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Cumulative stress and substantiated maltreatment: The importance of caregiver vulnerability and adult partner violence[☆]

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Abstract

Objective: Our goal is to assess the effect of caregiver vulnerabilities, singly and in combination, on the substantiation of child abuse (physical, sexual) and neglect, while controlling for relevant background variables. We test the moderator role of adult partner violence in qualifying the relationship between caregiver vulnerabilities and maltreatment substantiation.

Method: Secondary analyses of the 1998 Canadian Incidence Study of Reported Child Maltreatment (CIS) are used to predict child protective service investigation substantiation versus non-substantiation from a range of caregiver vulnerability factors. Involvement in partner violence was examined as a moderator in the relation between caregiver vulnerabilities and maltreatment substantiation. The CIS is an epidemiological survey of first-reported cases to child protective services, using a random sample of child welfare agencies across Canada. Child welfare workers completed a research form on the child, primary caregiver, family, perpetrator, severity and type of maltreatment, as

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well as services and court outcomes. All maltreatment classifications were assigned according to the Canadian legal definition of child abuse and neglect. Hierarchical logistic regression analyses were used, with stepped entry of: (1) demographic factors, socioeconomic disadvantage, and caregiver's own history of maltreatment; (2) caregiver vulnerability factors; (3) involvement in partner violence; (4) the interaction between caregiver vulnerability and partner violence.

Results: Caregiver substance abuse was found to be the single most potent kind of caregiver vulnerability in predicting maltreatment substantiation. When the total number of vulnerabilities was used as the predictor, prediction across all types of maltreatment increased, especially for substantiated neglect. Analyses also showed that the presence of partner violence in the home exacerbated the effect of caregiver vulnerability on substantiation.

Conclusions: The total number of caregiver vulnerabilities was the best predictor of the substantiation of child abuse and neglect. This relationship was moderated by the existence of partner violence: high caregiver vulnerability *and* high partner violence increased the likelihood of substantiation versus non-substantiation. These results suggest that caregiver issues should be considered in tandem with partner relationships. Among child welfare cases, caregiver vulnerability and partner violence are critical targets for child maltreatment prevention and early child protective services intervention.

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Introduction

Child maltreatment is, fundamentally, a caregiver issue in terms of either perpetration or failure to protect. The psychological context for the caregiver is critical in considering whether parenting is impaired. Historically, caregiver vulnerabilities such as psychiatric deficits (Kempe, Silverman, Steele, Droegemueller, & Silver, 1985), psychological unavailability (Egeland, Sroufe, & Erickson, 1983), apathy and futility (Polansky, Gaudin, Ammons, & Davis, 1985) have been considered. Community-based research supports the importance of targeting caregiver vulnerabilities (e.g., Egeland, Erickson, Butcher, & Ben-Porath, 1991; Grosz, Kempe, & Kelly, 2000; Oates, Gray, Schweitzer, Kempe, & Harmon, 1995) for screening, prevention, and intervention. Yet, there remains a need to consider simultaneously a broader range of vulnerabilities to assess relative importance, as well as cumulative psychological burden with clinical families recognized as having multiple needs (Behl, Conyngham, & May, 2003).

The environmental context for the caregiver is also salient; such stressors as low income, socioeconomic disadvantage (SED), or social isolation are considered potential disrupters to sustained capacity to provide adequate care (Bronfenbrenner, 1979; Wolfe, 1999). A further contextual variable is the nature of the parental dyad, where intimate partner violence is an important issue. Maltreatment may ensue from different pathways: an increased likelihood of perpetration by the stressed/vulnerable caregiver, failure to protect because unskilled or dangerous others stepped into the caregiver role (e.g., sibling, other adult), and failure to protect from perpetrating, non-caregivers. The current study considers how caregiver vulnerability factors predict the legal threshold for child abuse and neglect, when considering environmental and partner factors, using data from a child protection, population-based study.

Caregivers' vulnerabilities of various kinds have been linked to compromised parenting: caregivers' own history of maltreatment, anxiety and depression (e.g., Éthier, Lemelin, & Lacharité, 2004; Katerndahl, Burge, & Kellogg, 2005; Pine et al., 2005; Rogosch, Cicchetti, & Toth, 2004; Shea, Walsh, MacMillan, & Steiner, 2005), substance abuse (e.g., Eiden & Leonard, 2000), aggression and antisociality (Egeland, Yates, Appleyard, & van Dulmen, 2002), lack of social support (Dumas & Wahler, 1983; Polansky et al., 1985), and poor physical health (MacMillan & Munn, 2001). Some work has considered the temporal relationship between parental and child problems. For example, longitudinal study has shown that maternal depression typically precedes child aggression and hyperactivity, underscoring the need to intervene proactively to address maternal mental health to support child adjustment (Elgar, Curtis, McGrath, Waschbusch, & Stewart, 2003). While previous work has found that both the risk and the substantiation of maltreatment were associated with specific caregiver characteristics (English & Graham, 2000; English, Marshall, Coghlan, Brummel, & Orme, 2002), other research has not (Wells, Fluke, & Brown, 1995). Given previous research on the critical effect of cumulative stress (e.g., Sameroff, Seifer, Barocas, Zax, & Greenspan, 1987), it may be that the total number of vulnerability factors a caregiver faces is a better predictor of maltreatment substantiation than any single factor. The current study examines caregiver vulnerability, both in terms of the simultaneous consideration of various vulnerability factors, as well as a cumulative vulnerability index.

One environmental factor that has been consistently shown to challenge efficacious parenting is socioeconomic disadvantage. One aspect of SED, low income, has been linked to greater aversive parenting, including corporal punishment (McLoyd, 1998; McLoyd, Jayaratne, Ceballo, & Borquez, 1994), which is relevant to CPS physical abuse which often occurs in a disciplinary context and escalation from within norms parenting to abuse. In reviewing the quality of research on the intergenerational transmission of physical abuse, failures to control for each generations' socioeconomic status at the time of the child abuse was ignored in most studies, thereby hampering our assessment of intergenerational physical abuse, as well as the contribution of socioeconomic disadvantage (Ertem, Leventhal, & Dobb, 2000). Families involved with child welfare experience other disadvantaged contexts than is captured by traditional indicators like family income, including less stable housing, more children, and children with special needs (Trocmé et al., 2001; US Department of Health and Human Services, Administration on Children, Youth and Families, 2005) Overall, SED has been associated with greater caregiver mood problems (e.g., Klebanov, Brooks-Gunn, & Duncan, 1994; Suchman & Luthar, 2000), greater use of punitive parenting (Dumas & Wekerle, 1995), and higher risk of partner violence (Desai, Arias, Thompson, & Basile, 2002). More recent views posit the relationship between social context and parental well-being as reciprocal: positive social contexts enhance caregiver well-being and parenting behaviors and vice versa (Beeman, 2001). Thus, there is a need to take SED into account when attempting to assess the unique contribution of caregiver vulnerability to maltreatment substantiation.

Caregiving, at some point, involves partnering with adults. Independent of the existence of child physical abuse and neglect, exposure to partner violence alone predicts child maladjustment in prospective longitudinal study (Yates, Dodds, Sroufe, & Egeland, 2003). The overlap between partner violence and child abuse in child protective services samples is substantial (33–48%; Folsom, Christensen, Avery, & Moore, 2003; Hangen, 1994). However, it remains unclear as to whether caregiver vulnerability may be buffered by non-violent, supportive partnerships, or whether the negative effects of caregiver vulnerability may be exacerbated by the presence of a violent partnership. Hence, the current study explores whether adult partner violence interacts with caregiver vulnerability in predicting maltreatment substantiation.

Method

The CIS Study

The descriptive features of this Canadian epidemiological child welfare sample have been presented previously (Trocmé, Tourigny, MacLaurin, & Fallon, 2003). Here, we present secondary analyses of the CIS on predictors of child abuse and neglect substantiation. Briefly, the CIS used a multi-stage sampling design to select a representative sample of 51 child welfare service areas across Canada. The CIS had workers complete a standard research form for all new reports to child welfare. New reports from October to December 1998 yielded a final sample of 7,672 investigations involving children under the age of 16. The CIS sample does not contain: (1) incidents that were not reported to child welfare authorities (e.g., those reported to police with no child protection concerns), (2) reported cases that were screened out by child welfare services (e.g., insufficient demographic information to move forward), and (3) new reports on cases already opened by child welfare services. New reports on closed cases were included.

All case workers were certified social workers trained in identifying different types of maltreatment according to Canadian legal definitions. For the purpose of the study, additional on-site training was also provided to participating child welfare workers by principal investigators and collaborative research-community training teams. Using case vignettes, workers completed forms and discussed discrepancies in ratings to ensure consistency. Each worker was given a study guide with definitions for all the items and a summary of study procedures. Reliability of the CIS research form was checked by comparing ratings of the case narratives on a sample of 220 cases (20 cases randomly selected from cases collected by the 11 site-based researchers). Percentage of agreement among workers' rating on the 20 cases varied from 82% (kappa = .58) to 94% (kappa = .87). The average participation rates of workers across different child welfare sites were 90%, ranging from 75% to 100%. Item completion rates were over 95% on all items of the CIS research form.

CIS research form

The CIS instrument was a three-page fixed response form, which took on average of 10 minutes to complete, and contained questions related to caregivers, child, family and environment, as well as information on child-specific investigations outcomes. Generally, the form was completed at the stage of making the substantiation decision and when court-related follow-up procedures were known. Typically, it was completed by the investigating worker.

Substantiated maltreatment

The CIS used a common classification system across all jurisdictions that was based on the Canadian legal definition of maltreatment, which included 22 concrete descriptors of maltreatment acts used to identify which of the four primary maltreatment categories were assigned: (1) physical abuse (e.g., shaken baby syndrome, inappropriate punishment), (2) sexual abuse (e.g., touching or fondling genitals, exposure of genitals, exploitation in terms of pornography or prostitution), (3) neglect (e.g., failure to supervise or protect, and/or physical, medical, or educational neglect), and (4) emotional abuse (e.g., non-organic failure to thrive, exposure to family violence). Because we were interested in the moderational role of partner violence, primary emotional abuse cases were not used in the current study.

The CIS documented substantiation practices as they occurred typically in Canada. We acknowledge that such substantiation practices may reflect only the worker's *decision* to substantiate the occurrence of a particular type of maltreatment (vs. other classifications: non-substantiated, suspected, false allegation), rather than the factual occurrence of child abuse/neglect. Nevertheless, the substantiation practice was guided by the legal definitions of the Canadian provinces and territories that share basic common characteristics (e.g., a harm or substantial risk of harm standard). Substantiation referred to cases where the balance of evidence indicated that maltreatment occurred. An unsubstantiated case referred to cases where there was sufficient evidence to conclude that the child had not been maltreated. Unsubstantiated cases considered to have been malicious reports were classified as false allegations. Suspected maltreatment indicated that there was insufficient evidence to conclude that the child had not been maltreated, yet not enough evidence to substantiate. For the purposes of the present study, suspected and false allegation classifications were not included in the following analyses, which focused on distinguishing substantiated from unsubstantiated cases. Further, the form allowed each case a primary, a secondary, and a tertiary maltreatment classification, where the primary classification best characterized the major investigation concern. For this reason, only the primary type of substantiation was considered presently. The unsubstantiated cases serve as the reference group for all analyses.

CIS sample

The sample was described in the original report of the 1998 CIS (Trocmé et al., 2003): 45% of investigations were substantiated and 29% were unsubstantiated. Primary substantiated maltreatment types were divided among neglect (38%), physical abuse (23%), sexual abuse (9%), and emotional abuse (23%); and less than 10% of these cases involved documented physical injuries. Multiple forms of maltreatment had been noted by workers in 24% of the cases. In these cases, the primary maltreatment category was based on the most severe form of maltreatment that occurred. Overall, cases were nearly equally divided between genders (51.3% boys). Mothers (81%) were most often noted as the primary caregiver. The child's age ranged from 0 to 15 years (mean = 7.5, $SD = 4.48$), with the largest proportion found in the 4–7-year-old group (28%). The age of the primary caregivers ranged from below 16 years of age to more than 70 years old, with most primary caregivers within the 31–40-year-old group (48.8%). Biological mothers and fathers were the alleged perpetrators in 65.6% and 42.8% of investigations, respectively. For analyses, the continuous age variable, rather than age category, was used. These secondary analyses were vetted through the Centre for Addiction and Mental Health Research Ethics Board (PI's site at time of analyses) and were approved.

Study variables

Beyond the demographic information, investigating workers noted study variables (e.g., substance abuse, mental health) as present/absent and as either "confirmed" or "unconfirmed." Confirmed responses indicated that the worker was basing the response on more "direct" evidence such as worker observation, third-party report, and/or professional documentation (psychiatric diagnosis, police report, treatment center report). Only "confirmed" study variables were used in the present analyses.

Socioeconomic Disadvantage (SED). To capture the negative impact of socio-economic disadvantage, a cumulative index was formed in accordance with previous research (Dumas & Wahler, 1983; Dumas &

Wekerle, 1995). This conceptualization has been predictive of clinical versus non-clinical groups. In this study, SED is defined as having one or more of the following present: (1) minority status of the primary caregiver, (2) single motherhood, (3) having three or more children, (4) having moved three or more times in the past 6-month, (5) caregivers with elementary or less education, (6) family income less than \$15,000, (7) receiving some form of social assistance or having no source of income, and (8) living in shelter/hostel. The total number of SED factors was tallied into a cumulative index of SED. Research on cumulative risk supports this approach of tallying risk factors across a board range of seemingly diverse situations as the most effective way of encapsulating individuals' risk status (Rutter, 1987; Rutter & Quinton, 1977; Sameroff et al., 1987). In the current study, most families had at least one SED factor: 20% of the primary caregivers were minorities, 39% of the primary caregivers were single mothers, 36% of the families had three or more children, 1.8% of the families moved three or more times in the past 6 months, 4.8% of the caregiver received only elementary education, 26% of families had incomes of less than \$15,000, 42% received some form of social assistance or had no source of income and 1.4% of the current sample were living in shelter or hostel. Only 22% of cases had no SED factor, 27% had 1, 23% had 2, 18% had 3, 8% had 4, 2% had 5, and 1% had 6 or more. In the following analyses, we controlled for SED in order to examine the unique effect of caregiver vulnerability on maltreatment substantiation.

Primary caregiver history of childhood maltreatment. The investigating worker was asked to confirm that the caregiver was ever maltreated while growing up. A childhood history of their own maltreatment had been confirmed in 28% of the primary caregivers.

Primary caregiver involvement in partner violence. The investigating worker was asked to confirm that the caregiver was involved in a violent partner relationship in the past 6 months. In the current sample, involvement in partner violence had been confirmed for 12% of the primary caregivers.

Primary caregiver vulnerabilities. The investigating work was asked to confirm the presence of vulnerabilities during the past 6 months with respect to: (1) substance abuse, (2) criminal activities, (3) mental health issue, (4) physical health issue, and (5) lack of social support. In addition, the total number of dichotomously coded vulnerability factors faced by the caregiver was tallied as a caregiver vulnerability index. In the current sample, substance abuse had been confirmed in 15%, criminal activities in 6%, mental health issues in 9%, physical health in 6%, and lack of social support in 14% of the primary caregivers. Of the primary caregiver in the current sample, 66% had no vulnerability confirmed, with one confirmed for 23%, two for 9%, and three or more for 3% of primary caregivers.

Analysis plan

Multiple logistic regression analyses were conducted to examine the likelihood of different maltreatment types being substantiated in families with different demographics characteristics, household socioeconomic characteristics, and caregiver vulnerabilities. Goodness-of-fit (χ^2) of the models, the Wald statistics, odds ratio (OR) and two-sided 95% confidence intervals (CI) of individual predictors are reported. For categorical independent variables, such as gender and involvement in a violent relationship, the odds ratio indicates the ratio between the odds of substantiation for those who endorsed the independent variable (e.g., being female or confirmed involvement in violent relationship) and the odds of substantiation for those who did not endorse. For continuous variables, such as age and socioeconomic

disadvantage index, the odds ratio was the ratio of the odds of substantiation for any particular value of the continuous independent variable divided by the odds of substantiation for a value of that variable one point lower than the one in the numerator (see Cohen, Cohen, West, & Aiken, 2003; Tabachnick & Fidell, 2001).

Hierarchical multiple logistic regression analyses were conducted, with the following stepped entry, moving from background factors to historical caregiver factor, to recent/current caregiver vulnerabilities and partner violence. Specifically, the steps that were entered sequentially were: (1) child and caregiver demographics, (2) SED, (3) caregiver's own childhood history of maltreatment, (4) caregiver vulnerability factors in the past 6 months, (5) violent partnership past 6 months. The final step was the interaction between caregiver vulnerability and violent partnership to test the moderator role of partner violence. For step 4, two models were tested: (1) whether the presence of specific vulnerability factors increased the likelihood of substantiation (all vulnerability factors entered simultaneously in a single step), and (2) whether the greater the number of vulnerabilities, the greater the likelihood of substantiation (the vulnerability factors as a summary score). Thus, caregiver vulnerability was either entered as a set of five separate independent predictors or as a summary score reflecting the total number of caregiver vulnerabilities confirmed. The interaction was derived from the caregiver vulnerability summary score multiplied by the presence/absence of partner violence. According to Baron and Kenny's (1986) criteria, the moderating effect is affirmed only when the interaction term of two independent variables (in our case, vulnerability and partner violence) account for a significant amount of additional variance above and beyond what variance is accounted for by the main effects of these two variables, indicating that the interaction term must be entered in the last step.

Results

The regression model is reported in Table 1 and is described by block below.

Block 1: Entry of child and caregiver demographics

When age and gender were entered simultaneously as a block in a multiple logistic regression model, analyses indicated that older children were more likely than younger ones to be abused physically (OR = 5.46, CI = 3.94–7.56; Wald = 103.81, $p < .01$) and sexually (OR = 3.76, CI = 2.29–6.16; Wald = 27.57, $p < .01$). Boys were more likely to be victims of substantiated physical abuse (OR = 1.24, CI = 1.06–1.45; Wald = 7.29, $p < .01$), while girls were more at risk of substantiated sexual abuse (OR = 2.78, CI = 2.13–3.70; Wald = 55.78, $p < .01$). In terms of caregiver characteristics, neglect was more likely to be substantiated in homes with younger primary caregivers (OR = 2.22, CI = 1.25–4.00; Wald = 7.40, $p < .05$), while physical abuse (OR = 1.41, CI = 1.15–1.73; Wald = 10.60, $p < .01$) and neglect (OR = 1.43, CI = 1.21–1.70; Wald = 17.37, $p < .01$) were more likely to be substantiated in homes with males as primary caregivers.

Goodness-of-fit tests of models with the demographics against constant-only models were statistically significant in distinguishing between unsubstantiated cases and those which were substantiated with physical abuse [$\chi^2(4) = 158.94, p < .01$], sexual abuse [$\chi^2(4) = 122.23, p < .01$], and neglect [$\chi^2(4) = 21.22, p < .01$].

Table 1
Hierarchical multiple logistic regression analyses examining predictors of maltreatment substantiation

Independent variables	Maltreatment type								
	Physical abuse			Sexual abuse			Neglect		
	Wald	OR	CI	Wald	OR	CI	Wald	OR	CI
Block 1									
Child's age	103.81	5.46	(3.94, 7.56)**	27.57	3.76	(2.29, 6.16)**		ns	
Child's gender (M)	7.29	1.24	(1.06, 1.45)**	55.78	.36	(.27, .47)**		ns	
Caregiver's age		ns			ns		7.40	.45	(.25, .80)*
Caregiver's gender (M)	10.60	1.41	(1.15, 1.73)**		ns		17.37	1.43	(1.21, 1.70)**
Block 2									
SED index	4.25	.63	(.40, .98)*	11.97	.28	(.13, .57)**	120.64	6.63	(4.73, 9.30)**
Block 3									
History of maltreatment	122.77	2.71	(2.27, 3.24)**	19.98	1.91	(1.44, 2.53)**	216.08	2.86	(2.49, 3.29)**
Block 4a									
Substance abuse	26.10	2.10	(1.58, 2.80)**		ns		233.88	5.36	(4.32, 6.64)**
Antisocial behavior	2.98	1.44	(.95, 2.18)+	7.64	2.17	(1.25, 3.77)**	13.07	1.85	(1.32, 2.58)**
Mental health issues	5.99	1.49	(1.08, 2.06)**		ns		23.58	1.89	(1.46, 2.45)**
Physical health		ns			ns		3.59	1.31	(.99, 1.74)+
Few social support	36.02	2.22	(1.71, 2.88)**	2.93	1.48	(.94, 2.33)+	81.67	2.61	(2.12, 3.22)**
Block 4b									
Caregiver vulnerability index	65.26	12.82	(6.91, 23.81)**	13.51	6.32	(2.36, 16.89)**	330.49	114.75	(68.81 191.34)**
Block 5									
Partner violence	95.37	3.02	(2.42, 3.77)**	8.88	1.73	(1.21, 2.49)**	71.56	2.27	(1.88, 2.74)**
Block 6									
Partner violence × caregiver vulnerability index	5.50	6.02	(1.34, 26.97)*	3.82	9.81	(1.00, 96.76)*	3.59	3.88	(.95, 15.80)+

Note: OR: odds ratio; CI: 95% confidence interval; ** $p < .01$; * $p < .05$; + $p < .10$, trend; ns = not significant ($p > .10$). Caregiver vulnerability index is the sum of five distinct dichotomously coded vulnerability factors.

Block 2: Entry of socioeconomic disadvantage

After controlling for child and caregiver demographics, the result showed that families who had a larger number of socioeconomic disadvantage indicators were more likely to be substantiated with neglect (OR = 6.63, CI = 4.73–9.30; Wald = 120.64, $p < .01$). Greater socioeconomic disadvantage did not, however, confer greater risk in terms of physical and sexual abuse categories after controlling for the prior block of demographics. This indicates that as families increased by one in their number of SED indicators, they increased their likelihood of having a substantiated neglect case by 6.63 times. The odds ratio reflects how much the odds of substantiated neglected are multiplied for each additional unit increase of SED. If one family had 1 SED factor, and another family had three SED factors, then the latter family would be about 44 times more likely to be substantiated with neglect (i.e., 2 unit increase = 6.63 squared).

Goodness-of-fit tests of models with the SED index added against models with only the constants and demographics were statistically significant in distinguishing between unsubstantiated cases and those which were substantiated with physical abuse [$\chi^2(1) = 4.29, p < .05$], sexual abuse [$\chi^2(1) = 12.42, p < .01$], and neglect [$\chi^2(1) = 124.85, p < .01$].

Block 3: Entry of caregiver's own childhood history of maltreatment

After statistically controlling for demographics and SED, families where caregivers had been maltreated in their own childhoods were more at risk of all types of substantiated maltreatment [physical abuse: OR = 2.71 (2.27, 3.24), Wald = 122.77, $p < .01$; sexual abuse: OR = 1.91 (1.44, 2.53), Wald = 19.98, $p < .01$] and neglect [OR = 2.86 (2.49, 3.29), Wald = 216.08, $p < .01$].

Goodness-of-fit tests of models with the primary caregiver's history of maltreatment added against models with only the constants, demographics, and SED indices were statistically significant in distinguishing between unsubstantiated cases and those which were substantiated with physical abuse [$\chi^2(1) = 122.51, p < .01$], sexual abuse [$\chi^2(1) = 18.97, p < .01$], and neglect [$\chi^2(1) = 221.83, p < .01$].

Block 4: Entry of caregiver vulnerabilities

The effect of caregiver vulnerabilities on substantiation status was examined in two ways: (1) as a set of independent factors and (2) as an overall summary score that reflected the total number of vulnerabilities endorsed. The Block 4a of Table 1 shows the unique contribution of each individual vulnerability factor to the substantiation versus non-substantiation of maltreatment, to assess whether a single vulnerability factor greatly increased the likelihood of substantiation. The Block 4b of Table 1 shows the effect of the number of dichotomously scored vulnerability factors on substantiation decisions. In both models of examining caregiver vulnerability factors, demographics, SED, and caregiver history of maltreatment in their childhood were statistically controlled for.

Block 4a. Lacking social support, as well as caregiver engagement in antisocial activities, elevated the likelihood of most types of substantiated maltreatment (social support: physical abuse: OR = 2.22, CI = 1.71–2.88; Wald = 36.02, $p < .01$; neglect: OR = 2.61, CI = 2.12–3.22; Wald = 81.67, $p < .01$; antisocial: sexual abuse: OR = 2.17, CI = 1.25–3.77; Wald = 7.64, $p < .01$; neglect: OR = 1.85, CI = 1.32–2.58; Wald = 13.07, $p < .01$). Caregiver mental illness predicted substantiation of physical abuse (OR = 1.49, CI = 1.08–2.06; Wald = 5.99, $p < .01$) and neglect (OR = 1.89, CI = 1.46–2.45; Wald = 23.58, $p < .01$). The

single most potent risk factor was caregiver substance abuse, increasing the risk for substantiated physical abuse (OR = 2.10, CI = 1.58–2.80; Wald = 26.10, $p < .01$), but especially for substantiated neglect (OR = 5.36, CI = 4.32–6.64; Wald = 233.88, $p < .01$).

Goodness-of-fit tests of models, with the five caregiver vulnerabilities simultaneously added against models with only the constants, demographics, SED indices, and the primary caregiver's maltreatment history, were statistically significant in distinguishing between unsubstantiated cases and those which were substantiated with physical abuse [$\chi^2(5) = 84.02$, $p < .01$], sexual abuse [$\chi^2(5) = 15.43$, $p < .01$], and neglect [$\chi^2(5) = 478.84$, $p < .01$].

Block 4b. We investigated the effect of the number of vulnerability factors a caregiver suffered, rather than the identity of any particular vulnerability, on substantiation. Among cases that were not substantiated, 81% of caregivers suffered from no vulnerability, 15% suffered from one form of vulnerability, 4% suffered from two, and .7% suffered from three. On the other hand, among the substantiated cases, depending on their maltreatment type, 46–72% suffered from no vulnerability, 20–33% suffered from one, 6–15% suffered from two, 2–5% suffered from three, .5–1% suffered from four, and .1% suffered from all forms of vulnerabilities. After controlling for other covariates, the larger the number of vulnerabilities a caregiver suffered from, the greater the likelihood of substantiation in physical abuse (OR = 12.82, CI = 6.91–23.81; Wald = 65.26, $p < .01$), sexual abuse (OR = 6.32, CI = 2.36–16.89; Wald = 13.51, $p < .01$), and neglect (OR = 114.75, CI = 68.81–191.34; Wald = 330.49, $p < .01$).

Goodness-of-fit tests of models with the total number of vulnerabilities added against models with only the constants, demographics, SED indices, and the primary caregiver's maltreatment history were statistically significant in distinguishing between unsubstantiated cases and those who were substantiated with physical abuse [$\chi^2(1) = 65.10$, $p < .01$], sexual abuse [$\chi^2(1) = 12.57$, $p < .01$], and neglect [$\chi^2(1) = 396.94$, $p < .01$].

Block 5: Entry of caregiver involvement in partner violence in the past 6 months

The results indicated that the caregiver's involvement in partner violence significantly increased the likelihood of the substantiation of physical abuse (OR = 3.02, CI = 2.42–3.77; Wald = 95.37, $p < .01$), sexual abuse (OR = 1.73, CI = 1.21–2.49; Wald = 8.88, $p < .01$), and neglect (OR = 2.27, CI = 1.88–2.74; Wald = 71.56, $p < .01$), even after taking into account the number of vulnerabilities the caregiver was suffering from and other control and risk factors.

Goodness-of-fit tests of models with caregiver involvement in violent relationships added against models with only the constants, demographics, SED, the primary caregiver's maltreatment history, and the number of caregiver vulnerabilities were statistically significant in distinguishing between unsubstantiated cases and those who were substantiated with physical abuse [$\chi^2(1) = 94.24$, $p < .01$], sexual abuse [$\chi^2(1) = 8.31$, $p < .01$], and neglect [$\chi^2(1) = 73.00$, $p < .01$].

Block 6: Entry of caregiver vulnerability index—partner violence interaction

Finally, an elevated risk to maltreatment substantiation posed by the increased number of caregiver vulnerabilities was significantly exacerbated by the caregiver's involvement in partner violence. The moderation model significantly increased the likelihood of substantiated physical abuse (OR = 6.02, CI = 1.34–26.97; Wald = 5.50, $p < .01$), sexual abuse (OR = 9.81, CI = 1.00–96.76; Wald = 3.82, $p < .05$),

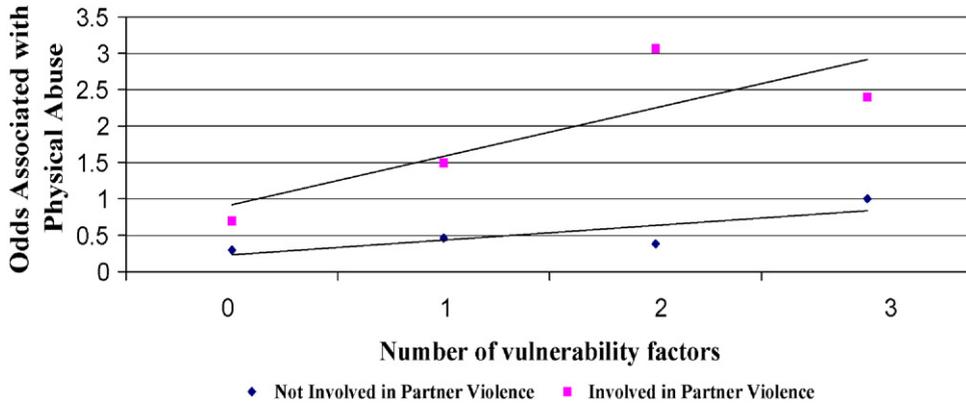


Figure 1. The moderating effect of partner violence on the relation between caregiver vulnerability index and substantiated physical abuse.

and a trend in neglect (OR = 3.88, CI = .95–15.80; Wald = 3.59, $p < .10$). Figures 1–3 display the significant moderating effect: the presence of adult partner violence exacerbates the relationship between the number of caregiver vulnerabilities and substantiation of all types of abuse.

Goodness-of-fit tests of models with only the interaction term between the number of caregiver vulnerabilities and involvement in partner violence added against models with the constants, demographics, SED, the primary caregiver’s maltreatment history, the number of caregiver vulnerabilities and caregiver involvement in partner violence were statistically significant in distinguishing between unsubstantiated cases and those which were substantiated with physical abuse [$\chi^2(1) = 5.75, p < .05$], sexual abuse [$\chi^2(1) = 3.85, p < .05$], and neglect [$\chi^2(1) = 3.75, p < .05$]. The overall fits of the models, with all the predictors, including the number of caregiver vulnerabilities and the interaction term between caregiver vulnerability and involvement in partner violence, were $\chi^2(9) = 450.83 (p < .01)$ for the substantiation of physical abuse, $\chi^2(9) = 178.36 (p < .01)$ for sexual abuse, and $\chi^2(9) = 841.57 (p < .01)$ for neglect.

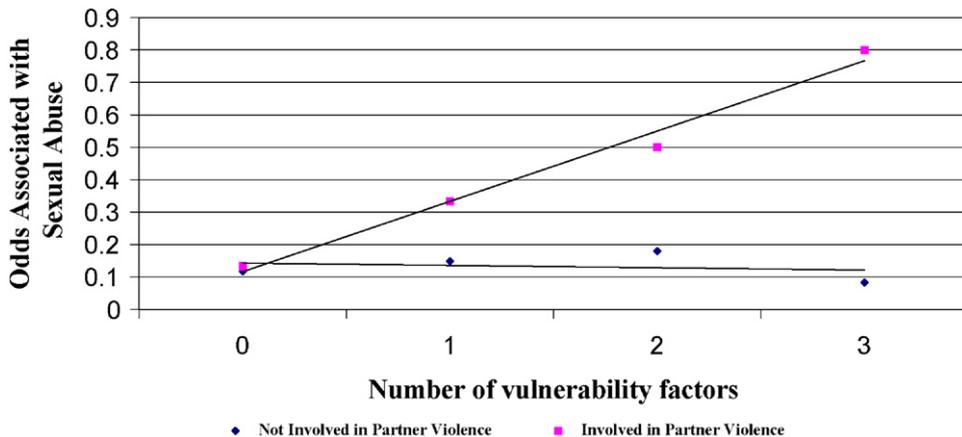


Figure 2. The moderating effect of partner violence on the relation between caregiver vulnerability index and substantiated sexual abuse.

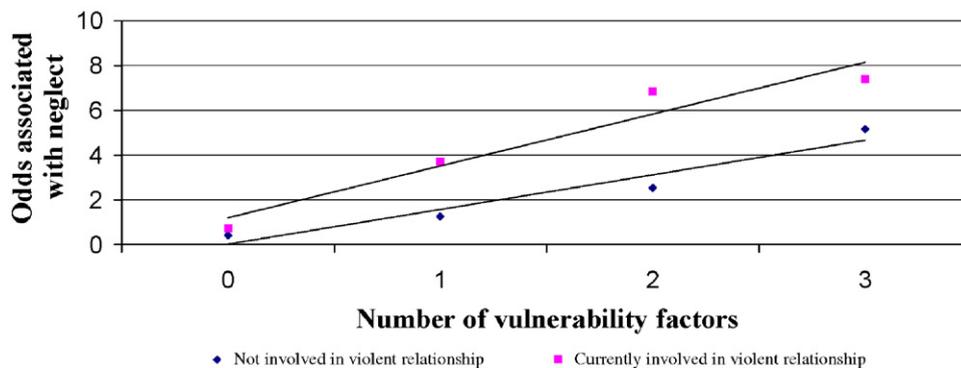


Figure 3. The moderating effect of partner violence on the relation between caregiver vulnerability index and substantiated neglect.

Discussion

Two key results emerged from the current study: (1) caregiver vulnerability, as an individual factor as well as a cumulative index of stress, predicts the substantiation of maltreatment and (2) caregiver's involvement in partner violence exacerbates the effect of caregiver vulnerability on maltreatment substantiation. It is worth noting that the total number of caregiver vulnerabilities was a far more robust predictor of maltreatment substantiation than any specific vulnerability, increased the odds ratio over 100-fold for neglect. However, beyond all demographics, SED, and primary caregiver issues, partner violence itself was a significant predictor. Being in a violent partnership in the past 6 months qualified the impact of caregiver vulnerability: it is when vulnerabilities co-occurred with partner violence that the likelihood of maltreatment substantiation increased. This supports the current trend in risk assessment, which pays increasing attention to the co-occurring risk factors influencing primary caregivers.

Individually, caregiver vulnerability factors evidenced increases in odds ratios of similar magnitude as the primary caregiver's history of maltreatment during childhood, generally of the order of doubling the likelihood of substantiated maltreatment. This is an on-going concern within the adult treatment field, where childhood trauma resolution is not well-integrated within effective adult mental health program. As adults, integrating traumatic childhood experiences, and recognizing on-going trauma symptomatology, may be an important direct target for intervention, rather than a sole treatment focus on the current issue (e.g., depression).

As individual predictors, the largest effect was observed between caregiver substance abuse and neglect. Parental substance abuse has been noted as an issue for children going into substitute care (Takayama, Wolfe, & Coulter, 1998) and neglect recidivism (Wekerle & Wall, 2002). Research based on victim retrospective reporting has found parental substance abuse linked with a history of physical abuse (Walsh, MacMillan, & Jamieson, 2003). Yet, despite the relatively larger odds ratio for caregiver substance abuse, its impact on the likelihood of maltreatment substantiation still fell short compared to the cumulative vulnerabilities. Consistent with the current study findings, results from a randomized longitudinal study of substance abusing mothers found that self-reported child abuse potential (not reported or substantiated abuse) was higher for women who had five or more personal and/or environmental risk factors, as compared to women who had four or less (Nair, Schuler, Black, Kettinger, & Harrington, 2003).

The exacerbated negative impact associated with the co-occurrence of caregiver vulnerability and relationship violence underscores the importance of the interaction between personal and partner risk factors. Longitudinal study of a sample of young children (age 6) reported to a US Department of Social Services found that, at 2-year follow-up, risk of maltreatment was significantly reduced when the maternal caregiver and her partner had separated when domestic violence had been present (Cox, Kotch, & Everson, 2003). Thus, it is suggested that domestic violence is an important context in which to consider caregiver vulnerability, as risk of abuse and neglect substantiation.

Study limitations

There were important study limitations. First, the worker's decision to substantiate maltreatment could have been influenced by different caregivers' issues noted during the investigation, and therefore inflated the relationship between caregiver vulnerability and maltreatment substantiation. It would be helpful for such epidemiological studies to do within-study investigations for inter-rater reliability of substantiation decision.

Second, these data were on intake cases. Families who previously had an open case, but had a closed file at the time of intake on new maltreatment are alongside families who are first reported for maltreatment. However, the first instance of maltreatment may have gone undetected. Also, with cases already in the system and multiple maltreatments over time, these results may not apply in terms of substantiation beyond those new cases of maltreatment coming into the CPS system. It is recognized that child maltreatment/neglect is typically a patterned behavior maintained over time, rather than a single, discrete-onset, high-impact event. This is an important issue for CPS cases in terms of prospective monitoring of child abuse and neglect, once a case has reached an investigation stage. Research suggests that neglect may be a common initial primary category of substantiation, but that cross-type recidivism appears to be in the majority as cases evolve over time (English, 2003).

Third, the CIS did not use conventionally accepted standardized self-report screening tools to assess caregiver vulnerability, history of childhood maltreatment, and partner violence. The CIS' use of a study-derived, standard form relied on clinical judgment based on all available information from direct interview, informant report, and official report (e.g., treatment center report). Thus, there was no "gold standard" identified for the purpose of verifying the range of predictor variables. Epidemiological work on the CPS population may benefit from including some focal, standardized screening (e.g., caregiver substance abuse), upon which to build the knowledge base. Finally, the CIS was not a longitudinal study and cannot address the accuracy of substantiation decisions in the long-term with regard to recidivism, caregiver vulnerability and intimate partner violence involvement. Thus, continual work in caregiver vulnerabilities would benefit from longitudinal study as cases move in and out of child welfare.

It is noted that directionality is not testable with these data in terms of whether partner violence may contribute causally to caregiver vulnerability, as suggested by other research (e.g., English, Marshall, & Stewart, 2003).

Implications

These results suggest that primary caregiver vulnerabilities, especially substance abuse or co-morbidity (i.e., the combined presence of two or more vulnerabilities), provide much information on maltreatment risk in the population of children reported to CPS. The practice issue to be raised is: With new cases

coming to CPS, how successfully does CPS (a) screen for caregiver vulnerability, (b) follow-up with referral to appropriate resources and evidence-based treatment, and (c) continue to assess parental capacity across the pre-intervention (e.g., substance-abusing), during and post-intervention (i.e., reduced use; abstinence goals; relapse prevention plan)? While the best interests of the child remain focal, the child's dysfunctional care environment must be the context that is addressed in parallel to child protection efforts.

Further, the caregiver context is multi-fold, where intraparental issues may compound one another (e.g., history of childhood maltreatment, social isolation, substance abuse) and interparental issues interact. A violent partnership can elevate unmanaged caregiver vulnerabilities (e.g., depression) to a family crisis level, where any positive parenting strengths get derailed and undermined when there is an abusive partner exercising pervasive control of the environment, monitoring of caregiver movements, including parenting, unpredictable violent outbursts, and threats of harm to self, harm to others, and child abuse when children witness or attempt to intervene in the interparental conflict. In this complex situation, it would be a systemic failure if the only "service" a family receives is investigation, where police charges on domestic violence may be appropriate along with any child abuse investigations. All key caregivers should be eligible for assessment and treatment along existing practice guidelines early in the CPS involvement. Currently, the value of routine clinic screening for violence against women is under investigation in randomized control trial format (e.g., Dr. Harriet Macmillan (2001) study). At present, these results are consistent with a need for coordination and integration of evidence-based service delivery, including for couples who want to stay together where there is violence and substance abuse (e.g., Behavior Couples Therapy, O'Farrell & Murphy, 2002; for the manual, O'Farrell & Fals-Stewart, 2006) to where women choose to exit their relationship, and fruitful tie-ins to PTSD interventions (Nemeroff et al., 2006). For child welfare, the essential piece is not the referral or active support to accept and maintain treatment adherence, but to continue to monitor treatment's impact on protective, violence-free parenting from treatment completion to relapse prevention programming.

The child welfare system cannot be viewed as only a child service system, but as a gateway for necessary adult service needs. Addressing caregiver vulnerabilities, in addition to when it occurs with partner violence, may be regarded as child abuse prevention. Drake (1995) cautions that the multiple roles of CPS investigators require attention beyond substantiation and must fully embrace client diversity to invoke preventive strategies opportunely. This early point of entry may be a fortuitous window of opportunity for early intervention. However, given the less effective outcomes are seen in the context of partner violence (e.g., Eckenrode et al., 2000; Olds et al., 1997), understanding what works best to protect children when intraparental vulnerabilities and interparental violence is present represents an urgent clinical and practice question in need of further guidance from research.

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