


# Are dual and single exposures differently associated with clinical levels of trauma symptoms? Examining physical abuse and witnessing intimate partner violence among young children

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## Abstract

A significant portion of children living in the United States have experienced trauma. Informed by the developmental traumatology model, we explored the effects of physical abuse and witnessing intimate partner violence (IPV) on childhood trauma symptoms. This study utilizes a convenience sample of 580 high-risk children between 3 and 12 years who received services from one-child advocacy centre during a 12-month period. We performed a series of binary logistic regression analyses to examine if physical abuse, exposure to IPV, and dual exposure (i.e., both physical abuse and IPV) are distinctly associated with six trauma symptoms, including anxiety, depression, post-traumatic stress (PTS), dissociation, anger, and sexual concerns. The results indicated that dual exposure was predictive of all trauma symptoms, except for dissociation. Additionally, physical abuse was associated with PTS, anger, and sexual concerns, whereas exposure to IPV was associated with depression, PTS, and sexual concerns. Research and implications for practitioners working with young children are discussed.

## KEYWORDS

dual exposure, intimate partner violence, physical abuse, trauma

## 1 | INTRODUCTION

According to the 2011 National Survey of Children's Health, 25.3% of children living in the United States have experienced at least one form of family-related trauma, such as witnessing intimate partner violence (IPV), parental incarceration, parental mental health problems, and parental substance abuse problems (Data Resource Center for Child and Adolescent Health, 2011). Childhood trauma, such as witnessing violence or violence victimization, is associated with various trauma symptoms, including anxiety, depression, and posttraumatic stress (PTS) symptoms (Lindert et al., 2014; Yoon, Steigerwald, Holmes, & Perzynski, 2016). Prior research has suggested that children are likely to experience more than one type of trauma (Finkelhor, Ormrod, & Turner, 2007); in particular, child physical abuse and witnessing IPV have shown to co-occur commonly (Briggs et al., 2013). Despite the

high co-occurrence rate of physical abuse and exposure to IPV, few studies have systematically examined the impact of such dual exposure on young children's trauma symptoms. The existing studies have primarily focused on dual exposure during adolescence (e.g., Moylan et al., 2010; Sousa et al., 2011), and the role of dual exposure on young children's psychosocial development remains unclear. Therefore, the current study explores the presence of trauma symptoms among a convenience sample of young children who have experienced physical abuse and witnessed IPV and dual exposure.

## 2 | LITERATURE REVIEW

Trauma can manifest itself in a variety of ways in the lives of children. Trauma is associated with anxiety, depression, posttraumatic stress

disorder (PTSD), anger, and inappropriate sexual behaviour (Briere et al., 2001; Lindert et al., 2014; Yoon et al., 2016). In a meta-analysis of adolescent PTSD, it was found that 16% of children were diagnosed with PTSD after experiencing trauma (Alisic et al., 2014). In a longitudinal study of the effect of trauma, Hoven et al. (2009) found that childhood emotional trauma was associated with a dual diagnosis of anxiety and depression in adulthood.

A growing body of literature explores the complexities of trauma and its fluctuation by event frequency, trauma type, and personal characteristics (Telman et al., 2016; Turner et al., 2012). Utilizing the Trauma Symptom Inventory (Briere, 1995), researchers have found that experiences of sexual abuse were more likely to be associated with every symptom on the inventory than were experiences of physical abuse (Briere & Elliott, 2003). Similarly, the severe effects of chronic abuse could result in the infiltration of children's biological, psychological, behavioural, social, and cognitive development (Milot, Éthier, St-Laurent, & Provost, 2010). For instance, in a meta-analysis of more than 100 studies, Kitzmann, Gaylord, Holt, and Kenny (2003) found that the frequency of trauma or exposure quantity is associated with poor health outcomes like distress, negative cognitions, withdrawal, and aggression ( $d = -0.29$ ). Lastly, personal characteristics like gender are also associated with the impact of trauma. In a sample of children who witnessed IPV, Moretti, Obsuth, Odgers, and Reebye (2006) found that among children who witnessed IPV, boys were more likely to show physical aggression towards peers.

## 2.1 | Witnessing IPV and trauma symptoms

An estimated one in six U.S. children witness IPV at some point before they turn 18 years of age (Hamby, Finkelhor, Turner, & Ormrod, 2011). Children who witness IPV are more likely to show emotional, behavioural, social, and cognitive problems than children who do not witness IPV (Evans, Davies, & DiLillo, 2008; Overbeek, de Schipper, Lamers-Winkelmann, & Schuengel, 2013). In one study of 112 youths referred to a Canadian correctional facility, nearly half of girls and a quarter of boys who witnessed IPV met the diagnostic criteria for PTSD (Moretti et al., 2006). Similarly in a study of witnessing IPV and trauma, 51% of preschool-aged children could be diagnosed with PTSD based on symptomology, with the frequent symptom being re-experiencing or being upset when reminded of IPV (Graham-Bermann, Castor, Miller, & Howell, 2012).

## 2.2 | Physical abuse and trauma symptoms

Child maltreatment can be thought of as a form of chronic interpersonal trauma and is related to a range of internal and external problems for children (Milot et al., 2010). In circumstances of child maltreatment, parents or primary caregivers are often the source of maltreatment, and children may not have a source of comfort thus creating what experts (i.e., Briere & Spinazzola, 2005; Herman, 1992; Milot et al., 2010) label as "complex interpersonal trauma."

Children who experience physical abuse may uniquely experience traumatic symptoms. In a sample of children seeking services at a Mid-west social service agency in which 80% of participants reported physical abuse, a significant portion of the sample met clinically significant levels of anxiety, sexual concerns, and depression (Brady & Caraway, 2002). In addition, there is reason to believe that physical abuse has a distinctive effect on children's behaviour. In a national study of children receiving social services, children who have experienced physical trauma were more likely to show hyperarousal symptoms than children who experienced other forms of trauma (Murphy et al., 2014). In fact, between 11% and 50% of children who are exposed to physical abuse will develop PTSD symptoms (Green, 1985; Pelcovitz et al., 1994).

## 2.3 | Dual exposure and trauma

Finkelhor et al. (2007) use the term polyvictims to refer to children who experience multiple forms of victimization and who illustrate traumatic symptomatology. Previous literature supports the notion that victimizations in childhood overlap due to frequency and common risk factors related to family stability (Finkelhor et al., 2007; Nishina, Juvonen, & Witkow, 2005). In fact, using nationally representative data, it has been estimated that 22% of children under 18 years of age suffer from at least four different forms of victimizations in a 12-month period (Finkelhor, Ormrod, & Turner, 2007), and studies of clinical samples find 58% of children experiencing at least four different forms of victimization (Briggs et al., 2013).

Previous research reports that co-occurrence of IPV and child maltreatment can range from 30% to 60% in families (Hazen, Connelly, Kelleher, Landsverk, & Barth, 2004). In a sample of adults receiving healthcare services in one city in California, persons who grew up with IPV in their family had approximately 2 to 6 times higher adverse childhood experiences scores than persons who were not exposed to IPV as children (Dube, Anda, Felitti, Edwards, & Williamson, 2002). Among different forms of child maltreatment, evidence of co-occurrence is particularly strong for physical abuse (i.e., dual exposure to child physical abuse and IPV; Herrenkohl, Sousa, Tajima, Herrenkohl, & Moylan, 2008).

Dual exposure may also have a greater impact on trauma symptoms such as anxiety, depression, and anger. In a meta-analysis of more than 40 studies exploring the developmental impact of witnessing IPV, Wolfe, Crooks, Lee, McIntyre-Smith, and Jaffe (2003) found that children who experienced dual exposure or both witnessing IPV and child maltreatment, as opposed to solely witnessing IPV or child maltreatment, showed increased levels of behavioural outcomes (e.g., external) and emotional outcomes (e.g., internal). However, not all researchers have observed the "double whammy" phenomenon in which behavioural and developmental outcomes positively related to trauma experiences (Hughes, Parkinson, & Vargo, 1989). For example, in a longitudinal sample of 457 children in a mid-western state, psychosocial functioning and behavioural outcomes for children with dual exposure compared with children with single exposure were not statistically different (Moylan et al., 2010).

## 2.4 | Developmental traumatology model

To guide the current exploration of physical abuse and witnessing IPV on childhood trauma, we draw from the assumptions of the developmental traumatology model (De Bellis, 2001). This model posits that childhood trauma, such as child abuse or exposure to IPV, may alter the biological stress response system, which then may lead to the development of PTS and other maladaptive psychological symptoms, such as anxiety, depression, and anger (De Bellis, 2001; De Bellis et al., 1999). According to the model, children's biological stress systems react not only to a traumatic incident (i.e., witnessing IPV or physical abuse) but also to the relationship the child has with the perpetrator of the incident (De Bellis, 2001). In the case of witnessing IPV or physical abuse, a child may lose faith in the ability of an abusive parent to care for their family, making them more likely to show trauma symptoms. Further, it is assumed in the developmental traumatology model that childhood trauma may be more damaging than adulthood trauma because children are still developing behavioural, cognitive, and emotional regulations (De Bellis, 2001). Informed by the developmental traumatology model, we believe that the current sample of young children receiving services at an advocacy agency who experience physical abuse, witness IPV, or both will be more likely to show symptoms of trauma than nonexposed children.

Although previous literature has examined the relationship between various traumatic incidents (e.g., witnessing IPV, child physical abuse, and child sexual abuse) and trauma symptoms (Telman et al., 2016; Yoon et al., 2016), studies have yet to examine systematically if dual (i.e., exposure to both physical abuse and IPV), and single (i.e., IPV only and physical abuse only) exposures are differently associated with clinical levels of trauma symptoms among young children. To fill the gaps in the literature, we investigate the following research questions:

1. Among children who witness IPV, what clinically significant trauma symptoms are most likely to be experienced?
2. Among children who are victims of physical abuse, what clinically significant trauma symptoms are most likely to be experienced?
3. Among children who witness IPV and who are victims of physical abuse, what clinically significant trauma symptoms are most likely to be experienced?
4. Among children who experience dual exposure, does the frequency of clinically significant trauma symptoms differ from children who experience either witnessing IPV or physical abuse?

## 3 | METHODS

### 3.1 | Study setting and population

The study setting was a children's advocacy centre (CAC) at a large Midwestern U.S. children's hospital. Children were referred to the CAC for evaluation for suspected child abuse from various referral

sources, including primary care providers, emergency departments, children services agencies, law enforcement, or parental request. Both acute and nonacute cases of suspected child abuse were evaluated.

As part of the assessment at the CAC, the Trauma Symptom Checklist for Young Children (TSCYC) was completed for children who were 3–12 years old. Surveys were completed and scored directly before appointments at the CAC so that results could guide treatment recommendations. Lastly, children 3 years of age and older who were developmentally able participated in a medical forensic interview with a trained social worker. This retrospective study was approved by the authors' Institutional Review Boards. All children who had completed the TSCYC from January 1, 2015, through December 31, 2015, and had a forensic interview completed at the CAC were included in the study.

### 3.2 | Data source and sample

The current study utilized secondary data of the TSCYC survey at the CAC. The total sample ( $N = 1,234$ ) was limited to children who received an initial assessment for suspected abuse at the CAC during the 2015 calendar year. Within the total sample, there were children who did not have the outcomes data because families left the CAC without completing the survey. Additionally, some participants who did complete the survey could not be included because of an ID error, as survey scores could not be matched to the electronic medical records system that included their demographic information and disclosures. To further understand the traumatic experiences of young children, we utilized two sources of administrative data. First, participants were matched with available administrative records to include child protective services dispositions (substantiated, unsubstantiated, or indicated). Forensic interview disclosures were extracted from the electronic health record to determine if children reported a number of experiences including witnessing IPV. The sample for the current study was limited to children who were between 3 and 12 years old who had a caregiver completed TSCYC survey on file ( $N = 584$ ). There was a very low rate of missing data (i.e., 0.5%) in this analysis and so listwise deletion was used to obtain the final sample ( $N = 580$ ). Children who were excluded from the study were more likely to be older, female, sexually abused, and exposed to IPV only (no physical abuse) than those who were included in the analytic sample. There were no other statistically significant differences between the groups.

### 3.3 | Measures

#### 3.3.1 | Dependent variable: Trauma symptoms

Trauma symptoms were measured using six clinical scales of the TSCYC (Briere, 1997). Although the developmental traumatology model was not developed with TSCYC, they are comparable in using Diagnostic and Statistical Manual criteria as a standard (Briere et al., 2001; De Bellis, 2001). The TSCYC is a 90-item caregiver report measure for assessing symptomatology and other psychological consequences of traumatic events in children from age 3 to 12 years. The

TSCYC consists of eight clinical scales: anxiety (nine items, e.g., being easily scared and being afraid to be alone), depression (nine items, e.g., looking sad and crying for no obvious reason), anger (nine items, e.g., breaking things on purpose and getting into physical fights), PTS intrusion (nine items: e.g., bad dreams or nightmares), PTS avoidance (nine items, e.g., no longer doing things that he or she used to enjoy), PTS arousal (nine items, e.g., having trouble concentrating), dissociation (nine items, e.g., living in a fantasy world), and sexual concerns (nine items, e.g., talking about sexual things). For PTS symptoms, we used the summary (total) PTS scale. The caregiver reported how often the child experienced each item in the last month on a 4-point response scale (1 = not at all, 2 = sometimes, 3 = often, 4 = very often). The TSCYC provides use information regarding clinically significant trauma symptoms, which refer to symptoms that cause clinical levels of distress or impairment in functioning (American Psychiatric Association, 1994). For each scale, scores were summed and converted into standardized *T* scores, with higher scores indicating greater symptoms and *T* scores greater than 70 indicating clinically significant symptomatology (Briere, 1997). We dichotomized (0 = not clinically significant, 1 = clinically significant) each TSCYC clinical scale (i.e., anxiety, depression, PTS, dissociation, anger, and sexual concerns), using 70 as a cut-off point. All clinical scales, but the sexual concerns scale ( $\alpha = .42$ ), indicated acceptable internal consistency, with Cronbach's alphas ranging from .77 (depression scale) to .94 (PTS scale).

### 3.3.2 | Key independent variables: Exposure to trauma

The information about the child's exposure to trauma and violence was obtained by the medical forensic interview disclosures of physical abuse and IPV. Child physical abuse experience was coded dichotomously (0 = no physical abuse, 1 = physical abuse). Similarly, the child's exposure to IPV was coded dichotomously (0 = not exposed to IPV, 1 = exposed to IPV). Using the dichotomous child physical abuse and IPV exposure variables, the sample was categorized into four mutually exclusive groups: (a) no physical abuse or IPV exposure disclosed group, (b) physical abuse only group, (c) IPV only group, and (d) children who were physically abused and exposed to IPV.

### 3.3.3 | Control variables

As a secondary data analysis, we were limited in the control variables available. However, we were able to control for a few basic characteristics of the child that have been may be related to the behaviours included in the trauma symptom scale (Marx & Sloan, 2003). Control variables included child age at the time of the CAC appointment, sex (0 = female, 1 = male), race, alleged sexual abuse (0 = no, 1 = yes), and CPS substantiation of sexual abuse (0 = no, 1 = yes). Alleged sexual abuse was assessed by the person that contacted the CAC regarding concerns of sexual abuse. The person who contacted the CAC could be the parent, CPS worker, physician, law enforcement, or any number of referrals. We included CPS substantiation of sexual abuse as a control variable because of a high rate of experience of sexual

abuse in the sample (approximately 80%). In the state where the study was conducted, there is a third disposition option called "indicated" for cases where the child welfare worker believes that abuse has happened but the evidence does not fit the burden of proof for a substantiation decision. In this study, those cases that are indicated are included in the "not substantiated" (substantiation = 0) group. The child's race was dummy coded into three categories (White, Black, and others) using Black as the reference group.

## 3.4 | Analysis plan

Preliminary analyses, including univariate frequencies and descriptive statistics, were conducted to assess the descriptive characteristics of the study variables. A series of binary logistic regression analyses were performed using SPSS V.23 (IBM, 2014) to ascertain the effects of exposure to trauma on the likelihood of clinically significant levels of six trauma symptoms (anxiety, depression, PTS, dissociation, anger, and sexual concerns). Separate sets of logistic models were estimated for each outcome of interest (i.e., six trauma symptoms). Violence exposure, the focal predictor, was examined by entering three violence exposure groups (i.e., physical abuse only, exposure to IPV only, and dual exposure) into the model as a set of dummy variables, with the nonexposure group as a reference group. Control variables, including child demographics and sexual abuse substantiation, were also added into the model to adequately account for confounding effects. The nature and the statistical significance of the relationship between the focal variables and the outcomes were examined using *b* coefficients, odd ratios, and the significance of Wald statistics.

## 4 | RESULTS

Table 1 presents the descriptive statistics of the key study variables. One third of the sample was female ( $n = 391$ , 67%). Over half (64.2%) of the study sample was White; 24.1% was Black, and 11.6% was another race. Other race/ethnicity included Latino/Hispanic, biracial/multiracial, Asian, and African. Children's age at time of visit ranged from 3 to 12 years, with the mean age of approximately 7 years ( $SD = 2.33$ ). Approximately half or 58.7% of the sample had not experienced physical abuse or witnessed IPV; 22% experienced only physical abuse; 9% only witnessed IPV, and 10% experienced both. In terms of clinically significant levels of trauma symptoms based on the parent reported TSCYC, 30% of the children displayed anxiety symptoms; 27.7% showed symptoms of depression; 25% showed anger; 38.5% exhibited PTS symptoms; 21.8% had dissociation, and 37.7% presented sexual concerns.

### 4.1 | Physical abuse, exposure to IPV, dual exposure, and trauma symptoms

Table 2 presents our findings from a series of binary logistic regression analyses. In the regressions, we examined physical abuse, exposure to IPV, and dual exposure as predictors of clinically significant levels of

**TABLE 1** Descriptive statistics (N = 580)

Variable	No exposure (n = 339) %/M (SD)	PA only (n = 128) %/M (SD)	IPV only (n = 53) %/M (SD)	Dual exposure (n = 60) %/M (SD)
Male	32.4	35.9	22.6	40.0
Race				
White	69.0	52.3	81.1	51.7
Black	19.8	32.8	15.1	38.3
Others	11.2	14.8	3.8	10.0
Age at time of visit	5.88 (2.36)	6.15 (2.02)	6.89 (2.18)	6.55 (2.27)
Sexual abuse	73.7	69.5	81.1	71.7
CPS substantiation of sexual abuse	8.1	5.5	0	3.3
Clinically significant symptoms				
Anxiety	26.5	31.3	37.7	41.7
Depression	23.3	29.9	39.6	36.7
Anger	20.4	28.9	24.5	43.3
Posttraumatic stress symptoms	32.4	46.1	49.1	46.7
Dissociation	20.9	21.1	24.5	25.0
Sexual concerns	30.4	48.0	50.9	45.0

Abbreviations: CPS, child protective service; IPV, intimate partner violence; PA, physical abuse.

**TABLE 2** Binary logistic regressions examining physical abuse and exposure to domestic violence as predictors of clinically significant trauma symptoms (N = 580)

	Anxiety OR [95% CI]	Depression OR [95% CI]	PTS OR [95% CI]	Dissociation OR [95% CI]	Anger OR [95% CI]	Sexual concerns OR [95% CI]
Exposure to violence						
No exposure (reference group)						
Physical abuse only	1.50 [0.95, 2.38]	1.49 [0.93, 2.37]	2.10** [1.36, 3.24]	1.09 [0.65, 1.84]	1.65* [1.03, 2.66]	2.31*** [1.50, 3.58]
Exposure to IPV only	1.67 [0.89, 3.13]	2.15* [1.16, 4.00]	1.85* [1.01, 3.38]	1.08 [0.53, 2.17]	1.31 [0.65, 2.62]	2.23** [1.22, 4.08]
Both physical abuse and IPV	2.59** [1.42, 4.71]	2.10* [1.15, 3.82]	2.20** [1.23, 3.93]	1.42 [0.73, 2.78]	3.33*** [1.84, 6.05]	2.09* [1.17, 3.74]
Age	0.95 [0.87, 1.03]	0.96 [0.88, 1.04]	0.94 [0.87, 1.02]	0.95 [0.87, 1.04]	0.97 [0.89, 1.06]	0.95 [0.87, 1.02]
Gender (1 = male)	0.82 [0.56, 1.22]	0.77 [0.51, 1.15]	0.66* [0.45, 0.96]	0.33*** [0.20, 0.55]	0.73 [0.48, 1.12]	0.51** [0.34, 0.75]
Race (reference group: Black)						
White	2.82*** [1.70, 4.67]	1.30 [0.81, 2.07]	1.84** [1.19, 2.85]	1.28 [0.76, 2.13]	1.38 [0.85, 2.24]	1.18 [0.77, 1.81]
Other	2.06 [1.02, 4.15]	1.48 [0.76, 2.88]	0.80 [0.41, 1.57]	1.36 [0.65, 2.86]	1.77 [0.89, 3.49]	0.78 [0.41, 1.50]
Substantiated sexual abuse	1.20 [0.53, 2.74]	0.79 [0.33, 1.89]	0.54 [0.23, 1.30]	0.21* [0.05, .91]	0.80 [0.32, 2.04]	0.41 [0.16, 1.05]
Alleged sexual abuse	1.06 [0.70, 1.61]	1.17 [0.76, 1.80]	1.08 [0.72, 1.60]	1.39 [0.85, 2.26]	0.71 [0.46, 1.09]	0.93 [0.62, 1.38]

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

Abbreviations: IPV, intimate partner violence; PTS, posttraumatic stress.

six trauma symptoms (anxiety, depression, PTS, dissociation, anger, and sexual concerns). Children who experienced physical abuse were more likely to exhibit clinically significant PTS symptoms, anger, and sexual concerns compared with children who did not disclose physical

abuse or IPV exposure (PTS: OR = 2.10; anger: OR = 1.65; sexual concerns: OR = 2.31).

Children who were exposed to IPV were more likely to experience clinically significant levels of depression, PTS, and sexual

concerns, when compared with children who did not disclose physical abuse or IPV exposure (depression: OR = 2.15; PTS: OR = 1.85; sexual concerns: OR = 2.23). Neither physical abuse nor exposure to IPV significantly predicted the odds of clinically significant levels of dissociation. Children who experienced both physical abuse and who witnessed IPV were more likely to experience anxiety, depression, PTS, sexual concerns, and anger, compared with children who did not disclose physical abuse or IPV exposure (anxiety: OR = 2.59; depression: OR = 2.10; PTS: OR = 2.20; sexual concerns: OR = 2.09; anger: OR = 3.33).

In regard to the specific influence of the control variables, there were several results of note. Males had significantly lower odds of experiencing clinically significant PTS symptoms (OR = 0.66, CI [0.45, 0.96]), dissociation (OR = 0.33, CI [0.20, 0.55]) and sexual concerns (OR = 0.51, CI [0.34, 0.75]) than females. White children were 2.82 and 1.84 times more likely to experience clinical levels of anxiety and PTS symptoms, respectively, compared with Black children. Children with a substantiated sexual abuse case were less likely to experience clinical levels of dissociation (OR = 0.21, CI [0.05, 0.91]).

## 5 | DISCUSSION

The primary aim of the study was to increase our understanding of the role of dual exposure on trauma symptoms by systematically investigating the differential associations of dual (i.e., exposure to both physical abuse and IPV) and single (i.e., IPV only and physical abuse only) exposures with clinical levels of trauma symptoms among young children. To explore dual exposure, we utilized a convenience sample of young children who were receiving services at a CAC. Consistent with prior empirical research (Brady & Caraway, 2002; Moretti et al., 2006; Overbeek et al., 2013; Wolfe et al., 2003), our results indicate that child exposure to violence and trauma (witnessing IPV, physical abuse, and dual exposure) is associated with various forms of trauma symptoms. These findings also support the main tenets of the developmental traumatology model (De Bellis, 2001; De Bellis et al., 1999), which underscores childhood trauma as a critical source for various psychological problems and trauma-related symptomatology.

It is important to note that given the nature of our sample of children receiving services from a CAC, all children in the sample likely experienced some degree of trauma, which is supported with the findings. Specifically, all study groups showed increased risk for PTS symptoms and sexual concerns. Interestingly, we did not find significant findings for dissociation. The comparison group (those who did not experience physical abuse or witness IPV) has also experienced some form of family violence, by virtue of being treated at the CAC. This group likely experienced sexual abuse only. Sexual abuse is associated with dissociation (Rodriguez-Srednicki, 2001), which may explain the lack of differential findings for the groups who also experienced physical abuse and/or witnessed IPV.

Notably, our results indicate that children who both experienced physical abuse and witnessed IPV (i.e., dual exposure) were more consistently at risk for a wider range of trauma symptoms than

children who experienced only one type of trauma (i.e., either physical abuse only or IPV exposure only). Children who had dual exposure were at heightened risk for almost all types of trauma symptoms examined in our study, with dual exposure predicting an increased probability of anxiety, depression, PTS, anger, and sexual concerns among young children, whereas experiencing physical abuse alone or witnessing IPV alone predicted only certain types of trauma symptoms. This finding is consistent with the polyvictimization literature (Finkelhor, Turner, Hamby, & Ormrod, 2011) as well as the idea of complex trauma (Cook et al., 2017; Van der Kolk, 2017) that highlight the importance of understanding multifaceted and cumulative nature of traumatic experiences (e.g., co-occurring and chronic interpersonal violence) and associated symptomatology (e.g., comorbidity of PTSD and other internalizing and externalizing psychopathology). This finding is also consistent with the developmental traumatology model. Participants that experienced dual exposure may be showing heightened risk for trauma symptoms because their biological stress systems are suffering from the neurological chemical imbalance from physical abuse and witnessing IPV (De Bellis et al., 1999). Taken together, our findings regarding dual exposure are important for understanding polyvictimization and highlight the dually exposed group as a particularly vulnerable, high-risk population for psychopathology.

Our finding that children who experienced physical abuse were significantly more likely to experience PTS and sexual concerns than children who had not experienced physical abuse or witnessed IPV is consistent with previous literature (Brady & Caraway, 2002; Briere et al., 2001; Kolko et al., 2010; Pelcovitz et al., 1994; Yoon et al., 2016). Likewise, our finding that childhood physical abuse is associated with anger is in line with prior research that reported anger regulation difficulties in children and adolescents who have experienced abuse and neglect (Andrews, Brewin, Rose, & Kirk, 2000; Faulkner, Goldstein, & Wekerle, 2014).

Our finding that witnessing IPV was associated with PTS, depression, and sexual concerns is also consistent with previous literature (Briere et al., 2001; Carlson, 2000; Gewirtz & Edleson, 2007; Graham-Bermann et al., 2012). Witnessing IPV is associated with parenting stress (Levendosky & Graham-Bermann, 1998), and experiencing IPV is associated with a range of poor mental health outcomes (Hart & Klein, 2013); therefore, caregivers may experience difficulty in providing quality care after children witness IPV and creating increased risk for PTS, depression, and sexual concerns. Finally, it should be noted that all three categories of violence experiences predicted higher odds of PTS and sexual concern symptoms. However, caution is needed in interpretation of these results because this may also have to do with the uniqueness of our sample. Specifically, a majority of our convenience sample (approximately 80%) present concerns for sexual abuse, and there is a robust body of literature suggesting influence of childhood sexual abuse on PTS symptoms and sexual problem behaviours (Filipas & Ullman, 2006; Lalor & McElvaney, 2010; Molnar, Buka, & Kessler, 2001). Future studies may benefit from examining the interaction effects between sexual abuse and exposure to IPV on PTS symptoms.

## 5.1 | Limitations

The current study is limited to reports of caregiver's perceptions of child trauma symptoms and child self-disclosures of physical abuse and witnessing IPV. In reality, the measure is subject to inaccuracy because children may be experiencing trauma differently than their caregiver perceives and also may not have disclosed traumatic experiences during their CAC visit. Further, aspects of the caregiver including level of engagement or frustration with the child could influence interpretation of the child's symptoms as well as measurement validity and reliability. The method used to assess children's trauma exposure poses another limitation. We relied on the child's self-disclosure during medical forensic interview to assess the child's exposure to trauma and dichotomously coded (0 = no disclosure; 1 = disclosure) child physical abuse and IPV exposure variables. Such dichotomization, coupled with the lack of standardized measures used in the study to assess trauma exposure, may not fully capture multifaceted nature of trauma experienced by the child nor does it test biochemical measures referred to in De Bellis et al.'s (1999) developmental traumatology model. Future research should benefit from utilizing standardized scales and sophisticated methods (e.g., multiple informants) to capture the full spectrum (e.g., type, severity, timing, and chronicity) of the child's exposure to trauma. As this was a secondary data analysis, we were limited in what was available in terms of covariates. There are likely important aspects of the child, family, and community that relate to the child's trauma symptoms for which we are unable to control. Specifically, previous researchers have found maternal education, parental marital status, parental substance abuse, child behavioural problems, and social isolation significantly related to childhood trauma (Faulkner et al., 2014; Milot, 2010; Van der Kolk, 2017). Finally, the sample is limited to sampling from only 1 year of data collection and one urban Midwestern CAC. Findings do not reflect the long-term effect of trauma exposure nor can they be generalized to all children who experience trauma.

## 5.2 | Research and practice implications

Future researchers should continue to investigate young children's trauma symptoms. Utilizing the developmental traumatology model, future researchers can build upon current findings by conducting systematic investigations of maltreatment types and testing the biochemical imbalance of young trauma survivors. The current study explores the unique effect of physical abuse, witnessing IPV, and dual exposure on trauma symptoms, but there are many types of maltreatment that have not been individually examined. Additional CAC disclosures such as exposure to physical abuse of others, pornography exposure, parental failure to meet medical needs, emotional neglect, and so on may also alter the biological stress response system in young children. If researchers systematically examined the unique effect of disclosures on trauma symptoms, findings would inform much needed client-centred screening procedures based on child experiences (Finkelhor, 2018). Further, we encourage using biochemical imbalance testing

with young trauma survivors in future research. Although we did not have the resources to test participants' levels of cortisol and catecholamines, the developmental traumatology model suggests doing so in order to investigate the biochemical effects of trauma.

The findings from the current study are also relevant to practitioners screening young clients. Previous literature illustrates that screening practices are highly varied and may be attached to social stigma (Finkelhor, 2018; Harris, Sawaya, Moyer, & Calonge, 2011). Additionally, concern of intervention fidelity and ethical practice arise when service providers screen for traumatic symptoms they are unqualified or unexperienced to treat (Finkelhor, 2018). By educating practitioners with our findings, we hope to contribute to a chain reaction in which clients are delivered the best available service and discrepancies are reduced among professionals. For example, if providers learned that depression is more likely in children exposed to IPV, clients who disclose witnessing IPV might more frequently be referred to childhood depression specialists. Further, there might be less variation in diagnosis if providers routinely screen for depression among children who witness IPV. Likewise, the effect of education could also work in the reverse if practitioners screen for witnessing IPV among children presenting with depressive symptoms. Assessing the types of trauma that children may experience can be useful for tailoring interventions for children with various symptoms.

These results call attention to the importance of screening for exposure to multiple trauma types and multiple symptomatology at a young age, which will help to create trauma-informed care plans individualized to the child. Of course, personal characteristics like gender and race, as observed in the current sample, also uniquely impact trauma symptoms and therefore should be considered in creating client-centred services. Lastly, practitioners should be especially mindful of children who are polyvictims as they may be at highest risk for serious mental health problems.

## CONFLICT OF INTEREST

On behalf of all authors, the corresponding author states that there is no conflict of interest.

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