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Conduct Disorder Symptoms in Pre-School Children Exposed to Intimate Partner Violence:
Gender Differences in Risk and Resilience

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Abstract

This study utilized data involving 7,743 children (51.6% boys) aged four from the Avon Longitudinal Study of Parents and Children (ALSPAC) cohort. Children were cross-categorized into four groups: Resilient, Non-resilient, Vulnerable and Competent. Maternal depression and life events, parenting, attachment, social development and temperament were analyzed as dependent variables, and were examined as predictors of group membership. Results showed that resilient boys were less emotional, less active, and more shy and had higher-educated mothers than the non-resilient boys. Resilient girls were less emotional, less active, more shy, less socially developmentally advanced, had more secure attachment to their mothers, and their mothers were better educated and reported more positive parenting strategies than non-resilient girls. Different approaches to intervention may be needed for IPV-exposed preschool boys and girls.

Keywords: ALSPAC, resilience, domestic violence, pre-school, longitudinal, conduct disorder

Conduct Disorder Symptoms in Pre-School Children Exposed to Intimate Partner Violence: Gender Differences in Risk and Resilience

Intimate Partner Violence (IPV), defined as physical, sexual and non-physical forms of abuse between current or former intimate partners (Home Office, 2015), is more likely to occur within married or cohabiting couples who have children than those who are childless (McDonald et al., 2006). Although children under six years of age are disproportionately exposed to IPV (Fantuzzo & Fusco, 2007), few studies have examined the impact of IPV exposure on this population (Howell, 2011), and how the impact of IPV might vary within this population. Evidence shows that a sizeable proportion of IPV-exposed children display resilience in the face of this experience, although there is clear evidence that for a proportion of children this experience leads to dire developmental and behavioral outcomes (Meltzer, Doos, Vostanis, Ford & Goodman, 2009). One meta-analysis of 118 studies found that 37% of children exposed to domestic violence showed no significant developmental problems (Kitzman, Gaylord, Holt & Kenny, 2003). The capacity of some children exposed to IPV to develop with no significant problems illustrates that there are individual differences in resilience within this context (Masten & Obradovic, 2006).

Empirical evidence indicates that IPV-exposed children are generally more likely to exhibit conduct-disorder symptoms than are those children not exposed to IPV (Moylan et al, 2010). Some evidence suggests that this behavioral outcome is more likely among boys than girls (Moffitt, 2001) although this pattern of sex differences has been contradicted in cross-sectional studies (e.g. Kolbo, 1996; Spaccarelli, Sandler & Roosa, 1994). Conduct disorder itself has been found to be a risk factor for later IPV perpetration (e.g. Fang et al, 2010) as well as a mediator of the intergenerational transmission of IPV (e.g. Ehrensaft et al, 2003; Moffitt, 2001). Moreover, conduct disorder has been theorized as characterizing early-onset and life course persistent offenders who are disproportionately responsible for criminal

activity (Moffitt, 1993). Indeed, preschool children who exhibit conduct disorder are at risk of these behavioral problems continuing into adolescence (Campbell, 1995). Consequently, there is a need to understand the protective factors that may mitigate the impact of IPV exposure on the development of conduct disorder symptoms specifically so that interventions may be developed to interrupt these potentially negative longitudinal outcomes.

Rates of childhood resilience to IPV vary between 16-65% across studies (Bowen, 2015; Graham-Bermann, Gruber, Howell, & Girz, 2009; Grych, Jouriles, Swank, McDonald & Norwood, 2000; Hughes & Luke, 1998; Martinez-Torteya, Bogat, von Eye & Levendosky, 2009). This variation appears to be a function of sampling with lower estimates arising from non-clinical samples (e.g. Bowen, 2015). The small body of literature to examine resilience to IPV in childhood is also limited in the extent to which gender differences have been analyzed, due to an over-representation of small samples drawn from clinical populations that compromise statistical power (e.g. Hughes & Luke, 1998; Kolbo, 1996; Martinez-Torteya et al, 2009). Indeed, gender differences have only been explicitly examined in two studies. First, Grych et al (2000) reported no differences in the prevalence of resilient children based on gender in their sample of 228 children identified from a women's shelter, with 31% of their sample identified as having no problems despite witnessing IPV. In contrast, Bowen (2015) found that preschool girls from a community sample were more likely to be categorized as resilient to peer problems, than were boys (16.1% girls, 14.3% boys).

Previous research has suggested that the impact of IPV on children may be influenced by child gender, with studies finding that boys are more negatively impacted by IPV than girls (e.g. Jaffe, Wolfe, Wilson, & Zak, 1986). It has been theorized that boys may be more vulnerable to family stress (Rutter, 1990), and it has been found that boys more often than girls are not protected from family arguments (Hetherington, Stanley-Hagan, & Anderson, 1989), and that violence towards mothers is more likely to spillover into parental aggressions

against sons (Jouriles & Norwood, 1995). Although, it has also been proposed that girls and boys respond differently to violence (Emery, 1982), empirical research is divided between studies that find boys more likely to develop externalizing behavioral problems as a response to IPV exposure (e.g. Cummings, Vogel, Cummings & El-Sheikh, 1989; Sternberg et al, 1993; Wolfe et al, 1986), and studies that fail to find such an association (e.g. Holden & Ritchie, 1991; Katz & Gottman, 1993).

It has also been proposed that there may be gender differences in the processes underlying children's responses to IPV, resulting from the way in which sex roles are modeled within violent and abusive relationships. Birns, Cascardi and Myer (1994) note that when IPV is witnessed by children, they are being exposed to a particular set of sex role behavioral scripts concerning how men and women relate to each other, and how conflict is resolved. Research suggests that children are likely to model the same-sexed parent and consequently it would be expected that boys and girls are influenced by IPV in sex specific ways (Kerig, Cowan & Cowan, 1993). Moreover, it has also been argued that children are socialized in gender-specific ways to cope with adverse circumstances. Zahn-Waxler (1993) argues that boys are socialized to be 'warriors' and to act against adverse circumstance, whereas girls are socialized to be 'worriers' who internalize their concerns.

It is likely that factors identified in previous studies as predictors of resilience to externalizing problems in the context of experiencing childhood IPV are relevant to predicting resilience to conduct disorder traits as measures amalgamate conduct disorder and attention deficit hyperactivity disorder symptoms into one single 'externalizing' behavior profile (e.g. Child Behavior Checklist, Achenbach, 1992). Several protective factors have been identified from the small corpus of studies that have examined resilience to externalizing behavior among children who have been exposed to IPV. However, despite the suggestion by Cummings et al (1994) that important gender differences may emerge not as

mean differences between boys and girls, but as differences in the patterns of relationships between variables, gender differences have rarely been examined directly. Consequently, the present paper explicitly examines the correlates of resilience in preschool children separately for boys and girls.

Identified predictors of resilience to externalizing behavior problems in the context of IPV include: exposure to lower levels of IPV (Grych et al., 2000), perceiving the IPV as less serious (Graham-Bermann et al., 2009; Grych et al., 2000), higher social support (for boys only; Kolbo, 1996), better quality parenting (Kolbo, 1996), low levels of maternal mental health problems (Kolbo, 1996), low depression and PTSD (Graham-Bermann et al., 2009; Martinez-Torteya et al., 2009), easy child temperament (Martinez-Torteya et al., 2009), and more effective family problem-solving capabilities (Graham-Bermann et al., 2009). In relation to race, those studies that did examine it found no association with resilience (Grych et al., 2000; Howell et al., 2010; Martinez-Torteya et al., 2009). It is also likely that attachment may play a role in childhood resilience. Disrupted attachment is a major adverse secondary outcome of IPV exposure (Quinlivan & Evans, 2005). Longitudinal studies have found that the likelihood of child behavioral problems increases with insecure attachment (Kochanska & Kim, 2013; Pasalich, Dadds, Hawes & Brennan, 2012), and yet attachment has been neglected from studies of resilience to conduct disorder arising from IPV exposure during preschool development.

The present study contributes to our understanding of resilience to conduct disorder in the context of IPV by drawing on data from a large longitudinal British community cohort, by examining risk and protective factors during infancy and pre-school development including attachment, and by analyzing results separately for boys and girls. As it is likely that the IPV experienced by women recruited from clinical settings is more extreme than that experienced more typically by women in community samples (Graham-Bermann *et al.*, 2009) there

remains a need to better understand the factors associated with risk and resilience in the context of IPV within community samples. Considering previous research, it was expected that a group of IPV-exposed children would be identified as resilient and that boys would be less likely than girls to be resilient to conduct disorder symptoms due to previous findings that boys are more likely to exhibit externalizing behavior problems when exposed to IPV. In addition, IPV-exposed children were expected to have higher levels of conduct disorder symptoms than non-IPV exposed children, and that the highest levels would be identified in boys exposed to IPV. Family and child characteristics, specifically attachment, parental involvement, and easy temperament were expected to predict resilience, with resilient children having greater attachment to mother, more parental involvement, and higher levels of easy temperament. In contrast, it was expected that non-resilient children would have been exposed to higher levels of risk factors (maternal depression and maternal life events) and have lower levels of attachment to parents, parental involvement, and more difficult temperaments. Ethnicity and maternal education were included as control variables.

Method

Participants and Procedure

The Avon Longitudinal Study of Parents and Children (ALSPAC) cohort study (Boyd et al., 2012) aimed to recruit all pregnant women resident in Avon who expected to deliver a child between 1 April 1991 and 31 December 1992; 14,541 women were enrolled (approximately 85% of the eligible pregnant population). Pregnant women were recruited during pre-natal healthcare clinic appointments. These pregnancies resulted in 14,676 known fetuses, of which 14,062 were live births and 13,988 were alive at 1 year. When excluding children born as part of a multiple birth and those who did not survive beyond the first year there were 13,617 mother-child pairs. Data were collected from pregnancy onwards using questionnaires sent to participants through the post.

Although ALSPAC presents a unique population study, the cohort demographics are not representative of the United Kingdom and there are some local differences between general regional characteristics and the demographics of the recruited cohort. Boyd et al (2012) report that in the 1991 census, 4.1% of the residents of the Avon region identified themselves as 'Non-White' which was lower than the 7.9% national average at that time. In addition, when the characteristics of the children were compared, significantly fewer ALSPAC households were identified as low income relative to national data (6.2% vs. 12.49%). The sample providing complete data for this article were more likely to be white ($OR = 3.27$, 95% CI = 2.60-4.10; $\chi^2 = 117.56$, $p = .000$, $d = .64$), were better educated ($V = .22$, $p = .000$; $\chi^2 = 595.92$, $p = .000$) but were not significantly less likely to have reported domestic violence victimization ($OR = 1.07$, 95% CI = .99 – 1.16, $\chi^2 = 2.95$, $p = .08$) than those who did not have complete data and were therefore excluded from this study. Ethical approval for the study was obtained from the ALSPAC Law and Ethics committee and the Local Research Ethics Committees.

Measures

Intimate partner violence. Postpartum intimate partner violence was assessed at 8, 21 and 33 months. Mothers were asked two questions about whether their partner had been emotionally cruel and/or physically hurt them since the child was born, or referring to the period of the last questionnaire. A woman was considered to have experienced intimate partner violence at each time point if she responded positively to either physical or emotional cruelty (C.f. Flach et al., 2011). The repeated responses were summarized into a variable identifying those women who had and had not experienced IPV from her partner during the first 33 months of their child's life.

Child conduct problems. Child conduct problems were measured at 47 months of age using mothers' responses on the Strengths and Difficulties Questionnaire (SDQ;

Goodman, 1997). Based on community population norms children were categorized into two groups: average conduct problems (score of 0 – 4; approximately 92%; positive adaptation), and high/very high conduct problems (score of 5 – 10; approximately 8%; negative adaptation). The internal consistency of the scale was good ($\alpha = .77$).

Child temperament. Mothers completed the Carey Temperament Scales (CTSs; Carey & McDevitt, 1978) when the child was 6 months and 24 months. Caregivers are presented with a statement describing a certain behavior (for example “She lies quietly in the bath”) and asked to rate how often their child behaves in that way on a scale ranging from 1 (almost never) to 6 (almost always). Higher scores indicate more difficult temperament. Two of the nine dimensions of temperament were selected for analysis *a priori*. ‘Intensity’ and ‘Mood’ were chosen as they correlate most closely with the concept of positive emotionality. The 10-item ‘Mood’ subscale is designed to measure the general tone of affect (whether positive or negative overall), and the 10-item ‘Intensity’ subscale is designed to capture the level of energy with which an emotional response is made. The internal consistency of the Mood subscale was $\alpha = 0.72$ and the internal consistency of the Intensity subscale was $\alpha = 0.73$.

At 38 months, mothers completed the Emotionality Activity Sociability (Buss & Plomin, 1984) temperament survey by postal questionnaire. The 20-item survey comprises four subscales corresponding to traits described by Buss and Plomin (1984): Emotionality (tendency to show distress), Activity (preferred level of activity), Shyness (tendency to be inhibited with unfamiliar people) and Sociability (tendency to prefer the company of others, Bould, Joinson, Sterne & Araya, 2013). High scores were taken to reflect a stronger endorsement of the scale. The internal consistency of the subscales was: Emotionality $\alpha = .84$; Activity $\alpha = 0.77$; Shyness $\alpha = 0.80$; Sociability $\alpha = 0.65$.

Social achievement. At 6 and 24 months' mothers completed the Denver Developmental Screening Test (Frankenburg, Dodds, & Archer, 1992). The social achievement scale comprises 30 items that reflect the extent to which the child engages in cooperative, autonomous and socially appropriate behaviors. Items include 'the child can wash and dry their own hands', 'the child helps mum with simple tasks', 'the child indicates their desires without crying'. High scores reflect more advanced social development. The internal consistency of these items was $\alpha = 0.77$.

Attachment. At 42 months, post-partum, mothers completed a three-item 'reunion warmth' scale the items of which reflect three forms of child behavior that may be present when reunited with mothers after a period of absence. Items are 'My child avoids me when we are reunited', 'My child pushes me away when we are reunited', and the reverse coded 'my child wants a hug when we are reunited'. Mothers reported whether these things happened 'always, sometimes or hardly ever'. High scores are taken to reflect adaptive reunion behaviors theoretically reflective of secure attachment style behaviors (Ainsworth & Bell, 1970). The internal consistency of these items was moderate ($\alpha = .55$).

Parental involvement. At 6, 24 and 42 months, mothers reported on their own and their partner's involvement in childcare activities. Nine items were used to determine the frequency (often, sometimes, rarely, never) with which each caregiver engaged in activities such as 'bathing the child', 'feeding the child', 'cuddling the child'. High scores reflected more frequent interaction. The internal consistency of the scale was $\alpha = 0.73$ (mothers), $\alpha = 0.85$ (fathers).

Maternal mental health. Maternal depressive symptoms were assessed at the same time points as domestic violence using the Edinburgh Postnatal Depression Scale (EPDS, Cox, Holden & Sarkovsky, 1987) a well-established 10-item questionnaire (possible scores ranging from 0 to 30) that has also been validated on non-postpartum women (Cox,

Chapman, Murray & Jones, 1996) and which evidenced good internal consistence ($\alpha = .77$) High scores are taken to reflect the presence of more symptoms of depression.

Stressful life events. A 42-item Life Event Questionnaire was used. The questionnaire lists a number of events which may have brought changes in mothers' life. The scale was completed at the same time points as domestic violence. It asks mothers if any of the events occurred since the birth of the child and to indicate the impact on a five point Likert scale 1) Yes, and affected me a lot; 2) Yes, moderately affected; 3) Yes, mildly affected; 4) Yes, but did not affect me and 5) No, did not happen at all. The items were re-coded such that high scores reflected the presence and greater impact of events. The internal consistency of the scale was $\alpha = 0.59$.

Education and race. Following the example provided by Flach et al., (2011), maternal education was simplified into a three-level variable: low (UK Certificate of Secondary Education (CSE), vocational); medium (CSE at 16) and high (A-levels at 18 or university degree). Due to the high ethnic bias within the sample, participants were categorized as either 'White or non-white'.

Please note that the study website contains details of all the data that is available through a fully searchable data dictionary available from <http://www.bris.ac.uk/alspac/researchers/data-access/data-dictionary/>

Data analysis

In this study, 7,743 cases (56.6% of original sample) were analyzed based on the presence of complete data. Missing data were deemed not to be missing at random and consequently multiple imputation methods were not considered feasible (Sterne et al., 2009). Therefore, analyses were conducted on complete data only. When repeated assessment of the same construct occurred using the same measure, average scores were used in analyses as this enabled more parsimonious models to be computed and reduced multicollinearity between

measures (c.f. Martinez-Torteya *et al.*, 2009). Odds ratio analyses were conducted to determine whether IPV exposure was associated with later conduct problems. Following the logic of Martinez-Torteya *et al.*, (2009) IPV and emotional adaptation (presence or absence of clinical level conduct disorder symptoms) were cross-classified to obtain four groups of children: a) Resilient = exposed to IPV and had lower than clinical levels of conduct disorder symptoms, ; b) Non-Resilient = exposed to IPV and displayed clinical levels of conduct disorder symptoms; c) Vulnerable = never exposed to IPV and displayed clinical levels of conduct disorder symptoms, and d) Competent = not exposed to IPV and had lower than clinical levels of conduct disorder symptoms. Cramer's V analyses were undertaken to determine the association between resilience category membership (resilient, non-resilient, vulnerable, competent) and the binary gender variable (boys/girls), and ethnicity (white/non-White) and mother's education (low, medium, high). A series of 2 (group (Resilient vs Non-resilient, Resilient vs Vulnerable, Resilient vs Competent)) x 2 (gender) MANOVA was conducted on the continuous data in order to determine whether children in each group differed significantly on each of the dependent variables. Where significant difference were identified, effect sizes were calculated using Cohen's *d*, where $d \leq 0.2$ is a small effect, $d \leq .50$ is a moderate effect and $d \geq .80$ is a large effect. For clarity only the effect sizes in instances of significant between-groups differences are reported. To then determine which characteristics were the most important predictors of group membership, logistic regression analyses were conducted with *all* variables entered together as predictors of resilience versus non-resilient, vulnerable and competent groups. These analyses were conducted separately for boys and girls.

Results

DV Exposure and the Odds of Resilience

Across the whole sample, the prevalence of IPV exposure between birth and 33 months was 17.7%, with 18.4% girls and 17% boys exposed to IPV during this period. The odds of experiencing conduct problems were higher in the group exposed to IPV compared to children who were not ($OR = 2.03$ 95% CI: 1.74 – 2.37). Overall, 16.0% of the sample was identified as Resilient, and as expected fewer boys than girls were identified in this category (15.3% boys; 16.7% girls), 1.7% Non-Resilient (1.7% boys; 1.7% girls), 3.1% Vulnerable (3.8% boys, 2.4% girls) and 79.2% Competent (79.2% boys, 79.2% girls). The association between resilience category and sex was significant ($V = .04$, $p = .003$). When this association was examined by gender, the odds of experiencing conduct problems for boys and girls were: OR 2.12, (95% CI 1.62-2.78), and $OR = 2.85$, (95% CI 2.11-3.86) respectively. Boys who were exposed to IPV were 2.12 times more likely to be identified as experiencing conduct problems than non-IPV exposed boys, and girls were 2.85 times more likely to be identified as experiencing conduct problems if they had been exposed to IPV (see Table 1).

Table 1.

Descriptive Statistics by Group and Gender

	Non-resilient		Vulnerable		Competent		Resilient	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
	<i>n = 66</i>	<i>n = 63</i>	<i>n = 151</i>	<i>n = 90</i>	<i>n = 3165</i>	<i>n = 2970</i>	<i>n = 613</i>	<i>n = 625</i>
Race (% White)	97.0	96.8	98.7	98.9	98.6	98.8	97.6	97.9
Maternal education:								
% Low	40.9	35.6	30.0	30.0	22.1	22.9	24.5	21.8
% Medium	34.8	41.3	42.0	37.8	36.5	36.8	35.2	34.9
% High	24.2	22.2	28.0	32.2	41.4	40.3	40.3	43.3
Mood 6-24m	17.77 (6.60)	18.28 (6.61)	18.35 (4.79)	18.81 (5.14)	16.28 (5.02)	16.47 (4.97)	16.57 (5.20)	16.96 (5.16)
Intensity 6-24m	23.43 (5.48)	23.38 (5.73)	20.05 (4.98)	24.61 (4.82)	22.42 (4.76)	22.43 (4.59)	23.01 (4.86)	23.13 (4.36)

CONDUCT DISORDER RESILIENCE

Social development 6 –	17.27 (3.59)	18.86	17.25	18.17	17.11	18.50	17.32	18.58 (3.47)
24 m		(3.72)	(3.45)	(3.01)	(3.34)	(3.47)	(3.61)	
Emotionality 38m	14.85 (4.34)	15.00	13.54	15.48	11.85	12.55	12.37	13.44 (4.26)
		(4.91)	(4.26)	(4.60)	(3.99)	(4.22)	(4.15)	
Activity 38m	23.02 (2.22)	22.17	22.49	21.96	21.75	21.35	21.96	21.36 (3.07)
		(2.88)	(2.76)	(3.20)	(3.14)	(3.09)	(3.18)	
Shyness 38m	11.70 (4.06)	11.90	12.49	11.91	12.40	12.70	11.88	12.43 (3.98)
		(3.82)	(4.09)	(4.10)	(4.09)	(4.07)	(3.97)	
Sociability 38m	18.86 (3.49)	18.56	18.35	19.46	18.32	18.34	17.98	18.55 (3.00)
		(3.56)	(3.29)	(3.22)	(3.14)	(2.98)	(3.10)	
Reunion warmth	5.59 (1.00)	5.54 (.80)	5.54 (.89)	5.59 (.72)	5.67 (.62)	5.70 (.59)	5.61 (.70)	5.69 (.62)
Maternal parenting	24.87 (3.46)	24.72	24.73	26.04	26.05	26.14	25.72	25.86 (3.30)
		(3.89)	(3.63)	(2.61)	(3.01)	(3.08)	(3.18)	
Partner parenting	16.74 (6.46)	17.08	20.74	21.43	22.56	22.46	18.93	18.35 (6.67)
		(6.81)	(5.54)	(5.60)	(4.93)	(4.99)	(6.63)	
Maternal depression	9.24 (5.45)	8.81 (3.98)	6.58 (4.20)	7.11 (4.42)	4.73	4.71 (3.53)	7.81	7.59 (4.27)

CONDUCT DISORDER RESILIENCE

					(3.44)		(4.24)_	
Maternal life events	21.47 (7.94)	22.22	16.46	16.87	14.48	14.57	19.84	20.06 (7.18)
		(7.71)	(6.86)	(6.14)	(5.39)	(5.48)	(7.61)	

Protective and Risk Factors

Resilient vs. Non-Resilient children

Boys versus girls. The multivariate interaction between gender and group was non-significant ($F_{(12, 1319)} = .40, p >.05$) (See Tables 2 and 3).

Boys. Resilience to conduct problems was associated with maternal education ($V = .13, p <.01$). MANOVA analyses identified that relative to non-resilient boys, resilient boys were rated as being significantly lower on emotionality ($d = -.60$), and activity ($d = -.34$). The logistic regression predicting resilient versus non-resilient group membership for boys (table 2) accounted for only 14% of the variance. Increased emotionality and activity reduced the likelihood of resilience, whereas increased shyness increased the likelihood of resilience. In addition, maternal high education more than doubled the likelihood of resilience.

Girls. Resilience to conduct problems was associated with maternal education ($V = .11, p <.02$). MANOVA analyses revealed that resilient girls had mothers who reported significantly lower levels of depression than did the mothers of non-resilient girls ($d = -.29$), and fewer life events ($d = -.30$). In addition, their mothers rated their temperaments as being significantly lower on emotionality ($d = -.38$), as less active ($d = -.27$) and their mood as more positive ($d = -.25$) than non-resilient girls. In addition, resilient girls were rated as experiencing greater interaction with their mothers. The logistic regression model accounted for only 14% of the variance (table 3). Maternal education (high vs. low) increased the odds of resilience, as did increased shyness, attachment to mother and maternal interaction. Conversely, increased social development, emotionality, and activity reduced the odds of girls being categorized as resilient.

Table 2.

Logistic Regression Analyses Predicting Resilience from the Alternative Adaptation Categories for Boys

		Non-resilient	Vulnerable	Competent
		<i>OR</i> (95% CI)	<i>OR</i> (95% CI)	<i>OR</i> (95% CI)
		<i>n</i> = 679	<i>n</i> = 764	<i>n</i> = 3778
Demographics	Race	.80 (.15-4.30)	1.64 (.34-7.95)	1.42 (.70-2.90)
	Maternal education (low vs. med)	1.58 (.83-3.00)	.90 (.55 – 1.47)	.92 (.72-1.23)
	Maternal education (low vs. high)	2.24 (4.08 0 4.64)*	1.50 (.88 – 2.55)	.96 (.73-1.25)
Child temperament	Mood	.98 (.94-1.05)	.94 (.90-0.98)*	.98 (.96-1.00)
	Intensity	1.00 (.95-1.08)	.97 (.91-1.03)	1.01 (.99-1.03)
	Social development	.97 (.86-1.04)	.97 (.91-1.03)	1.03 (.99-1.07)
	Emotionality 38m	.88 (.82-.94)*	.93 (.89-.98)*	.99 (.97-1.02)
	Activity 38m	.86 (.76-.91)*	.93 (.86 – 1.00)*	1.00 (.97-1.04)

	Shyness 38m	1.03 (.95 – 1.12)*	.99 (.93 – 1.05)	.98 (.95-1.00)
	Sociability 38m	1.00 (.91-1.04)	1.01 (.94 – 1.09)	1.01 (.98-1.05)
Attachment	Reunion warmth	1.05 (.75-1.48)	1.16 (.91 – 1.48)	.93 (.80-1.08)
Parenting	Maternal	1.07 (.98-1.16)	1.14 (1.06 – 1.21)*	1.02 (.98-1.03)
	Partner	1.02 (.98-1.07)	.93 (.89 - .96)*	.89 (.88-.91)*
Maternal mental health	Maternal depression 8–33m	.97 (.91-1.04)	1.06 (1.01-1.12)*	1.15 (1.11-1.18)*
Maternal life events	Maternal life events 8–33m	.99 (.95 – 1.02)	1.07 (1.03-1.15)*	1.10 (1.08-1.12)*
Model χ^2		45.94	96.06	666.20
Nagelkerke R ²		.14	.19	.28

Note: * indicates significant associations i.e., the 95% confidence intervals (CI) do not cross 1.

Table 3.

Logistic Regression Analyses Predicting Resilience from the Alternative Adaptation Categories for Girls

		Non-resilient	Vulnerable	Competent
		<i>OR</i> (95% CI)	<i>OR</i> (95% CI)	<i>OR</i> (95% CI)
		<i>n</i> = 688	<i>n</i> = 715	<i>n</i> = 3595
Demographics	Race	.55 (.14 – 2.36)	2.30 (.252-20.98)	1.80 (.87-3.74)
	Maternal Education (low vs. med)	1.33 (.71 – 2.51)	1.53 (.84-2.80)	1.08 (.83-1.41)
	Maternal education (low vs. high)	2.71 (1.27 – 5.76)*	2.14 (1.12 – 4.11)*	1.00 (.76-1.32)
Child temperament	Mood	.94 (.89 – 1.00)	.96 (.90 – 1.00)	.98 (.96-1.00)
	Intensity	1.03 (.96 – 1.11)	.96 (.89 – 1.02)	1.01 (.99-1.04)
	Social Development	.90 (.83 - .99)*	1.07 (.99 – 1.15)	1.03 (.99-1.06)
	Emotionality 38m	.92 (.86 - .98)*	.90 (.85 - .95)*	1.01 (.99-1.04)
	Activity 38m	.86 (.79 - .99)*	.95 (.86 – 1.04)	.98 (.95-1.04)
	Shyness 38m	1.09 (1.00 – 1.18)*	1.05 (.98 – 1.13)*	.95 (.97-1.03)
	Sociability 38m	1.09 (.99 – 1.21)	.96 (.87 – 1.04)*	1.02 (.98 – 1.06)
Attachment	Reunion warmth	1.46 (1.01 – 2.10)*	1.10 (.77 – 1.57)	.99 (.84-1.17)

Parenting	Maternal	1.12 (1.02 – 1.22)*	1.00 (.92 – 1.11)	1.05 (1.04 – 1.04)*
	Partner	1.00 (.96 – 1.05)	.91 (.87 - .95)*	.87 (.85 - .89)*
Maternal mental health	Maternal depression 8 – 33m	1.00 (.94 – 1.08)	1.01 (.95 -1.08)	1.11 (1.08-1.14)*
	Maternal life events	Maternal life events 8 – 33m	.96 (.92 – 1.00)	1.07 (1.03-1.12)*
Model χ^2		45.14	79.38	693.86
Nagelkerke R ²		.14	.20	.29

Note: * indicates significant associations i.e., the 95% confidence intervals (CI) do not cross 1.

Resilient vs. Vulnerable children

Boys versus girls. The multivariate interaction between gender and group was significant ($F_{(12, 1433)} = 1.80, p = .043$). Specifically, the univariate interaction between gender and group was significant for maternal parenting score only ($f_{(1, 103)} = 9.67, p = .002$). Post hoc tests indicated that within the vulnerable group the females were rated as having significantly greater maternal involvement than males (Male: $M = 24.63, SD = 3.66$; Female: $M = 26.05, SD = 2.62$; $F_{(1, 236)} = 1.98, p = .002$; $d = 1$). In contrast there were no significant differences in the extent of maternal involvement experienced by boys and girls in the resilient group (Males: $M = 25.75, SD = 3.19$; Females: $M = 25.84, SD = 3.31$; $F_{(1, 1214)} = .23, p > .05$).

When group was considered it was found that boys in the vulnerable group were rated as experiencing significantly lower levels of maternal involvement than those in the resilient group (Resilient: $M = 25.75, SD = 3.19$; Vulnerable: $M = 24.73, SD = 3.63$; $F_{(1, 745)} = 14.03, p = .000, d = .31$). For girls, there were no significant differences between the levels of maternal involvement experienced by the resilient and vulnerable groups (Resilient: $M = 25.84, SD = 3.31$; Vulnerable: $M = 26.05, SD = 2.62$; $F_{(1, 705)} = .30, p = > .05$).

Boys. There was a significant association between maternal education and resilience to conduct problems ($V = .10, p < .02$). MANOVA analyses identified that in contrast to vulnerable boys, resilient boys' mothers reported higher levels of depression ($d = .29$) and more life events ($d = .45$). In addition, resilient boys were rated as significantly lower on emotionality ($d = -.28$), and as of less negative mood ($d = -.35$). When these variables were entered into a logistic regression model predicting resilient versus vulnerable group membership, in combination, 19% of the variance was accounted for. The most significant individual predictors of resilient versus vulnerable group membership were mother ratings of child mood, emotionality and activity with lower levels predicting resilience. In addition,

higher maternal interaction increased the likelihood of resilience, whereas increased interactions with her partner decreased the likelihood of resilience. Finally, both increased depression and life events increased the likelihood that boys would be categorized as resilient rather than vulnerable.

Girls. Relative to vulnerable girls, resilient girls had mothers who reported higher levels of life events ($d = .45$). In addition, resilient girls experienced less frequent interaction with their mother's partner ($d = -.47$). Mothers rated resilient girls as having less negative mood ($d = -.36$), and their moods as being less intense ($d = -.36$). They were also rated as being less prone to negative outbursts ($d = -.47$) less sociable ($d = -.30$) than vulnerable girls. When all variables were entered into a logistic regression model 20% of the variance was accounted for. Six variables were identified as significant independent predictors of resilient versus vulnerable group membership. Higher maternal education, increased shyness and increased life events all increased the likelihood of girls being categorized as resilient. In contrast, increased distress proneness (emotionality), increased sociability and increased interactions with mother's partner all decreased the likelihood of girls being categorized as resilient.

Resilient vs. Competent children

Boys versus girls. The multivariate interaction between gender and group was non-significant ($F_{(12, 7217)} = .67, p = >.05$).

Boys. Relative to competent boys, boys who were resilient to conduct problems had mothers who reported higher levels of depression ($d = .86$) and life events ($d = .92$). In addition, resilient boys experienced less frequent interaction with their mother's partner ($d = -.69$). Mothers rated resilient boys as being more prone to distress ($d = .13$), less shy ($d = -.13$), and having more intense moods ($d = .12$). The full regression model predicting resilient versus competent group membership for boys accounted for 28% of the variance. Three

significant independent predictors of group membership were identified. Maternal ratings of partner-child interaction decreased the likelihood of boys being categorized as resilient. In addition, higher maternal depression and higher maternal life events increased the likelihood of boys being categorized as resilient.

Girls. In contrast to competent girls, girls who were resilient to conduct problems had mothers who reported higher levels of depression ($d = .79$) and more life events ($d = .95$). In addition, resilient girls experienced less interaction from both their mothers ($d = -.09$) and their mother's partners ($d = -.77$). Mothers rated resilient girls as exhibiting more intense moods ($d = .15$), more negative mood ($d = .10$) and being more distress prone ($d = .20$). For girls, the full regression model accounted for 29% of the variance, and four significant independent predictors were identified. Both increased maternal depression and life events increased the odds of girls being categorized as resilient rather than competent, as did increased maternal interaction. In contrast, increased interaction with mother's partner decreased the odds of girls being categorized as resilient.

Discussion

This is the first study to explore resilience among IPV-exposed preschool children within a community sample focusing on conduct disorder symptoms specifically. Exposure to IPV was found to more than double the likelihood that preschool children would have conduct problems, and this association was stronger for girls than for boys. As expected, the impact of IPV on children's conduct disorder symptoms was found to be heterogeneous given that a group of resilient children was identified. This finding reflects previous studies that have identified resilience to IPV in the context of internalizing and externalizing problems more generally (Graham-Bermann, *et al.*, 2009; Grych, *et al.*, 2000; Hughes & Luke, 1998; Martinez-Torteya, Bogatet *al.*, 2009). The majority (82.3%) of children exposed to IPV were resilient, supporting the findings of previous studies (e.g. Martinez-Torteya, 2009). Resilient

children had fewer conduct problems than non-resilient groups, and girls were more likely than boys to be identified as resilient (c.f. Martinez-Torteya *et al.*, 2009).

Demographic characteristics did not consistently differentiate groups, whereas individual and family factors did. Consistent with previous studies of resilience to IPV (e.g. Bowen, 2015; Howell *et al.*, 2010, Martinez-Torteya *et al.*, 2009) ethnicity was not found to be relevant to group categorization, although it is acknowledged that this variable was under-specified due to the low frequency of non-White respondents (Boyd *et al.*, 2012) and within-study attrition. It is possible that ethnic or cultural differences may exist which this study was not sensitive to. Future research needs to examine resilience to IPV in minority ethnic groups as well as bi-racial groups, to ensure that recommendations for interventions to increase childhood resilience are sensitive to cultural and ethnic diversity. For boys and girls, having a mother with a good education differentiated the resilient from non-resilient groups, and resilient from vulnerable groups of girls, with in both instances, resilient children having mothers who were better educated. These findings suggest that socioeconomic advantage buffers the impact of risk on the development of conduct disorder symptoms (c.f. Osofsky, 1999), which stands in contrast to the findings of the small number of previous studies of resilience to IPV during childhood (e.g. Bowen, 2015; Kolbo, 1996; Graham-Berman, *et al.*, 2009; Martinez-Torteya *et al.*, 2009). However, more research is needed to determine exactly what aspect of better education influenced resilience as research has shown that socioeconomic disadvantage is an indirect influence on childhood outcomes, mediated by several other factors (e.g. McLoyd, 1998).

Consistent with previous research (Bowen, 2015; Graham-Bermann *et al.*, 2009; Grych *et al.*, 2000; Howell *et al.*, 2010; Martinez-Torteya *et al.*, 2009), maternal depression and life events were both implicated in resilience, but to differing degrees across the categories. For example, maternal depression did not significantly predict resilient versus non-resilient

group membership for either boys or girls. It did however predict resilient versus vulnerable group membership for boys, with increased maternal depression decreasing the likelihood that boys would be categorized as resilient, confirming that vulnerability to conduct disorder in the absence of IPV exposure was associated with increased adversity. In addition, maternal depression significantly predicted resilient vs. competent group membership with increased maternal depression increasing the likelihood of resilient group membership, confirming the necessary association between risk and resilience.

Similarly, life events did not predict resilient versus non-resilient group membership for either boys or girls although higher life events increased the likelihood of resilient versus vulnerable and competent group categorization for both boys and girls. Together these findings show that resilience is linked to lower risk when compared to categories of children for whom IPV is absent. However, when IPV is present neither depression nor life events are associated with resilient or non-resilient group membership. These findings support those of Martinez-Torteya *et al.*, (2009) who found that the levels of maternal life events experienced by mothers of resilient and non-resilient children did not significantly differ, although the levels reported by those who experienced IPV versus those who did not (vulnerable and competent groups) were significantly different. Other previous studies further suggest a uniform influence of maternal depression with IPV-exposed groups reporting higher levels of maternal depression than non-IPV exposed groups (e.g. Graham-Berman *et al.*, 2009).

Family characteristics were inconsistent predictors of resilience. Partner interaction distinguished the resilient group from vulnerable (resilient less interaction) and competent (resilient less interaction) groups for boys and girls, but did not differentiate between resilient and non-resilient groups. This suggests that in contrast to when IPV is absent (vulnerable and competent groups), when IPV is present the likelihood of resilience is increased with lower levels of partner interaction. However, when IPV is present (resilient and non-resilient

groups), paternal interaction does not independently predict resilience for boys or girls. In contrast, maternal interaction predicted resilient from non-resilient (resilient more interaction) and resilient from competent (resilient more interaction) groups for girls, and only differentiated resilient from vulnerable groups (resilient more interaction) for boys. Previous studies have reported that positive parenting plays a role in resilience to IPV (Kolbo, 1996).

Although between-group differences were not significant, in the regression analysis increased reunion warmth predicted resilient group membership in contrast to non-resilient group membership for girls. This suggests that attachment to mothers independently predicts resilience once the shared variance between variables is accounted for. This potentially reaffirms the previous findings of the salience of having a positive relationship with mothers in mitigating the influence of IPV for girls. Non-resilient girls have been raised in violent homes and it is likely that the capacity of these mothers to respond consistently and warmly is compromised by their experiences of IPV (Levendosky et al, 2011). However, this is speculation given that the items were based on child reunion behaviors, rather than parenting style characteristics. It is of note that for boys, even though between group differences were not significant, in the regression analysis reunion warmth was not an independent predictor of resilient group membership. Why similar findings for boys were not identified is difficult to account for, but the findings suggest that positive parenting from both partners in the context of risk promotes resilience in boys and girls, with the behaviors of mothers more influential for girls than boys. These findings suggest that interventions could benefit from improving maternal parenting behaviors and quality of mother-daughter attachment in relationships where IPV is present. In addition, improving parenting skills of fathers may benefit both boys and girls in relationships that are not characterized by IPV and mitigate the onset of conduct disorder symptoms.

As expected from previous studies that characteristics of ‘easy temperament’ were important for resilience (e.g. Martinez-Torteya *et al*, 2009). In contrast to the non-resilient groups, resilient boys and girls were identified as less emotional, less active and more shy, and in addition girls were differentiated on the basis of their social development with resilient girls less socially developmentally advanced, a finding which is counterintuitive, but may reflect the items of the measure which combine aspects of behavioral independence (‘can wash own hands’, with collaborative interpersonal ‘social’ behaviors ‘can play pat a cake’). In contrast to vulnerable boys, resilient boys had more positive mood, were less emotional, and less active. For girls, the resilient group was less emotional, more shy and more sociable than the vulnerable group. None of the temperament variables predicted resilient group membership relative to competent group membership. It has been suggested that greater emotional awareness, in combination with physical maturation and language skills make girls more likely to be resilient to problems generally than boys (Zahn-Waxler, Shirtcliffe & Marceau, 2008). These findings highlight the potential role of social skills and emotion regulation training to promote resilience in IPV exposed preschool children as well as those living in environments characterized by high levels of stress and/or maternal depression.

Limitations

There are several limitations of this study. Although the strongest regression models accounted for approximately 30% of the variance, other, unmeasured variables may also play a role in resilience, and that more expansive modeling is required. For example, researchers have identified empathy and social expressiveness (Luthar, Cicchetti, & Becker, 2000), intelligence, locus of control and self-control (Alvord & Grados, 2005; Masten & Coatsworth, 1998) and self-esteem (Osofsky, 1999) as relevant to resilient development at an individual level. At a family level, although the present study captured parenting and attachment, parental social-competence (Skopp, McDonald, Jouriles & Rosenfield, 2007) has

also been implicated in resilient development. These factors should also be tested within the domain of resilience to IPV.

All variables are based on mother's accounts. Consequently, it is likely that the strength of the regression models is somewhat inflated due to common method variance (Lindell & Whitney, 2001). However, the size of the cohort and age of the children prohibited the collection of independent assessments of behavior and child functioning, although such data would have increased the validity of the findings. Moreover, the children were so young that their own reports would have been unreliable (Martinez-Torteya et al., 2009). It has been found in previous studies based on the Avon Longitudinal Study of Parents and Children (ALSPAC) cohort, that mother ratings of child temperament are not biased by maternal depression (Bould, et al., 2013), and nor are associations between temperament and behavioral problem ratings (Stringaris et al., 2010), and so the extent of common method variance in the present study is unclear. It is possible, however, that even if common method variance is low, social desirability may have influenced the reports. As mothers were gatekeepers to other respondents, partner reports were only available on a limited subsample and hence excluded from the present study.

It is likely that had partner reports been included, the resulting sample would have been even more systematically biased in favor of better-functioning parental relationships, as evidenced by the characteristics of the selective attrition in the sample reported upon herein. It is also unclear from the wording of the questionnaires, whether the 'partner' referred to the father of the child. Whilst this is the largest study of preschool resilience in IPV-exposed children, the sample itself is unrepresentative of the geographic region from which it was drawn (Boyd et al., 2012). Finally, the measure of IPV used is limited by its operationalization through only two items. Specifically, defining IPV through items which ask whether partners have been 'emotionally cruel' to and/or 'physically hurt' mothers might

reduce reporting through perceptions that such behaviors lead to particularly damaging psychological and physical consequences. Although more comprehensive measures of this construct exist that include sexual violence and injury (e.g. Conflict Tactics Scale revised, Straus, Hamby, Boney-McCoy & Sugarman, 1996), items are also included within these measures which represent behaviors that may not be perceived as eliciting the harm inferred by the operationalization of IPV in the present study (e.g. my partner grabbed me). It is recognized that measures which use action-based examples of partner violence lead to higher estimates of partner violence (DeKeseredy, 2000), and through the potential confound of behavior and consequence in the operationalization of IPV in the present study, it is likely that the levels of partner violence reported are lower than those experienced, and this is likely to have contributed to the somewhat modest effects found. Although the mothers reported on their experiences of IPV, the extent of children's witnessing is not clear though it is acknowledged that any exposure to IPV can be harmful to children (Fantuzzo & Mohr, 1999).

Conclusion

Despite these limitations, this study is the largest, prospective longitudinal study of resilience in community based pre-school children that have been exposed to IPV. In addition, its focus on conduct disorder symptoms as the outcome domain makes it unique. The findings suggest some similarities between the factors that promote resilience in this domain, and the broader externalizing behavioral problem domains, and further reinforce the need for holistic family-based interventions that increase the quality of parenting and maternal responsiveness to girls. In addition, women who experience IPV even in the community have mental health needs that require additional support to reduce symptoms, and increase effective coping strategies. Moreover, there is a need for interventions to work with young IPV-exposed boys to increase their emotional awareness and regulate their emotional responses. Such interventions will help to reduce the likelihood of more serious and

entrenched conduct disorder symptoms and potential diagnoses which are known to lead to additional negative developmental outcomes.

Disclosure of Interest The author declares that they have no conflicts of interest.

Ethical Standards and Informed Consent All procedures followed were in accordance with the ethical standards of the ALSPAC Law and Ethics committee and the Local Research Ethics Committees, and with the Helsinki Declaration of 1975, as revised in 2000. Informed consent was obtained from all patients for being included in the study.

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