors on PSU among Montreal-residing CWS-involved youth. Moreover, this study is unique in that it draws from detailed youth charts

until the age of 18, avoiding reliance on one-time retrospective or self-report measures. Access to multiple sources of data facilitated the exploration of a range of adversity factors that differed from typical ACE indices, offering a more comprehensive picture of adversity. This triangulation is typically challenging to accomplish in health research due to necessary layers of approval from multiple government agencies.

One limitation of this study is that despite the advantages of analyzing administrative data, the results are limited by data quality and extent of data collection. The knowledge and expertise of CW workers is an asset in the maintenance of standardization across client files; however, in practice, different forms of adversity may be challenging to define or accurately record. The exclusion of first-hand accounts may result in omissions, lack of clarity, or potential misinterpretations.

It should also be noted that our findings were limited by the relatively minimal paternal information available within our data (particularly given the average number of father figures associated with each youth). Child welfare-specific research has historically reflected low paternal involvement in the lives of offspring; however, more recent research has questioned whether fathers' roles have also been overlooked by information-gathering practices within the CWS[59]. Indeed, while 49% of our sample had two or more father figures (ranging from 0-6), our paternal variables reflected only information pertaining to biological fathers. Thus, father or stepfather influence may in fact be greater than what was captured in our study; results should be interpreted with this in mind.

Further, our data only included information pertaining to youths up to and including age 17, and did not account for PSU that might have developed after turning 18. Likewise, the data did not include information about youths who terminated contact with child welfare services prior to age 17, following termination; thus, PSU may not be captured for these individuals. We were also unable to examine CW-involvement of parents who grew up outside of Montreal, as these data were limited to what was recorded in the Montreal CWS.

Lastly, time within the CWS was not accounted for in our analyses. While certain adversity factors may have been experienced prior to involvement with CWS (e.g., sexual abuse), others were not. For example, placement instability may be correlated with the number of years involved with CWS; realistically functioning as a measure of time rather than impact. Hence, findings should be interpreted with caution considering the potentially confounding influence of time on the opportunity to experience certain types of adversity.

This study adds to the growing body of literature on adversity among youth involved in the child welfare population. Overall, the findings support the importance of early and ongoing screening for adversity and problematic substance use. Clinicians, service providers, and program developers may benefit from increased attention to sexual abuse, parental substance use, and social/material disadvantage as these factors are linked to PSU risk. Youth with histories of multiple placements warrant particular attention as they may face heightened vulnerability. Preventative approaches should prioritize efforts to reduce or avoid placement disruptions. Given that youth involved in the child welfare system experience disproportionate levels of adversity as compared to the general population, it is essential to understand the factors shaping their experiences in order to mitigate potentially harmful and long-term consequences of problematic substance use.

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