Child Abuse & Neglect 58 (2016) 1–11

Contents lists available at ScienceDirect

Child Abuse & Neglect

Research article

Children exposed to intimate partner violence: Identifying differential effects of family environment on children's trauma and psychopathology symptoms through regression mixture models

Shelby Elaine McDonald[a,*], Sunny Shin[a], Rosalie Corona[b], Anna Maternick[a], Sandra A. Graham-Bermann[c], Frank R. Ascione[d], James Herbert Williams[d]

[a] School of Social Work, Virginia Commonwealth University, Academic Learning Commons, 1000 Floyd Avenue, Third Floor, P.O. Box 842027, Richmond, VA 23284-2027, United States
[b] Department of Psychology, Virginia Commonwealth University, 806 W. Franklin Street, Richmond, VA 23284, United States
[c] Department of Psychology, The University of Michigan, 2265 East Hall 530 Church Street, Ann Arbor, MI 48109-1043, United States
[d] Graduate School of Social Work, University of Denver, Craig Hall, 2148 S. High St., Denver, CO 80208, United States

ARTICLE INFO

Article history:
Received 29 December 2015
Received in revised form 14 May 2016
Accepted 7 June 2016

Keywords:
Intimate partner violence
Children
Resilience
Adjustment

ABSTRACT

The majority of analytic approaches aimed at understanding the influence of environmental context on children's socioemotional adjustment assume comparable effects of contextual risk and protective factors for all children. Using self-reported data from 289 maternal caregiver-child dyads, we examined the degree to which there are differential effects of severity of intimate partner violence (IPV) exposure, yearly household income, and number of children in the family on posttraumatic stress symptoms (PTS) and psychopathology symptoms (i.e., internalizing and externalizing problems) among school-age children between the ages of 7–12 years. A regression mixture model identified three latent classes that were primarily distinguished by differential effects of IPV exposure severity on PTS and psychopathology symptoms: (1) asymptomatic with low sensitivity to environmental factors (66% of children), (2) maladjusted with moderate sensitivity (24%), and (3) highly maladjusted with high sensitivity (10%). Children with mothers who had higher levels of education were more likely to be in the maladjusted with moderate sensitivity group than the asymptomatic with low sensitivity group. Latino children were less likely to be in both maladjusted groups compared to the asymptomatic group. Overall, the findings suggest differential effects of family environmental factors on PTS and psychopathology symptoms among children exposed to IPV. Implications for research and practice are discussed.

Introduction

In the past several decades, increasing attention has been drawn to childhood exposure to intimate partner violence (IPV) and its disruptive impacts on lifelong health, learning, and behavior (Howell, Barnes, Miller, & Graham-Bermann, 2015). Experiencing the harms associated with IPV through direct or indirect observation is increasingly being identified as a form

* Corresponding author. Tel.: +1 3215148782.
E-mail address: sem9883@gmail.com (S.E. McDonald).

http://dx.doi.org/10.1016/j.chiabu.2016.06.010
0145-2134/

of child maltreatment in U.S. (Gilbert et al., 2009; MacMillen, Wathen, & Varcoe, 2013). Data from nationally representative samples suggest that 11% of U.S. children have been exposed to IPV in the past year and 26% of children have been exposed to IPV in their lifetime (Hamby, Finkelhor, Turner, & Ormrod, 2011). A large body of research links childhood IPV exposure to impairment in physical and mental health and behavioral problems across the lifespan (e.g., Chan & Yeung, 2009; Foster & Brooks-Gunn, 2009; Gewirtz & Edleson, 2007; Holt, Buckley, & Whelan, 2008; Kuelbs, 2009; Wolfe, Crooks, Lee, McIntyre-Smith, & Jaffe, 2003). Among a variety of deleterious consequences associated with IPV exposure, posttraumatic stress (PTS) and internalizing and externalizing problems are among the most well documented in school-age children (Howell et al., 2015). For example, in a meta-analysis of 60 studies that examined the effects of IPV exposure on PTS and psychopathology, Evans, Davies, and DiLillo (2008) reported a large effect size for PTS ($d = 1.54$), and moderate effect sizes for internalizing problems ($d = 0.51$) and externalizing problems ($d = 0.49$).

Prior research has also demonstrated several interconnected and often nested individual and family environmental factors that directly and indirectly affect PTS and psychopathology symptoms among children exposed to IPV. They include gender, ethnicity, the severity of children's exposure to IPV (Graham-Bermann, Gruber, Girz, & Howell, 2009; Grych, Jouriles, Swank, McDonald, & Norwood, 2000; Howell, Graham-Bermann, Czyz, & Lilly, 2010; Kilpatrick & Williams, 1998; Spilsbury et al., 2008; Wolfe et al., 2003), maternal warmth and mental health (Graham-Bermann & Levendosky, 1998), family income (Graham-Bermann, DeVoe, Mattis, Lynch, & Thomas, 2006; Shaw, Keenan, Vondra, Delliquandri, & Giovannelli, 1997), and number of children in the household (Hoffman, Demo, & Edwards, 1994; Keenan, Gunthorpe, & Grace, 2007; Trentacosta et al., 2008). Yet, findings regarding individual and family environmental influences vary among different subgroups of children. For example, Graham-Bermann et al. (2006) reported that mothers' mental health and low self-esteem best predicted PTS symptoms among European American children exposed to IPV whereas, for ethnic minority children, low family income and the severity of children's exposure to IPV were the strongest predictors of PTS symptoms. Additionally, maternal social support was a protective factor for PTS symptoms only for minority children. Furthermore, Skopp, McDonald, Jouriles, and Rosenfield (2007) found that while maternal warmth had no moderating effect on the relationship between IPV and externalizing problems for boys, it demonstrated buffering effects for girls' externalizing problems in that exposure to IPV was positively associated with girls' externalizing problems only in the presence of low levels of maternal warmth. Although more evidence is needed, these findings highlight the importance of attending to heterogeneity in children's responses to IPV exposure and differential effects of IPV exposure on PTS and psychopathology symptoms of victimized children.

Within the field of child development, there is increasing recognition of holistic and ecological models of individual development, which focus on the heterogeneity of child development (Bergman & Trost, 2006; Bronfenbrenner, 1979, 2005; Van Horn et al., 2009). These frameworks aim to delineate how various subgroups of children differ across multiple developmental characteristics, and assume that the influence of the contextual environment on children differs across children due to varying individual and family characteristics (Van Horn et al., 2009; von Eye & Bogat, 2006). Person-centered methodologies (e.g., cluster analysis, regression mixture models) are consistent with ecological models of child development in that such approaches advocate for attending to socio-contextual risk and protective factors to explain multivarious interactions occurring in the family and broader social environment (Van Horn et al., 2009). Person-oriented frameworks are particularly relevant to the study of children's exposure to IPV because there is great heterogeneity among this population in terms of their IPV exposure severity and the effects of IPV exposure on developmental outcomes (Edleson, 2004). For example, while Kitzmann, Gaylord, Holt, and Kenny's (2003) meta-analysis reported that 37% of children who witness or personally experience IPV have developmental outcomes that are better than or as good as children who do not experience violence in the home, Sternberg, Baradaran, Abbott, Lamb, and Guterman's (2006) mega-analysis showed that children who directly witness IPV are 1.9 times more likely to exhibit internalizing problems and 1.5 times more likely to demonstrate externalizing problems than non-IPV exposed peers. Finally, person-centered frameworks are also important in IPV research because subgroups of children exposed to IPV may demonstrate unique profiles of risk and protective factors that are associated with patterns of PTS and psychopathology symptoms.

Using a cluster analysis (a form of person-centered analysis) of multiple indicators of children's functioning, a few studies have examined profiles of psychological and behavioral adjustment among children exposed to IPV (Graham-Bermann et al., 2009; Grych et al., 2000; Hughes & Luke, 1998; Lang & Stover, 2008; Spilsbury et al., 2008). This sparse but important body of work suggests that between 20% (Graham-Bermann et al., 2009) and 75% (Lang & Stover, 2008) of community-based samples of children exposed to IPV are characterized by resilient and/or asymptomatic patterns of adjustment. In addition, each study reported two to four subgroups of children characterized by patterns of moderate to severe psychopathology symptoms, and by different risk and protective factors (e.g., gender, maternal education, and severity of violence exposure) that uniquely distinguished between patterns of adjustment (Graham-Bermann et al., 2009; Lang & Stover, 2008; Spilsbury et al., 2008). Among the maladjusted profiles identified across these studies, there has been empirical evidence for groups of children characterized by internalizing problems only (Grych et al., 2000; Spilsbury et al., 2008), externalizing problems only (Grych et al., 2000), and co-morbid internalizing and externalizing problems (Graham-Bermann et al., 2009; Grych et al., 2000).

The statistical technique of cluster analysis, however, is characterized by notable limitations (Bergman & Magnusson, 1997; DiStefano & Kamphaus, 2006) such as the lack of statistical indices to guide the researcher's choice of a final solution and unstable classification of clusters when missing variables exist. To address these limitations, a recent study employed latent profile analysis, a more flexible model-based clustering approach that derives clusters, or latent profiles, using a probabilistic model based on relationships between observed class indicator variables. Specifically,