



Regular Article

Examination of protective factors that promote prosocial skill development among children exposed to intimate partner violence

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Abstract

This retrospective cohort study examined prosocial skills development in child welfare-involved children, how intimate partner violence (IPV) exposure explained heterogeneity in children's trajectories of prosocial skill development, and the degree to which protective factors across children's ecologies promoted prosocial skill development. Data were from 1,678 children from the National Survey of Child and Adolescent Well-being I, collected between 1999 and 2007. Cohort-sequential growth mixture models were estimated to identify patterns of prosocial skill development between the ages of 3 to 10 years. Four diverse pathways were identified, including two groups that started high (high subtle-decreasing; high decreasing-to-increasing) and two groups that started low (low stable; low increasing-to-decreasing). Children with prior history of child welfare involvement, preschool-age IPV exposure, school-age IPV exposure, or family income below the federal poverty level had higher odds of being in the high decreasing-to-increasing group compared with the high subtle-decreasing group. Children with a mother with greater than high school education or higher maternal responsiveness had higher odds of being in the low increasing-to-decreasing group compared with the low stable group. The importance of maternal responsiveness in fostering prosocial skill development underlines the need for further assessment and intervention. Recommendations for clinical assessment and parenting programs are provided.

Keywords: Child maltreatment; intimate partner violence; longitudinal; prosocial skill development

(Received 7 October 2022; revised 14 December 2023; accepted 13 January 2024)

Introduction

One of the major developmental tasks for preschool children is prosocial skill development, or capacities for emotional regulation, cooperation, and altruistic behavior, all of which are essential for the cultivation of successful social relationships (Eisenberg et al., 2006). Research has indicated that children with greater prosocial skills – and more positive social relationships – are better able to avoid negative developmental outcomes (Lansford et al., 2006). In general population studies, researchers have identified great variation and distinct developmental trajectories of prosocial skills among young children (Berry & O'Connor, 2010; Kokko et al., 2006; Lamont & Van Horn, 2013; Takahashi et al., 2015). However, little research has examined the variation in prosocial skills over time (e.g., decreasing, increasing, stable low) among young

children exposed to intimate partner violence (IPV), despite prior cross-sectional studies suggesting exposure to IPV as a key risk factor linked to lower prosocial skills among young children (Fantuzzo et al., 1991; Holmes et al., 2015; Howell et al., 2010). Furthermore, it is unknown whether IPV exposure and other co-occurring risk factors affect prosocial skill development over time or what potential protective factors may promote better prosocial skill development among children exposed to IPV. These are important research gaps given that identifying varying patterns of prosocial development and understanding key risk and protective factors associated with the variation in prosocial trajectories among children exposed to IPV can inform intervention design to promote prosocial behaviors among at-risk children. Therefore, this study examined the extent to which the development of prosocial skills varied, how IPV exposure explained the variation in prosocial skill development over time, and the extent to which protective factors (i.e., preschool attendance, maternal warmth, maternal responsiveness, neighborhood safety) and risk factors (i.e., maternal depression, child maltreatment) contribute to variation in the development of prosocial skills.

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Cite this article: Holmes, M. R., Bender, A. E., Yoon, S., Berg, K. A., Duda-Banwar, J., Chen, Y., Evans, K. E., Korsch-Williams, A., & Perzynski, A. T. (2024). Examination of protective factors that promote prosocial skill development among children exposed to intimate partner violence. *Development and Psychopathology*, 1–14, <https://doi.org/10.1017/S0954579424000087>

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Heterogeneity of prosocial skill development

The developmental psychopathology perspective (Sroufe & Rutter, 1984) emphasizes that early experiences set the foundation for later development and that behavior develops through the ongoing interaction between children and their environment. According to this perspective, even when children are exposed to similar environmental experiences (i.e., child maltreatment, IPV exposure), their behavioral outcomes can differ significantly due to variation in their individual constellations of risk and protective factors. For example, it is possible that children who have been exposed to co-occurring child maltreatment and IPV may display different patterns of prosocial skill development because of multiple protective factors present throughout development (Holmes *et al.*, 2019). This would suggest that there may be individual differences in developmental trajectories of prosocial skills. Said differently, there may be distinct subpopulations within the broader population. For example, among children exposed to frequently co-occurring child maltreatment and IPV, it is possible that unique subgroups of children might be observed to share specific patterns, or trajectories, of prosocial skill development over time given the presence of multiple protective factors throughout development (Holmes *et al.*, 2019). This would evidence distinct subpopulations of prosocial skill development, despite similar adverse exposures, within the broader population. As a result of advances in statistical analyses, researchers are able to use person-centered approaches that allow for empirical identification of subgroups based on their patterns of developmental trajectories (Jung & Wickrama, 2008; Muthén & Muthén, 2000). Yet, to the authors' knowledge, no research has examined the variation (e.g., decreasing vs. increasing, high vs. low) in patterns of prosocial development over time among IPV-exposed children or the potential contribution of IPV exposure and protective factors to distinct developmental trajectories of prosocial skills. A life course perspective (Elder *et al.*, 2003) emphasizes that human development is a long-term dynamic process and that individuals' developmental pathways can vary by contexts within which they are embedded. Drawing from the life course perspective, examining the variation or heterogeneity in the developmental trajectories of prosocial development among children exposed to IPV can offer valuable insight into intervention efforts, by pointing out when and in what context divergent trajectories emerge over the life course. For example, if we find that involvement with the child-welfare system is associated with decreasing prosocial skills during the school-age period, then targeted social skills intervention and additional support could be provided to this population during school-age years to promote healthy patterns of prosocial development.

Earlier studies examining the general population have suggested that children's prosocial skill development follows a curvilinear pattern, with development accelerating at different times throughout childhood, specifically between kindergarten and third grade (Berry & O'Connor, 2010; Lamont & Van Horn, 2013). Although these studies indicate that there is heterogeneity in prosocial skill developmental trajectories from kindergarten to third grade, the researchers assumed that there was normal variability across individuals, and therefore estimated a mean trajectory of prosocial skill development. However, the observed variability in a sample may also suggest that there are multiple pathways of development (i.e., distinct subgroups).

To better examine heterogeneous patterns, researchers have more recently used a person-centered approach to identify

subgroups of prosocial skill development. Kokko *et al.* (2006) identified two distinct prosocial skill development trajectories among males between ages 6 and 12; the majority (57%) were in the low declining group and the remaining in the moderate declining group. Lamont and Van Horn's (2013) longitudinal study examining social skills among 6,964 children from kindergarten to third grade identified three classes of social skill development: an ongoing stable trajectory included the majority of the sample (86%), a stable-then-increasing trajectory encompassed about 8% of the sample, and a stable-then-decreasing trajectory included about 6% of the sample. Both curvilinear trajectories were stable during kindergarten then either increased or decreased between first or second grade (i.e., ages 6–7 years old). Takahashi *et al.* (2015) examined prosocial skill development among 1,055 Japanese children between the ages of 2 and 5 and identified three distinct groups, including low to slight increase, sharp increase, and high increase. Interestingly, all three studies found different curvilinear trajectories, which may suggest that normative prosocial skill development may have periods of acceleration, deceleration, or stability over time.

Although general population studies have evidenced heterogeneity in prosocial skill developmental trajectories, it is unknown whether the trajectories in prosocial skill development among the general population hold in a population that has experienced adverse life events (e.g., IPV exposure, child maltreatment). At-risk populations, such as those exposed to IPV, may show a decreasing or consistently low pattern of prosocial skill development resulting from the trauma associated with adverse life experiences, but this has not been empirically investigated. Most general population studies are also limited in that they examined prosocial skill development from kindergarten on, which provides limited understanding of earlier prosocial skill development. Only one study, to our knowledge, examined prosocial skill development among 2 to 5 year olds in a sample of Japanese children (Takahashi *et al.*, 2015). Considering that prosocial skill development begins around the preschool years (e.g., Dunn & Munn, 1986) and that the primary emphasis of preschool is social development, it is important to examine prosocial skill development starting in preschool (age 3) through the early school years.

Effect of IPV exposure and other risk factors on children's prosocial behavior

IPV continues to be a national problem, with more than 1 in 4 women (30 million) and more than 1 in 10 men (12.1 million) reported to have experienced physical violence, sexual violence, or stalking by an intimate partner at least once in their lives (Smith *et al.*, 2018). On average, women who said they were physically assaulted more than once reported victimization occurring over 4.5 years (Tjaden & Thoennes, 2000). Child exposure to IPV is an equally concerning issue. A national survey showed that a quarter of all children under the age of 18 have witnessed a physical assault between caretakers in their lifetime, with more than 6% being exposed in the past year (Finkelhor *et al.*, 2015). There is also a high economic burden associated with IPV exposure, totaling \$55 billion in the form of increased health care costs, increased crime costs, and reduced workforce productivity (Holmes *et al.*, 2018).

Although only a small number of studies have examined the effect of IPV exposure on child prosocial skills, these studies consistently suggest that IPV-exposed children tend to have poorer prosocial skills than non-exposed children. For example, Fantuzzo *et al.*'s (1991) cross-sectional study found that preschool-age

children (i.e., 3–5 years) residing in domestic violence shelters who had witnessed both physical and verbal aggression between their parents demonstrated significantly lower levels of prosocial skills compared with those who had not been exposed to violence. Howell et al. (2010) studied 56 children between the ages of 4 and 6 years from low-income families, all of whom were exposed to IPV during the previous year. They found that the more frequently a child was exposed to IPV in the previous 12 months, the less likely they were to demonstrate competence in prosocial behavior and emotional regulation. Holmes et al. (2015) found a similar, but delayed, longitudinal effect of exposure to IPV on children's prosocial skills through aggression. Children's exposure to IPV was related to significantly more aggression during preschool, which, in turn, was associated with decreased prosocial skills during elementary school, suggesting that exposure to IPV may affect children's prosocial skills over time through other domains of behavior (Holmes et al., 2015).

Studies examining links between children's exposure to violence and their social functioning and adaptation have suggested that youth exposed to violence tend to demonstrate less success in developing, navigating, and maintaining social relationships. Though limited, some family violence research has specifically explored the effects of child maltreatment on children's prosocial skills. In general, cross-sectional studies have identified significant prosocial skills deficits in both preschool-age (Darwish et al., 2001; Fantuzzo et al., 1998) and school-age children (Shonk & Cicchetti, 2001; see also Holosko, 2015) with maltreatment histories. One longitudinal study, following children from birth to 9 years old, found that the more developmental periods characterized by maltreatment, the poorer a child's prosocial skills (Jaffee & Maikovich-Fong, 2011).

Other family-level characteristics have also been identified as risk factors for poorer prosocial skill outcomes. Maternal mental health has been identified as a significant predictor of social-emotional functioning among preschool-aged children exposed to IPV, even after controlling for violence severity or other demographic factors (Howell et al., 2010). Children of mothers with fewer depressive symptoms reported significantly higher prosocial skills than children with mothers with greater depressive symptoms (Howell et al., 2010). Poorer maternal mental health can limit the ways in which caregivers provide attuned and effective parenting (e.g., regulation or social skill modeling) that is essential for prosocial skill development (Howell et al., 2010, 2021). Caregiver education and income, as indicators of socioeconomic status, have also been identified as predictors of child prosocial skill development (Garner, 2006; Hosokawa & Katsura, 2017). Lower caregiver education and income have both been associated with lower child prosocial skill development through financial stress (see Conger et al., 2010) which may then result in more authoritarian or controlling parenting styles that are less conducive to prosocial skill development (Garner, 2006; Howell et al., 2021).

Although this literature is limited, results of these collective studies underscore a similar trend: children exposed to family violence (i.e., maltreatment or IPV) tend to exhibit more prosocial skills deficits than children never exposed to any type of family violence (Bevilacqua et al., 2021; Darwish et al., 2001; Fantuzzo et al., 1998; Howell et al., 2021; Shonk & Cicchetti, 2001). However, due to the limited number of studies examining the specific effect of IPV exposure on children's prosocial skills, further research examining this relationship is warranted.

Protective factors promoting prosocial skills

Factors that promote prosocial skills among children include parent-level factors (e.g., maternal warmth, maternal responsiveness; Howell et al., 2021; Oravec et al., 2008), school-level factors (e.g., preschool attendance; Moore et al., 2015), and neighborhood-level factors (e.g., neighborhood safety; Criss et al., 2009; Howell et al., 2021). Each of these environments – family, school, and neighborhood – provide important experiences and opportunities for children to develop prosocial skills (Criss et al., 2009; Howell et al., 2021). The role of parents in promoting resilience among children with maltreatment histories has been well studied, with a smaller body of literature focusing on parent-level protective factors related to prosocial skill development among IPV-exposed children in particular. Studies have consistently found that positive parenting characteristics (e.g., emotional support, high monitoring/supervision, maternal responsiveness) were associated with higher levels of social skills (e.g., social competence, prosocial skills) and increasing developmental trajectories of prosocial skills among young IPV-exposed children (Howell et al., 2021; Oravec et al., 2008).

Beyond the family environment, preschool also provides an important milieu in which children achieve developmental tasks, including the development of prosocial skills. While the cognitive benefits of preschool attendance are widely recognized (e.g., Bassok, 2010; Geoffroy et al., 2010), positive social and emotional outcomes are also associated with preschool attendance (Moore et al., 2015). Findings from a study of at-risk children ages 3 to 5 years old suggest the importance of preschool duration, coupled with preschool quality, on child social and cognitive development (Hall et al., 2013). Children who attended higher-quality preschools for a longer period of time demonstrated improved social and cognitive development at age 5 when compared with children who attended poorer-quality preschools for a shorter period of time (Hall et al., 2013). Preschool attendance can be particularly beneficial for children who have been exposed to IPV and other early traumatic experiences by providing safe, caring, and predictable caregiving environments necessary for promoting regulation and coping skills (Barfield et al., 2012; Perry, 2002). The implications of these findings are meaningful in both the short and long term; preschool attendance is associated with overall social competence and school readiness and is consequential for future scholastic success, academic achievement, and overall positive social development (Arnold et al., 2012; Clements et al., 2004).

Neighborhoods also offer important contexts for a child's social development; neighborhood environments may directly (e.g., community violence exposure) or indirectly (e.g., via increased maternal stress) affect a child's development (Criss et al., 2009; Howell et al., 2021). Direct associations between neighborhood characteristics and child adjustment outcomes have been observed; low perceived neighborhood dangerousness in early childhood was significantly related to higher social skills during adolescence (Criss et al., 2009), whereas more neighborhood problems were associated with physical aggression and other externalizing behaviors among children throughout early and middle childhood (Kim & Glasgow, 2018; Pei et al., 2022; Romano et al., 2005). Neighborhood dangerousness and maternal-level factors (e.g., maternal depressive symptoms) have been found to be significantly correlated, lending support to the assertion that neighborhood factors may contribute to parenting stress and have indirect effects on child development (Criss et al., 2009).

Current study

Framed by the developmental psychopathology perspective, this study aimed to (a) examine the extent to which the development of prosocial skills varies in a sample of child welfare-involved children, (b) explore how IPV exposure explains the variation in prosocial skill development over time, and (c) examine the extent to which protective factors (i.e., preschool attendance, maternal warmth, maternal responsiveness, neighborhood safety) promote prosocial skill development while controlling for risk factors (i.e., maternal depression, child maltreatment, family income, maternal education). We hypothesized that distinct trajectories of prosocial skill development would be identified, that IPV exposure would be associated with group membership in the decreasing prosocial skill trajectories, and that protective factors would be related to group membership in increasing prosocial skill trajectories.

Method

For this retrospective cohort study, we conducted secondary data analyses using the National Survey of Child and Adolescent Well-Being (NSCAW-I), a United States national longitudinal study designed to examine outcomes of children referred to child protective services (CPS) for abuse or neglect between October 1999 and December 2000. Caregivers, children, teachers, and caseworkers were interviewed at five time points after the close of the CPS investigation: baseline, 12, 18, 36, and 59–96 months (Dowd *et al.*, 2002). While all children were investigated for maltreatment, not all children had substantiated cases. This study was approved by the Case Western Reserve University Institutional Review Board.

Sample

The study sample included 1,678 children between the ages of birth and 5 years at baseline who were not removed from their home following investigation and who lived with their biological mother. At the fifth time point, children were between the ages of 5 and 10 years old.

Measures

Child prosocial skills

The Social Skills Rating System (SSRS) measured the caregiver's perception of the child's prosocial skills related to four domains: cooperation (e.g., follows household rules, works well with family members), assertion (e.g., asks for help from an adult, stands up for themselves when treated unfairly), responsibility (e.g., respects the property of others, is well-behaved when unsupervised), and self-control (e.g., resolves disagreements calmly, makes a compromise during a conflict; Gresham & Elliott, 1990). The SSRS contained 39 items for children 3 to 5 years old and 38 items for children 6 to 10 years old. Items were on a 3-point Likert scale (1 = *never*, 2 = *sometimes*, 3 = *very often*). Scores were summed and then standardized based on percentiles for a normative sample. Internal consistencies in the current study for children 3 to 5 years old for all time points ranged from 0.89 to 0.90, and from 0.80 to 0.88 for children 6 to 10 years old.

Exposure to IPV

IPV occurring in the home was measured by the physical assault subscale of the Conflict Tactics Scale (CTS; Straus, 1979), which assessed the female caregiver's experience with physical violence perpetrated by her partner (9 items; e.g., pushed, slapped, choked,

threatened with a knife or gun). Response categories ranged from 0 (*never*) to 6 (>20 times), indicating the frequency of behavior in the past year. Internal consistency ranged from .75 to .83 across time points. We then coded IPV as either having been experienced (1) or not (0). An IPV exposure timing variable was created by recoding IPV exposure based on the child's developmental stage in which the IPV exposure occurred. Erikson's stages of psychosocial development were used to identify three developmental stages: infancy/toddlerhood (0–2 years); preschool (3–5 years); and school age (6–13 years). For each developmental stage, IPV exposure variables were coded as *yes* (1) or *no* (0).

Protective factors

Preschool attendance was reported by the mother who indicated the current grade of the child. For children who were ages 3 to 4 and whose mother indicated that the child was in nursery school/preschool/Head Start, the child was coded as *attended preschool* (1). If the caregiver indicated the child was not in school at age 3 to 4, the child was coded as *did not attend preschool* (0).

We measured maternal warmth as the quality and quantity of emotional support provided by the mother in the home environment of children from birth to 10 years. The Home Observation for Measurement of the Environment (HOME; Caldwell, & Bradley, 1984) was used to obtain information through observations by a member of the research team. The maternal warmth subscale included seven questions (e.g., caregiver spontaneously praised child at least twice) for children less than 3 years and seven questions (e.g., caregiver caressed, kissed, or hugged child at least twice) for children aged 3 to 5 years and 11 months. Internal consistency ranged from .62 to .68 for all maternal warmth subscales across time points. Items were scored as *yes* (1) if present or *no* (0) if not present. Items were summed and then converted to *z* scores. Higher *z* scores indicate a higher level of maternal warmth. The earliest measurement of warmth was used.

Maternal responsiveness was measured by the Cognitive/Verbal Stimulation subscale in the shorter version of the Home Observation for Measurement of the Environment (HOME-SF; Caldwell, & Bradley, 1984), which assesses the quality and quantity of cognitive stimulation that children receive in the home environment from birth to 5 years. Specific caregiver behaviors or physical conditions in the home were reported by mothers and also observed by the researchers. The Cognitive/Verbal Stimulation subscale (9 items for 0–2 year olds, 14 items for 3–5 year olds) includes questions and observations about the physical environment (e.g., Is child's play environment safe?) and presence of stimulating materials and activities for the child (e.g., How often do you read stories to child?). All items were coded as *yes* (1) and *not present* (0). Items were summed and then converted to *z* scores. Higher *z* scores indicate a higher level of cognitive/verbal stimulation. Cronbach's alphas ranged from .71 to .74. The first reported score (i.e., earliest measurement) of maternal responsiveness was used.

We measured mothers' perceived community environment with the Abridged Community Environment scale (Furstenberg *et al.*, 1999) used in the National Evaluation of Family Support programs. The scale consists of nine items that ask mothers about current problems in their neighborhoods and how their own neighborhood compares with others. All nine items were reverse-coded so that higher scores on this scale indicate higher perceived neighborhood safety. We conducted an exploratory factor analysis, using principal axis factoring with Varimax rotation, to assess the dimensionality of the community environment scale. Using the

Kaiser-Guttman rule (initial eigenvalues >1: factor 1 = 4.35, factor 2 = 1.26) and scree-plot inspection, two factors were retained and rotated. All nine items demonstrated acceptable primary factor loadings $\geq .40$ (range: .51 to .80). Based on the factor analysis results, two subscales (subscale 1: current problems and safety issues in the neighborhood, subscale 2: relative neighborhood safety) were created and used in the analysis. Cronbach's alphas were acceptable for both subscales (subscale 1: .84, subscale 2: .78).

Risk factors

Maternal depression was assessed by the presence of a major depressive episode in the past year using the Composite International Diagnostic Interview Short Form (CIDI-SF; Kessler & Üstün, 2004). Having a major depressive episode was measured by three qualifying items (i.e., whether, in the past year, the caregiver has felt sad, blue, or depressed for at least half a day, almost every day, for a total duration of 2 or more weeks) followed by five symptom questions (i.e., weight change, trouble sleeping, difficulty concentrating, feelings of worthlessness, thoughts about death) based on the *DSM-IV* criteria for a major depressive episode (American Psychiatric Association, 2000). Responses were coded as *having a major depressive episode in the past year* (0) or *not having a major depressive episode in the past year* (1). Concordance with clinical diagnoses has been reported to range from .76 to .84 (Janca et al., 1992).

Previous CPS involvement was reported by the CPS caseworker and coded as *having a previous maltreatment investigation* (1) or *not having a previous maltreatment investigation* (0). Substantiated maltreatment was reported by the CPS caseworker regarding the outcome of the most recent maltreatment investigation. Responses were coded as *the case being substantiated* (1) or *the case not being substantiated* (0).

Control variables

Child characteristics included the child's gender and race as reported by the caregiver at Wave 1. Caregiver/family characteristics reported by the caregiver at Wave 1 included caregiver's age, education, and family income. We coded caregiver education into two categories: *less than high school diploma* (0) or *high school diploma or more* (1). Family income reported by the caregiver at each wave was recoded to indicate *yes* (1) or *no* (0) as to whether the family income was below the federal poverty level at any time during the study.

Analysis approach

We used a two-stage approach to test hypotheses because of the complexities of fitting cohort-sequential growth mixture models (CS-GMM) and the importance of aligning with the life course perspective of prior studies of child and human development (Li et al., 2001; McDermott & Nagin, 2001; Muthén et al., 2003; Muthén, 2001; Nagin & Land, 1993; Nagin et al., 1995). First, the CS-GMM (i.e., without IPV exposure and protective and risk covariates) was fitted to determine the number of distinct trajectory groups. As an extension of latent growth curve modeling, growth mixture modeling (GMM) allows for identification of subpopulations within a larger population to examine the mean trajectories, including and testing the effect of linear, quadratic, and cubic factors, and individual variation across and within the subpopulations (Gunzler et al., 2021; Jung & Wickrama, 2008; Muthén, & Muthén, 2000; Ram & Grimm, 2009). CS-GMM advances current GMM analyses by allowing for cohorts of

children based on developmental stage to be used to determine the distinct trajectory groups. Cohort-sequential methods have important advantages in longitudinal research, particularly in research involving children (Baer & Schmitz, 2000; Gunzler et al., 2021).

Although prior work has extended latent growth curve models to include a cohort-sequential component (Muthén, & Muthén, 2000), this study is the first to extend the CS-GMM framework to child development of prosocial skills, in which trajectories are estimated as a latent categorical variable (Vanhalst et al., 2013). As in prior CS-GMM studies of mental health, substance use among adults and academic functioning of maltreated children, we implemented a model using the latent class growth analysis framework (Holmes et al., 2017; Jung & Wickrama, 2008; Nagin, 1999). The number of latent trajectories was determined by conducting analyses with between two and six trajectories and examining classification quality (entropy), model fit, parameter estimates and visualizations of the estimated group and individual values (Bayesian information criterion; BIC; Reinecke, 2006). For the second stage, we conducted multinomial logistic regression to assess whether IPV exposure and protective factors significantly predicted the log odds of prosocial skills trajectory group membership. Guided by developmental psychopathology perspective (Sroufe & Rutter, 1984) that emphasizes that early experiences set the foundation for later development and that behavior develops through the ongoing interaction between children and their environment, we compared models that had a similar starting point at age 3 but then varied in trajectory. In order to gain a better understanding of what contributes to these differences, risk and protective factors were then examined to identify the extent to which each factor contributed to the differentiation of prosocial skills across these groups of children. The model included control variables, IPV exposure variables, risk factor, and protective factor variables. For all analyses, missing data were handled using listwise deletion.

Results

Sample demographics

Child participants ranged in age from birth to 5 years old, with a mean age of 1.7 years ($SD = 1.72$) at baseline. Trajectories for prosocial skills were estimated between the ages of 3 to 10 years old. Over half of the children (53.00%) were male, 53.72% were white, 32.28% were Black, and 19.03% were Hispanic/Latinx. Among caregivers, the mean age at baseline was 25.86 years old ($SD = 6.52$) and approximately half were white (51.80%). Nearly a third (61.30%) of caregivers received a high school diploma/GED or higher level of education, and 28.10% reported a major depressive episode within the past year. A majority of participants (77.40%) reported family income below the federal poverty line. Table 1 presents the study sample demographics and Table 2 presents bivariate results for study variables and prosocial skills.

Trajectories of prosocial skills

Table 3 displays the model fit comparisons for a number of prosocial skills trajectories. In the CS-GMM, entropy was greater than 0.70 for all of the models (Reinecke, 2006). BIC decreased with each additional trajectory added. Although the BIC was lowest for the model with five trajectories, the addition of a fifth trajectory resulted in very small subgroup sample sizes (<5% of the total sample) and unstable solutions. Therefore, we concluded that the

Table 1. Sample demographics ($N = 1,678$)

Variable	M (SD) / %
Child characteristics	
Age at baseline (years)	1.69 (1.72)
Male	53.00
Race	
Black	32.28
White	53.72
Other	14.00
Hispanic/Latinx	19.03
Mother characteristics	
Age in years	25.86 (6.52)
Race	
Black	26.14
White	55.65
Other	18.21
Hispanic/Latinx	14.80
Education - highest degree	
<High school equivalency	38.70
High school diploma or GED	45.70
>High school diploma	15.60
Major depressive episode	
Below poverty line	77.40

four-trajectory model was the optimal solution. Further analyses were based on the four-trajectory model.

The resulting four trajectories of prosocial skill development are shown in Figure 1. Notably, while a 5 trajectory model (see Table 3) showed improved BIC, the 5th estimated class in this model included out of range (negative) estimated parameter values, suggesting an inappropriate model solution. In addition, the shape and interpretation of the 4 classes from the 4 class model were nearly identically reproduced in the 5 class model except that the “increasing to decreasing” class separated into to nearly identical inverted-U trajectories shapes (as in Figure 1), with one of these simply shifted to the left slightly. Thus extracting trajectories beyond 4 is overfitting the underlying developmental processes in the sample (see Supplemental Table 1 for average latent class probabilities for most likely latent class).

Two identified groups had children who started with low prosocial skills but then diverged as the children aged. Of these, one group of children started low and remained low in prosocial skills over time (low stable group, 34.3%), and the other group of children started low but increased and then decreased in prosocial skills over time (low increasing-to-decreasing group, 15.6%). The other two groups included children who started with high prosocial skills but then diverged as they aged. One group of children started high and then subtly decreased in prosocial skills over time (high subtle-decreasing group, 33.1%) and the other group of children started high but decreased then increased in prosocial skills over time (high decreasing-to-increasing group, 17.0%). The four trajectories in the model each have a clear substantive interpretation and differ from the other classes.

Factors predicting trajectories of prosocial skills

Table 4 summarizes the results of the multinomial logistic regression analyses that examined IPV exposure timing and protective factors as focal predictors of membership in the prosocial skills trajectory groups. As a result of the natural grouping of trajectories during toddlerhood as displayed in Figure 1, the same multinomial logistic regression was run twice using a different reference group. The model was first run using the high subtle-decreasing group as the reference group. The high decreasing-to-increasing group was compared with the high subtle-decreasing group to examine the factors associated with children’s divergent paths of prosocial skills over time. The model was then run a second time using the low stable group as the reference group. The low increasing-to-decreasing group was compared with the low stable group to examine the factors associated with children’s improving then declining (versus consistently low) prosocial skills over time.

High decreasing-to-increasing group compared with high subtle-decreasing group

Children with a prior history of CPS involvement had approximately 1.6 times higher odds of being in the high decreasing-to-increasing group, compared with the high subtle-decreasing group (OR: 1.58, 95% CI: 1.11–2.24, $p = .012$). Preschool-age IPV exposure and school-age IPV exposure also significantly predicted membership in the high decreasing-to-increasing group; children who were exposed to IPV during the preschool or school-age period had approximately 1.7 times higher odds of being in the high decreasing-to-increasing group, compared with the high subtle-decreasing group. Family income below the federal poverty level significantly increased the likelihood of membership in the high decreasing-to-increasing group, compared with the high subtle-decreasing group, while controlling for exposure to IPV and other confounders (OR: 1.79, 95% CI: 1.15–2.79, $p = .010$).

Low increasing-to-decreasing compared with low stable group

Children who had a mother with greater than high school education had 1.66 times higher odds of being in the low increasing-to-decreasing group, compared with the low stable group (OR: 1.66, 95% CI: 1.13–2.43, $p = .010$). Maternal responsiveness increased the odds of membership in the low increasing-to-decreasing group by 1.45 times, compared with the low stable group (OR: 1.45, 95% CI: 1.18–1.76, $p < .001$).

Discussion

This study examined the patterns (i.e., heterogeneity) of prosocial skill development in a sample of children reported to CPS for abuse or neglect, how IPV exposure may explain the variation in prosocial skill development, and the extent to which protective factors (i.e., preschool attendance, maternal warmth, maternal responsiveness, neighborhood safety) and risk factors (i.e., maternal depression, child maltreatment) contribute to variation in the development of prosocial skills.

Heterogeneity in prosocial skills

While person-centered approaches (Jung & Wickrama, 2008; Muthén & Muthén, 2000) are increasingly being used to examine prosocial skill development in general population research (Kokko et al., 2006; Lamont & Van Horn, 2013), this study is the first to examine prosocial skill development in an at-risk sample starting

Table 2. Bivariate results for study variables and prosocial skills

		%	Preschool-age prosocial skills			School-age prosocial skills		
			<i>M</i> (SD)	<i>t</i>	<i>p</i>	<i>M</i> (SD)	<i>t</i>	<i>p</i>
Infant/toddler IPV exposure	No	70.95	90.86 (.43)	2.52	.0118	91.43 (.52)	-0.21	.8282
	Yes	29.05	88.80 (.69)			9.167 (.94)		
Preschool-age IPV exposure	No	75.08	90.75 (.45)	2.08	.0379	92.21 (.57)	2.38	.0174
	Yes	24.92	89.04 (.61)			89.81 (.77)		
School-age IPV exposure	No	87.83				92.21 (.51)	3.11	.0019
	Yes	12.17				88.62 (1.01)		
Previous CPS involvement	No	65.06	91.02 (.47)	2.72	.0065	92.33 (.60)	2.29	.0220
	Yes	34.95	88.93 (.58)			90.17 (.71)		
Substantiated maltreatment	No	51.50	90.71 (.52)	1.34	.1800	91.97 (.66)	0.79	.4283
	Yes	48.50	89.69 (.56)			91.20 (.69)		
Below poverty level	No	22.62	93.72 (.78)	4.97	.0001	94.95 (.93)	3.99	.0001
	Yes	77.38	89.33 (.41)			90.51 (.52)		
Maternal depression	No	71.87	90.39 (.44)	0.27	.7813	92.27 (.54)	2.45	.0143
	Yes	28.13	90.16 (.68)			89.79 (.87)		
Preschool attendance	No	56.58	89.43 (.51)	-1.20	.2265	91.19 (.70)	-0.46	.6462
	Yes	43.42	90.34 (.56)			91.64 (.67)		
			<i>M</i> (SD)				<i>r</i>	<i>p</i>
Maternal warmth			5.66 (1.52)				.126	.0001
Maternal responsiveness			7.73 (2.69)				.1980	.0001
Less neighborhood problems			12.98 (2.59)				.0713	.0047
Relative neighborhood safety			8.55 (2.27)				.1152	.0001

Note. Preschool age = 3 to 5 years old; school age = 6 to 10 years old; standardized scores were used for bivariate analyses of prosocial skills; raw scores were used for correlation of maternal warmth, maternal responsiveness, less neighborhood problems, and relative neighborhood safety.

Table 3. Model fit comparison for number of prosocial skills trajectories ($N = 1,678$)

# of Classes	Free Param	Entropy	Log Likelihood	BIC	Adj BIC
2	15	0.909	-12375.494	24862.368	24814.715
3	20	0.822	-12238.760	24826.026	24762.489
4	25	0.814	-12280.495	24746.625	24667.203
5	30	0.800	-12232.804	24688.368	24593.062

in toddlerhood. Results of this study indicated that there is variation in the development of prosocial skills, as evidenced by our identification of distinct subgroups within a large sample of CPS-involved children. Similar to general population studies (Kokko et al., 2006; Lamont & Van Horn, 2013; Takahashi et al., 2015), we identified curvilinear paths that had increasing, decreasing, or stable periods of prosocial skill development. Specifically, four diverse pathways of development over time were identified. It is important to note that while four groups were identified, there were two distinct starting points for 3-year-olds. Approximately half of the sample started with high prosocial skills

while the other half of the sample started with low prosocial skills. However, the two initial groupings diverged wherein some children experienced a curved developmental path and others either remained low or subtly decreased in prosocial skills over time. In order to gain a better understanding of what contributes to these differences, risk and protective factors were examined to identify the extent to which each factor contributed to the differentiation of prosocial skills across these groups of children.

Risk factors

IPV exposure and prior CPS involvement

IPV exposure was examined to determine whether certain time points of exposure during a child's development were related to patterns of prosocial skill development. Results indicated that children who were exposed to IPV during the preschool- or school-age period had nearly two times higher odds of being in the high decreasing-to-increasing compared with the high subtle-decreasing group. Children with prior history of CPS involvement were also more likely to be in the high decreasing-to-increasing group compared with the high subtle-decreasing group. This means that while half of the children in the sample at age 3 were high functioning, about 34% of those children (16.9% of total sample) began to decrease in prosocial skills between the ages of 4 to 7 and then experienced an increase in prosocial skills between ages 8 to 10. While few previous studies have examined the effect of IPV

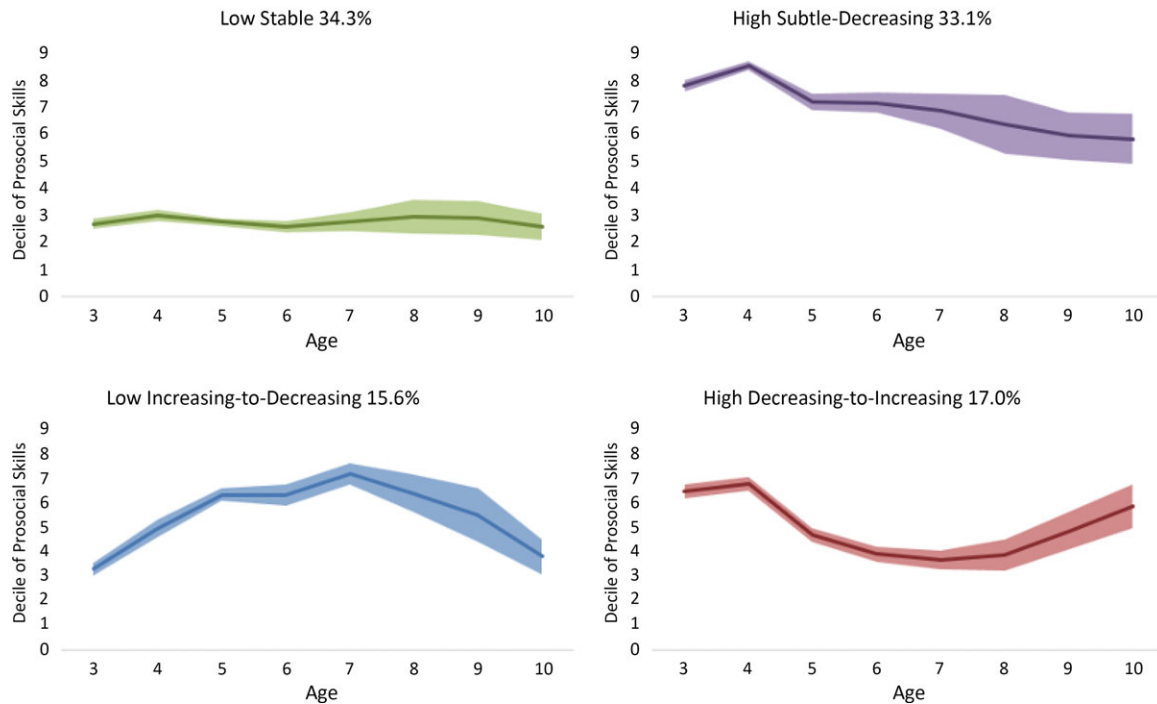


Figure 1. Developmental trajectories of prosocial skills ($N = 1,678$).

exposure on prosocial skills, the results of the current study do align with past research; both Fantuzzo et al. (1991) and Howell et al. (2010) found that children who had been exposed to IPV during the preschool years had significantly lower levels of prosocial skills compared with non-exposed children. Additionally, previous general population research has indicated that children have a curvilinear trajectory of prosocial skill development including periods of acceleration, deceleration, or stability over time (Kokko et al., 2006; Lamont & Van Horn, 2013; Takahashi et al., 2015).

Although limited research has examined the effects of co-occurring IPV exposure and prior CPS involvement on prosocial behavior in children, studies have indicated that children who experienced maltreatment during either the preschool-age (Bevilacqua et al., 2021; Darwish et al., 2001; Fantuzzo et al., 1998) or school-age years (Shonk & Cicchetti, 2001) exhibit significantly fewer prosocial skills than children with no maltreatment history (see also Holosko, 2015). These findings corroborate the current finding that links prior CPS involvement to decreasing prosocial skills during preschool and early school years. In other words, those children in the current study who had a prior CPS case had at least two instances of alleged maltreatment. While it is unclear whether both of the cases were substantiated, it is possible that these children also experienced multiple developmental periods in which they were maltreated, aligning with the results of Jaffee and Maikovich-Fong's (2011) longitudinal study finding that the greater number of developmental periods characterized by maltreatment, the poorer a child's prosocial skills.

Trauma symptoms may be one possible explanation for the observed decrease in prosocial skills among children exposed to family violence. It is widely recognized that empathy (i.e., feeling as the other feels) and sympathy (i.e., feeling concern for the other) are major determinants of prosocial skills (Eisenberg & Miller, 1987; Yu et al., 2020). However, young children who have been

exposed to IPV may have difficulty empathizing and attending properly to social cues due to poor role modeling by caregivers, intrusive trauma symptom thoughts, and lower emotional regulation skills (Bender et al., 2022; Margolin, 2005; Rossman et al., 2000). This difficulty in empathizing and sympathizing, particularly during the preschool-age time period when such responses begin to develop, may explain the poorer prosocial skills in children who have been exposed to IPV.

During the preschool years, teachers tend to display more warmth to students and emphasize social development (Hatfield et al., 2016; Ladd & Coleman, 1997). However, starting in kindergarten and through the early school years, teachers emphasize cognitive development and may spend less time fostering social development. This shift in emphasis from social development to academic skills has been reported as one of the most challenging aspects of the preschool-to-kindergarten transition (Kiuru et al., 2015; Ladd & Coleman, 1997). For children exposed to IPV, this transition may be more difficult because of the additional demands placed on children to get along with their peers and perform academically once they enter kindergarten (Kiuru et al., 2015).

Poverty

Results indicate that children who had family income below the federal poverty level had 1.8 times higher odds of being in the high decreasing-to-increasing group compared with the high decreasing group. Although prior research has not examined the specific interrelationships between IPV exposure, child poverty, and prosocial skills, findings from the present study regarding this initial decrease in prosocial skills do support previous research on the link between child poverty and social-emotional skills (Hosokawa & Katsura, 2018; Lichter et al., 2002; Webster-Stratton & Hammond, 1998). Both cross-sectional and longitudinal studies have demonstrated that persistent child poverty

Table 4. Multinomial logistic regression results for variables predicting membership in prosocial skills trajectory groups

Reference Group	High subtle-decrease			Low stable		
	High decreasing-to-increasing			Low increasing-to-decreasing		
	OR	95% CI	<i>p</i>	OR	95% CI	<i>p</i>
<i>Control variables</i>						
Child's sex (female)	1.076	[.77, 1.51]	.671	.931	[.66, 1.32]	.687
Child's race (White) ^a	.907	[.64, 1.30]	.592	.837	[.58, 1.21]	.343
Mother age (Years)	1.026	[.99, 1.06]	.063	.977	[.95, 1.01]	.132
Mother education (HS plus) ^b	.973	[.67, 1.42]	.888	1.656	[1.13, 2.43]	.010
Married/cohabitating	1.013	[.71, 1.44]	.941	.833	[.58, 1.19]	.321
<i>Risk factors</i>						
Infant/toddler IPV exposure	.737	[.49, 1.11]	.141	.861	[.56, 1.32]	.489
Preschool-age IPV exposure	1.697	[1.13, 2.54]	.010	1.050	[.70, 1.58]	.815
School-age IPV exposure	1.688	[1.02, 2.79]	.041	.700	[.40, 1.22]	.209
Previous CPS involvement	1.575	[1.11, 2.24]	.012	1.079	[.75, 1.57]	.686
Substantiated maltreatment	1.084	[.77, 1.52]	.643	1.383	[.97, 1.97]	.071
Below poverty level	1.789	[1.15, 2.79]	.010	.761	[.48, 1.19]	.239
Maternal depression	1.303	[.90, 1.88]	.155	.999	[.68, 1.47]	.996
<i>Protective factors</i>						
Preschool attendance	1.126	[.86, 1.48]	.389	.819	[.62, 1.08]	.162
Maternal warmth	1.103	[.92, 1.32]	.292	1.047	[.88, 1.25]	.607
Maternal responsiveness	.824	[.68, 1.00]	.054	1.446	[1.18, 1.76]	.000
Less neighborhood problems	.971	[.90, 1.05]	.462	1.040	[.96, 1.13]	.352
Relative neighborhood safety	.950	[.87, 1.04]	.262	.963	[.88, 1.06]	.429

Note. OR = odds ratio. ^aNon-White is the reference group. ^bHigh School (HS) or less is the reference group.

increases a child's risk of less social competence in preschool children (Hosokawa & Katsura, 2018; Webster-Stratton & Hammond, 1998) and exhibiting fewer prosocial behaviors in adolescence (Lichter et al., 2002; Yao & Enright, 2022).

Protective factors

Maternal responsiveness was a significant predictor of children being in either the high subtle-decreasing group or the low increasing-to-decreasing group. The results showed that children whose parents demonstrated responsiveness were 1.4 times more likely to be in the low increasing-to-decreasing group compared with the low stable group. This relationship between maternal responsiveness and child prosocial skill development is consistent with prior literature that underlines the significance of positive parenting in promoting healthy outcomes for IPV-exposed children (e.g., emotional regulation, prosocial skills; Howell et al., 2021).

One possible explanation for these findings is that a positive, healthy attachment relationship with a caregiver is important for the development of prosocial skills (Levendosky et al., 2003; Silke et al., 2018). The availability of a nurturing, supportive caregiver relationship, particularly in the early years, allows for a child to attend to important developmental tasks, including the capacity for emotional regulation and the promotion of social skills (Levendosky et al., 2003). However, IPV exposure may negatively

affect this caregiver-child attachment relationship due to increased maternal depression and post-traumatic stress symptoms (Austin et al., 2019; Chiesa et al., 2018). The findings in this study support earlier work suggesting that the prosocial skill development of IPV-exposed children may be indirectly bolstered by positive, attentive parenting practices (Howell et al., 2021).

As significant attachment figures, caregivers play an important role in modeling prosocial skills through their interactions with and behavior toward their children (Gross et al., 2017; Howell et al., 2021; Levendosky et al., 2003). Caregivers who demonstrate higher levels of responsiveness may be more likely to offer encouragement for prosocial behavior and consistent discipline for problematic behaviors (Gross et al., 2017). In addition, caregivers support children in developing the emotional regulation capacity necessary for healthy social interactions (Eisenberg et al., 2010). For example, one study found that emotional coaching by parents (i.e., promoting a child's emotion regulation skills) buffered the effects of IPV exposure on child adjustment outcomes (e.g., depression; Katz et al., 2020). This attentive parental feedback promotes a child's emotional regulatory capacity and reinforces development of prosocial skills (Eisenberg et al., 2010; Katz et al., 2020). Young children, in turn, may transfer these burgeoning understandings of emotional regulation and prosocial behavior to their interactions with peers and in relationships later in childhood (Caputi et al., 2012; Levendosky et al., 2003).

Strengths and limitations

This secondary data analysis overcomes serious methodological limitations of prior cross-sectional and limited growth modeling approaches (e.g., those that assume a single trajectory that fits an entire population, or those that examine change by studying discrete waves as opposed to using a sequential cohort framework), by using CS-GMM. Although prior work has extended latent growth curve models to include a cohort-sequential component (Muthén & Muthén, 2000), this study was among the first to extend this method to a GMM framework in which trajectories are estimated as a latent categorical variable (Hampson *et al.*, 2013; Holmes *et al.*, 2017; Vanhalst *et al.*, 2013). This modeling approach extends previous studies that have been limited to using longitudinal data at data collection time points only (wave-by-wave models), which can bias results. Cohort-sequential methods have important advantages in longitudinal research by appropriately modeling child development, particularly in research involving children as tremendous growth and development occur as the child ages. This study also extends previous research on prosocial skill development by examining an at-risk sample of children. Finally, the current study fills a gap in current knowledge related to early prosocial skills by examining prosocial skill development starting at age 3. Examining younger children allowed for the identification of earlier patterns of adaptive or maladaptive development. Those divergent patterns were then explained by risk and protective factors. Examination of the potential for heterogeneity of those effects across the different trajectories is novel.

This study has several limitations. Namely, the sample consisted of CPS-involved children, making the results of this study not generalizable to the overall population. This study was also limited to maternal reports of IPV that included only physical assault. Other forms of IPV exposure, such as witnessing emotional abuse, may also have an important effect on children's prosocial skill development, but these associations could not be tested. The majority of measures were reported by the mother, potentially biasing the results. Protective factors were estimated at baseline and could not be examined over time due to the already complicated models, and may have emerged as significant if measured at different developmental periods. This study only examined prosocial skills as a total percentile score and we are thus unable to evaluate whether there is important variation in specific subdomains over the course of development. Further work will be necessary to examine alternate measures, subdomains parameterizations of prosocial skills across developmental stages. Finally, the complexity of CS-GMM analyses and uncertainties about the underlying trajectory prevented the use of an informative a priori power simulation for this analysis. Similarly, power analyses for multinomial logistic models, even if conducted post hoc, require consideration of both events/distributions per variable and total sample size. While a post hoc power analysis is possible for the second stage regression analysis component of our approach, our sample size and the resulting events per variable are both considered large and adequate in the context of simulation studies and such an analysis is unlikely to alter the interpretation of our results (de Jong *et al.*, 2019), as in Table 4 where odds ratios are of moderate strength/effect size.

Research implications

This study identified the heterogeneity of prosocial skill development among children exposed to IPV. Findings illuminate areas

for future research with children exposed to IPV, as prosocial skills are associated with self-regulatory capacities (e.g., emotional regulation, delayed gratification, frustration tolerance), which translate to other important functional domains (e.g., social relationships, behavioral management, cognitive functioning; Denham & Brown, 2010; Flook *et al.*, 2015; Spinrad *et al.*, 2006). Multiple studies among general population and at-risk preschool-aged and elementary school-aged children have found that prosocial skills are associated with improved social relationships (Guo *et al.*, 2018; Miller *et al.*, 2004; Shields *et al.*, 2001), school readiness (Fantuzzo *et al.*, 2005) and academic performance (Guo *et al.*, 2018; Trentacosta & Izard, 2007). Future research should elucidate the mechanisms through which prosocial skills are associated with other domains of functioning in maltreated children, and whether children with low or decreasing prosocial skill developmental trajectories are also at risk for poorer functioning in other developmental domains.

This study examined the effects of risk and protective factors on prosocial skills development in children following trauma exposure. However, further research on how prosocial skills may also indirectly serve as a protective factor by bolstering functioning in other domains is warranted. In particular, prosocial skills may facilitate a child's ability to access social support in the aftermath of trauma exposure (Bender *et al.*, 2022). When children are able to have supportive social relationships with peers, siblings, and other family members, they may receive emotional encouragement and validation and/or tangible assistance or protection. This, in turn, may support a child's ability to attend to their developmental tasks, promote resiliency, and improve outcomes over time (Howell *et al.*, 2021; Lansford *et al.*, 2006).

Furthermore, this study's methodological advancements have clear implications for future modeling of longitudinal data using a sequential cohort framework rather than estimating trajectories based on change across waves of data collection. Future research utilizing novel cohort-sequential data collection methodology, paired with a sophisticated analytical method (cohort-sequential growth mixture modeling analyses, CS-GMM) to identify patterns of adjustment over time, will allow for increased efficiency in examining longitudinal pathways. Specifically, future data collection anticipating the use of CS-GMM analyses can assess fewer participants at each developmental stage, thus maximizing efficiency and minimizing time and costs traditionally associated with longitudinal design.

Practice implications

The prosocial skill development trajectories observed in this sample offer important implications for clinical practice and program development. First, mental health assessments need to comprehensively address child exposure to violence and other forms of early adversity. Assessments must be constructed using a developmentally sensitive approach, examining the range of adversities experienced by children during each developmental period from the prenatal period to present (Perry, 2009). Neural development and social interaction are deeply intertwined because early experiences occur in the context of the rapidly developing brain (van der Kolk, 2005). Research underscores the significance of the timing of violence exposure, as certain developmental windows may leave children more vulnerable to the negative sequelae of exposure to trauma (Graham-Bermann & Perkins, 2010).

Assessments must also be responsive to the range of potential responses to trauma and adverse life experiences in children. Studies have demonstrated that children who exhibit more externalizing behaviors following IPV exposure may more likely be identified for intervention, while children with more internalizing behaviors often remain overlooked (Levendosky et al., 2013). Furthermore, some children may exhibit “sleeper effects,” or show more negative outcomes associated with trauma over time, rather than immediately following violence exposure (Holmes, 2013; Vu et al., 2016). Briggs-Gowan et al. (2010) found preschoolers’ exposure to violence and to non-interpersonal trauma to be significantly related, providing preliminary support that children living in families experiencing IPV may be more likely to experience other types of traumatic events. Caregiver and child psychoeducation can be provided through the assessment process as both a prevention mechanism and an initial intervention. Finally, assessments must also closely examine protective factors that promote resilience, such as maternal responsiveness and healthy caregiver-child attachment relationships. Each developmental period should be carefully assessed for the constellation of available protective factors (Howell et al., 2021; Perry, 2009), offering important insight into potential points of intervention. Identifying and strengthening resources at the individual, family, and neighborhood level will support children in achieving adaptive outcomes (Howell et al., 2021).

Because of the critical protective role of maternal responsiveness in promoting prosocial skill development, interventions for children that integrate parent training and support warrant further research and clinical application. An example of promising interventions are Pre Kids’ Club (PKC) and Kids’ Club (KC) which were designed for IPV-exposed children ages 4 to 6 years old and school-age, respectively (Graham-Bermann et al., 2015). Through participation in these clinical programs, children work on developing skills related to emotional identification, emotional expression, and conflict resolution, while non-offending parents develop effective parenting practices and experience social support (Graham-Bermann et al., 2007). Children from families receiving PKC or KC interventions have been found to exhibit reduced internalizing and externalizing symptoms, and decreased beliefs in the justifiability of violence over time compared with children in the control group (Graham-Bermann et al., 2007, 2015). Although studies have not explicitly examined outcomes related to prosocial skills, these interventions may promote the development of prosocial skills by fostering a child’s capacity for emotional identification/expression and conflict regulation and by cultivating maternal responsiveness.

Supplementary material. The supplementary material for this article can be found at <https://doi.org/10.1017/S0954579424000087>.

Acknowledgements. This document includes data from the National Survey on Child and Adolescent Well-Being, which was developed under contract with the Administration on Children, Youth, and Families, U.S. Department of Health and Human Services (ACYF/DHHS). The data were provided by the National Data Archive on Child Abuse and Neglect.

Funding statement. Research reported in this publication was supported by The Eunice Kennedy Shriver National Institute of Child Health and Human Development of the National Institutes of Health under award number R03HD078416-01A1.

Competing interests. The author(s) declare none.

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