The Relationship Between Childhood Exposure to Parental Violence and Bullying Behaviours

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Doctorate of Clinical Psychology (DClinPsy)

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Preface

Involvement in bullying, whether perpetrator or victim, is associated with a range of negative life outcomes. Recent estimates have suggested that over a third of all adolescents have experienced bullying at some point in their lives. Whilst most research has focused on school, peer, and community related factors behind this phenomenon, less attention has been paid to the role of family-related processes. The aim of this research is to review the existing literature on the association between childhood exposure to intimate partner violence (IPV) and the perpetration of bullying in schools, and to examine the role of low self-control as a potential mediator between parental violence and adolescent involvement in bullying. This research is presented in two parts: a systematic literature review, and an empirical research paper.

The systematic literature review examined the association between childhood exposure to IPV and bullying perpetration. Searches of relevant databases identified 30 studies that met the inclusion criteria. The methodological quality of the studies was assessed and the findings relating to IPV exposure and bullying perpetration were summarised in a narrative synthesis. Approximately 80% of studies reported a significant association between childhood exposure to IPV and bullying perpetration, with effect sizes typically falling in the small to moderate range. A limited number of studies found that frequency and severity of exposure to IPV increased the risk of bullying perpetration. Methodological quality varied significantly across studies, with longitudinal studies representing the highest quality research. Studies were heterogenous regarding IPV definition, IPV measurement, and bullying measurement. There is an additional need for future research to focus on the role of gender for both IPV aggressors and bullying perpetrators.

In the empirical paper, an observational cohort study was used to explore the mediating role of low self-control on the relationship between parental violence and involvement in bullying, moderated by gender. Archival data from the Montevideo Project on the Social Development of Children and Youths (m-proso) was analysed, involving over 2000 students (mean age 15 years) from 82 different schools from Montevideo, Uruguay. Students completed self-report questionnaires on exposure to parental conflict and corporal punishment, as well as measures of low self-control and whether they had bullied or been bullied in the past year. Findings show that adolescents with higher bullying perpetration or victimisation were more likely to report parental violence at home than adolescents with lower bullying involvement. Furthermore, low self-control fully mediated the association between parental conflict and bullying perpetration: adolescents who reported exposure to parental conflict were more likely to have lower self-control, which effectively increased their risk of involvement in bullying. Gender did not moderate the mediating role of low self-control, although did moderate the direct relationship between parental conflict and bullying perpetration. Despite methodological limitations, this study has clinical implications for the prevention of child exposure to parental violence and the intervention in bullying behaviours in schools.

This research contributes to the growing literature on the association between parental practices and youth involvement in bullying by first summarising the existing evidence, and secondly adding to the evidence base for understanding the causal mechanisms of this relationship. This research can support families, children's services, and education settings in the early prevention and intervention in family relationships and child bullying behaviours.

Paper 1: Systematic Literature Review

The Perpetration of Bullying Behaviours in Children Exposed to Intimate Partner Violence: A Systematic Literature Review

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This paper was written in accordance with the guidelines for authors for the Journal *Child Abuse & Neglect* (Appendix A). To enable sufficient coverage of the methodology and findings, the word and page count adheres to Cardiff University guidance.

ABSTRACT

Background: Children exposed to intimate partner violence (IPV) at home are more likely to demonstrate aggressive behaviours when faced with social conflicts, including bullying. Childhood bullying perpetration is associated with numerous negative outcomes, including adult aggression, offending behaviours, and violence in romantic relationships.

Objective: The aim of this systematic review was to synthesise the evidence on the association between childhood exposure to IPV and the perpetration of bullying behaviours against their peers.

Methods: A systematic review was completed, in accordance with the PRISMA statement, on IPV and the perpetration of bullying behaviours of children and adolescents (18 years and younger).

Results: A total of 30 studies were included. IPV exposure was significantly associated with bullying perpetration in 80% of studies. The majority of studies reported small to medium effect sizes, with a limited number of studies indicating that frequency and severity of exposure to IPV increased risk of perpetrating bullying behaviours. The evidence for gender differences was inconclusive.

Conclusions: While the current literature base is limited, this review provides evidence that that childhood experiences in the family home have significant consequences for the child's social and behavioural development. It can also help identify children at risk of exposure to violence in the family home.

Keywords: 'intimate partner violence', 'domestic violence', 'child abuse', 'child aggression', **'**bullying', 'systematic review'

INTRODUCTION

Bullying is a pervasive issue in schools: approximately 36% of secondary school students in Wales reported being bullied in 2017 (Hewitt et al., 2019). Victims of bullying are associated with a range of negative life outcomes, including substance abuse, depression and suicidal ideation (Garnefski & Kraaij, 2014; Luk et al., 2010; Reed et al., 2015; Stapinski et al., 2015). However, the negative effects of bullying are not simply reserved for victims of bullying, with recent systematic reviews showing that perpetration of bullying significantly predicts later aggression (Ttofi et al., 2012), offending behaviours (Ttofi et al., 2011) and intimate partner violence (Falb et al., 2011). Therefore, bullying prevention programmes are not only important for the improving psychosocial development of young people but also key in preventing a longer term public health issue.

The causal mechanisms of bullying are multi-faceted and involve the interaction of intrapersonal factors with family, school, community and peer related factors (Álvarez-García et al., 2015; Swearer & Espelage, 2004; Swearer & Hymel, 2015). However, the specific role of family in preventing and reacting to bullying has received less attention than school and peer factors (Bradshaw, 2014).

One theoretical framework that can be used to understand why children develop bullying behaviours is social learning theory (Bandura, 1973; Bandura & Walters, 1977). Social learning theory posits that children develop behaviours through the observation and imitation of role models in their social environment (eg. Parents in the family home). Children exposed to violence in the family home therefore learn to use aggression as a means to resolve social conflicts or socialise at school. As the childs' needs are met through antisocial behaviours, they begin to develop positive beliefs around the use of violence towards others (Gorman–Smith & Tolan, 1998). Furthermore, children with aggressive

parents are less likely to have their feelings validated by their parents and are not provided with the tools to develop empathy with others. As a consequence, the child's emotional needs continue to go unmet, increasing the likelihood that they form an insecure attachment with their caregivers. The absence of a secure attachment base means the child fails to develop appropriate emotion regulation skills and therefore experiences lower inhibitory control; increasing the likelihood of perpetrating antisocial behaviours such as bullying (Farrell & Vaillancourt, 2019).

Bullying differs from other forms of violence – it involves power imbalance, can be pre-meditated, and uses physical as well as relational methods, such as intimidation, threat-making and rumour spreading (Farrington, 1993; Olweus, 1994). This differs from other forms of aggression that may be reactionary such as fighting or property destruction (indicating poor emotion regulation) or more delinquent behaviours such as stealing, drug-taking or truancy (indicating emotion regulation problems, peer pressure or lack of coping skills). In this way, bullying behaviours share a commonality with intimate partner violence (IPV), which is defined as repetitive physical, emotional or sexual aggression between two intimate partners with intent to harm by the Centers for Disease Control and Prevention (CDC) (2019). IPV not only includes physical violence between partners but also the use of control and coercion, such as rumour-spreading about the other partner to the child, threats of harm if the partner seeks help, and forcing the child to watch acts of aggression.

Child witnesses of IPV include those that have visually observed or heard violence, as well as experienced the aftermath of violence, such as seeing parental injuries and emotional distress, property damage, or police involvement in the home (Edleson et al., 2008). Victims include indviduals who have been targeted by the aggressive behaviours of their parents or caregivers. Although in reality children are often witnesses and victims of domestic violence simultaneously, there is inconclusive evidence that suggests each status affects the child

differently compared to unexposed children. Whilst children who are victims as well as witnesses of parental violence exhibit more internalising problems (Sternberg et al., 2006) and externalising problems (Moylan et al., 2010) compared to unexposed children, the differences between victims and witnesses are often not statistically significant (Kitzmann et al., 2003).

Global reports of domestic violence have increased in the wake of the COVID-19 pandemic (Piquero et al., 2021), where people were forced to spend longer periods at home under lockdown orders, effectively increasing contact between perpetrators and victims. However, the rate of police and social services' reports on child maltreatment has declined during the pandemic (Kourti et al., 2021), presumably as school closures and other services accessed by families have reduced the opportunity to identify children at risk. While early evidence suggests that bullying perpetration rates have fallen during the pandemic (Vaillancourt et al., 2021), it is not yet clear whether bullying prevalence will increase once children fully return to school.

In the UK, it has been estimated that just over half of children exposed to IPV are known to statutory children's social care (Co-ordinated Action Against Domestic Abuse (CAADA) (2014). Whilst children who are directly victimised by parent aggression may exhibit injuries that can be identified by teachers, social workers and health professionals, children who witness IPV may be harder to identify due to the lack of physical symptoms. If an association between witnessing IPV and bullying behaviours in schools can be established, it may help services enhance their screening processes for identifying at-risk children.

To the best of the authors' knowledge, only one systematic review has been conducted on the literature linking IPV and bullying perpetration (Voisin & Hong, 2012). This review reported early evidence for a signifcant relationship between IPV exposure and

bullying perpetration, as well as peer victimisation. However, there are several methodological reasons for updating this literature review: a) the search strategy by Voisin and Hong (2012) was restricted to three search engines and utilised variations on only five search terms, b) no assessment of methodological quality was conducted on the selected studies, and c) the review is now ten years old and recent developments in research may provide a more comprehensive overview of the association between IPV and bullying.

The aims of this systematic review were to (i) identify studies that have assessed childhood exposure to IPV and examined the effect on child bullying perpetration, (ii) describe and synthesise these findings accordingly, (iii) examine whether these studies have explored mediating factors that underpin any associations between IPV exposure and child bullying perpetration, (iv) describe the quality of the available evidence, identify study limitations and consider gaps in the existing evidence base, and (v) describe the implications and make research and clinical recommendations.

METHOD

This systematic literature review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement (Moher et al., 2009). A protocol was submitted to the PROSPERO register for systematic reviews (https://www.crd.york.ac.uk/PROSPERO/; registration number CRD42021268123). Details of this protocol for this sytematic review can be accessed at https://www.crd.york.ac.uk/PROSPERO/display_record.php?RecordID=268123.

Search strategy

Electronic searches were completed on 25 August 2021 on the following databases: PsycINFO, the Cumulative Index of Nursing and Allied Health Literature (CINAHL), MEDLINE, Scopus, and Web of Science. Search terms were required to appear anywhere in the text and used the following search string: ("interparental violence" OR "inter parental violence" OR "domestic violence" OR "family violence" OR "marital aggression" OR "marital conflict" OR "interparental conflict" OR "inter parental conflict" OR "partner abuse" OR "abusive partner" OR "wife abuse" OR "husband abuse" OR "IPV" OR "intimate partner violence" OR "marital violence") AND (child* OR adolescen* OR teen* OR youth* OR "young person") AND (bully* OR "school violence" OR bullied OR bullies). Searches were limited to peer-reviewed journals. No limitations were applied to publication date. A manual search of the reference lists of relevant articles was conducted. Backward hand searches were conducted on 29 September 2021.

Selection Criteria

To be included in the review, studies were required to meet the following criteria: (a) reported original quantitative data from observational designs (i.e. longitudinal, cross-sectional or retrospective studies); (b) reported associations between IPV and child bullying perpetration; (c) included a measure of physical, sexual, or psychological IPV; (d) reported outcomes relating to child perpetration of bullying behaviour towards peers at school; (e) IPV was measured at the same or earlier time point than the measure of child bullying perpetration; (f) the mean age of the children in the sample was 18 years or younger at point of exposure to IPV; (g) the study was peer reviewed; and (h) the study was written in English.

Studies were excluded from the review if: (a) the article reported non-observational data (e.g., Randomised-control trial, case study, qualitative data, or review article); (b) the measure of violence exposure was of parent-child violence, sibling-child violence, or community violence; (c) the measurement of bullying perpetration was of cyberbullying, reactive aggression, delinquency, or criminal behaviour.

Articles were screened for inclusion according to the selection criteria based on title and abstract. Remaining articles were screened based on the full text. A second reviewer independently screened 10% of full-text articles and any conflicts were discussed and resolved. The reliability between reviewers was assessed based on agreement to include or exclude; percentage agreement was 80% (Kappa = 0.41). There were two main reasons for exclusion based on full text: (i) many articles did not include the relevant predictor variable and instead reported data from exposure to domestic violence beyond that of intimate partners (i.e. towards the child or siblings in the home), community violence or composite measurements of child abuse and exposure to IPV; and/or (ii) did not include relevant outcomes, instead focusing on reactive aggression (i.e. involvement in fights), criminal behaviours (i.e. damaging public or private property) or combined bullying perpetration and victimisation into a composite score.

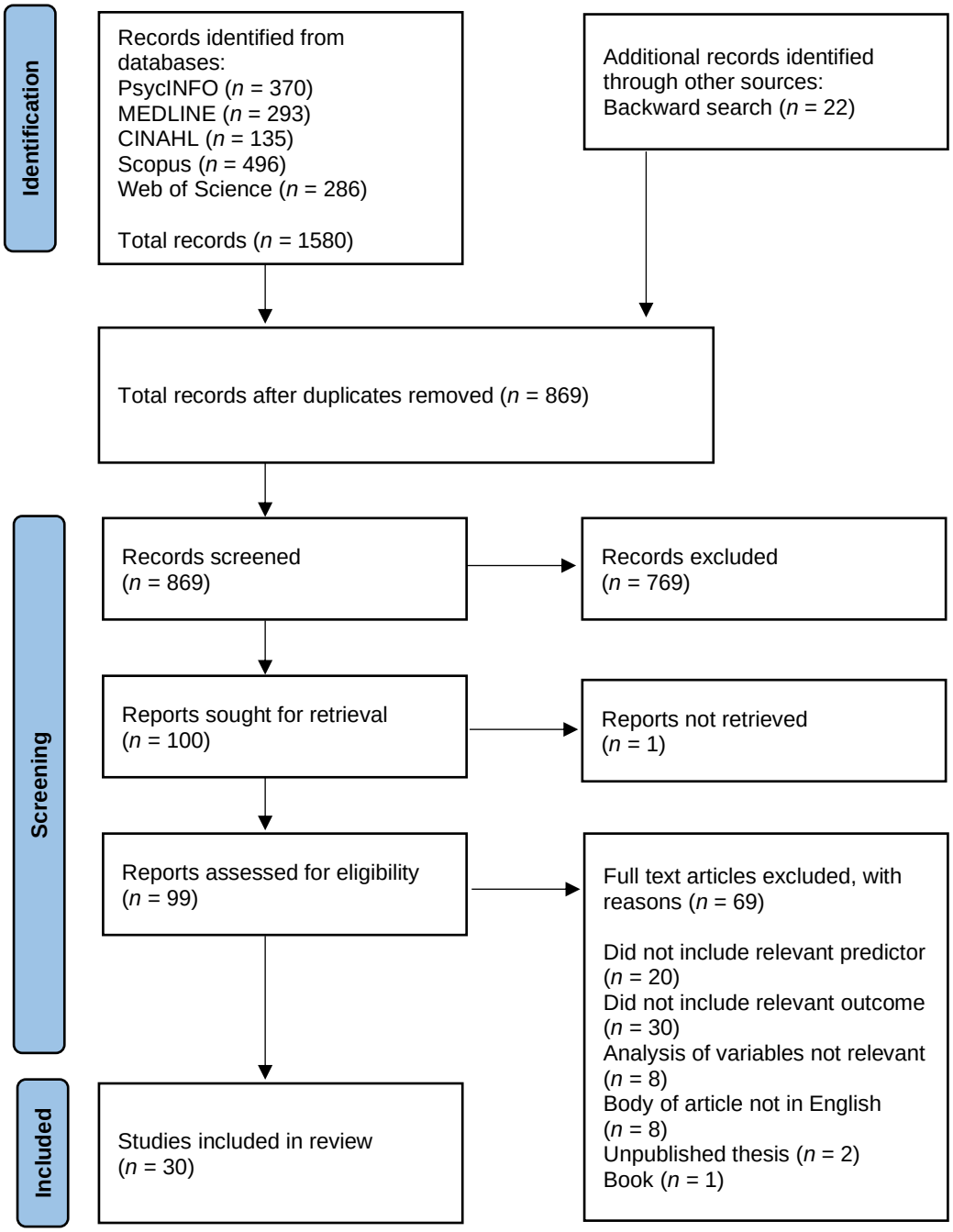

Figure 1. *PRISMA flow diagram*.

Data extraction

Data from articles meeting the inclusion criteria were extracted using a standardised spreadsheet. The data extracted included: (a) sample characteristics (*N*, sample type, country, mean age at IPV exposure); (b) measure of IPV; (c) IPV informant; (d) IPV perpetrator; (e)

timing of IPV; (f) measure of child bullying behaviours; (g) informant of child bullying behaviours; (h) time lag between measure of IPV and bullying behaviours; (i) study design; and (j) effect size details.

Quality assessment

The quality of studies was evaluated by using criteria outlined in the National Institutes of Health (NIH, 2014) quality assessment tool for observational cohort and cross-sectional studies (available here: www.nhlbi.nih.gov/health-topics/study-quality-assessment-tools). This 14-item checklist allows for assessment of a range of methodological elements including sample selection, loss to follow up, exposure time frames, clarity of variable definitions, reliability and validity of outcome measures, and risk of researcher bias. The scale is a recommended tool for cohort and cross-sectional studies (Ma et al., 2020) and was chosen as it enabled assessment of both types of study under the same evaluative tool. Each item is rated: yes/no/cannot determine/not reported/not applicable. The tool allows the reviewer to allocate an overall rating of ‘good’, ‘fair’ or ‘poor’ to each study.

For the purposes of this review, item 5 (“Was a sample size justification, power description, or variance and effect estimates provided?”) on the NIH quality assessment tool was excluded. Whilst the NIH (2014) does not explicitly suggest the exclusion of item 5, its guidelines do note that observational studies often do not report power or sample sizes because the analyses are exploratory in nature. In this case, the majority of studies would be scored "no" for this item, which could be misconstrued as a “fatal flaw”.

Approximately 25% of studies were rated on the NIH quality assessment tool by a second independent rater. Where there was discrepancy in the scores, both the author and second rater presented a rationale for their scoring in order to facilitate discussion and reach a

consensus. The reliability between the raters was assessed based on agreement of the qualitative descriptors (poor; fair; good). Percentage agreement was 71.4% (Kappa = 0.46).

RESULTS

Overview of studies

A total of 30 studies investigating the relationship between IPV and child bullying perpetration were included in the review. See Figure 1 for details of the PRISMA screening process. The key study characteristics from the 30 studies are summarised in Table 1. The study publication dates ranged from 2003 to 2021, representing 14 different countries of varying economic status according to the United Nations (UN) classification system (UN, 2022) (*Developed* economies: United States of America, Canada, United Kingdom, Italy, Finland, Sweden, Australia; *Developing* economies: Trinidad, Mexico, Malawi, Taiwan, Thailand, Vietnam, and South Korea). Just under half of all included studies were conducted in the USA (n=14) and only one study involved international data from both USA and Australia (Hemphill et al., 2012).

Design

By nature of the inclusion criteria all included studies were either cross-sectional (n=23) or longitudinal designs (n=7). Of the participants that were followed longitudinally, the shortest follow-up from baseline was six months and the longest 29 months. All but one longitudinal study was conducted in developed countries. The majority of studies (n=29) involved children in middle or late childhood (6 years+); just one study included early childhood (Bauer et al., 2006).

Participants

The studies had a wide range of sample sizes, ranging from 112 to 136,549 participants, with a pooled sample size of 319,194 participants. Studies conducted in developed countries typically used larger samples than developing countries (mean N = 13365 vs 1685). Nineteen studies reported mean child age (range 9-15.4 years), with the age range across all 30 studies of 5 to 19 years. There was a relatively equal distribution of male and female participants (range 44.3-64% female, median 50%).

The majority of studies involved a cohort that generally represented the population from which they were drawn (n=23); of the remaining seven studies, three used non-random samples (Foshee et al., 2016; Moretti et al., 2006; Mustanoja et al., 2011), two involved cohorts that over-represented ethnic minorities (Christie-Mizell, 2003; Ferguson et al., 2009), one specifically recruited children who attended Girl Guides or Boy Scouts (Ameli et al., 2017) and another recruited privately educated Islamic students (Tanrikulu & Campbell, 2015).

Table 1. *Methodological characteristics of included studies (n=30)*

Study characteristics							Predictor: IPV					Outcome: Bullying behaviours					
Author (Year)	*N*	Design	Age of child at IPV exposure (years)	Gender ratio (% female)	Sample type	Country	Measure	Method	Informant	Perpetrator	Time-frame	Measure	Method	Informant	Time-frame	Time between follow up	Covariates
Ameli et al. (2017)	561	Cross-sectional	Mean: 13 Range: 10-19	50	Non-pop	Malawi	Study Specific	Self-Report	Child	Not Specified	Not Specified	Study Specific	Self-Report	Child	Not Specified	-	Emotional abuse in the home, physical abuse in the home, physical abuse in the school, bullying victimisation, poverty, depression, attitudes towards violence and rape, urban/rural area
Baek et al. (2019)	1248	Cross-sectional	Mean: 10.3 SD: 1.4 Range: 8-14	44.3	Pop	Trinidad	Study Specific	Self-Report	Child	Not Specified	Not Specified	Study Specific	Self-Report	Child	Not Specified	-	Family structure, ethnicity
Baldry (2003)	1024	Cross-sectional	Mean: 11.2 SD: 1.45 Range: 8-15	48.5	Pop	Italy	CTS	Self-Report	Child	Mother & Father	Not Specified	OBVQ	Self-Report	Child	Last 3 months	-	Bullying victimisation, age, family structure, occupation of mother and father, child abuse
Bauer et al. (2006)	112	Cross-sectional	Range: 6-13	52.7	Pop	USA	CTS	Self-Report	Parents	Not Specified	Two time points in last 5 years	OBVQ	Self-Report	Child	Last 12 months	-	Maternal age at childbirth, highest educational level completed, race/ethnicity, participation in welfare programmes, parental childhood history of home violence, alcohol use, drug use
Bowes et al. (2009)	2232	Longitudinal	Ages 5 (T1) and 7 (T2)	NS	Pop	UK	CTS	Self-Report	Mother	Not Specified	Not Specified	Study Specific	Int	Mothers & Teachers	Between ages 5 and 7	24 months	Number of children in school, percentage of children eligible for free school meals, neighbourhood vandalism & problems with neighbours, SES, mother's depression, parents' antisocial behaviour, maternal warmth, stimulating activities, child maltreatment, child internalising and externalising behaviours

Table 1. *(Continued)*

Study characteristics							Predictor: IPV					Outcome: Bullying behaviours					
Author (Year)	*N*	Design	Age of child at IPV exposure (years)	Gender ratio (% female)	Sample type	Country	Measure	Method	Informant	Perpetrator	Time-frame	Measure	Method	Informant	Time-frame	Time between follow up	Covariates
CDC (2011)	5807	Cross-sectional	Age groups (11-12yrs and 13-16yrs)	49	Pop	USA	Study Specific	Self-Report	Child	Not Specified	Last 12 months	Study Specific	Self-Report	Child	Last 12 months	-	Poor grades, mental and physical health, suicidality, overweight or obese, alcohol/tobacco/ drug use, race
Chesworth et al. (2019)	95677	Cross-sectional	Mean: 9 Range: 6-17	49	Pop	USA	Study Specific	Self-Report	Parents	Not Specified	Not Specified	Study Specific	Self-Report	Parents	Last month	-	Race, parent education household poverty, parental coping skills, parent-child relationship, exposure to eight ACEs
Christie-Mizell (2003)	713	Cross-sectional	Range: 8-14	51	Non-pop	USA	Study Specific	Self-Report	Mother	Not Specified	Not Specified	BPI	Self-Report	Mother	Not Specified	Bullying data from 1992, all other data from 1994	Child self-concept, race, socioeconomic status, family characteristics, child age, child's school standing
Cuervo et al. (2018)	664	Cross-sectional	Mean: 13.6 SD: 1.13	45.6	Pop	Mexico	CPIC	Self-Report	Child	Not Specified	Not Specified	Study Specific	Self-Report	Child	Last month	-	Challenging behaviour, exposure to violence in the community,
Duke et al. (2010)	136549	Cross-sectional	Range: 10-19	50.2	Pop	USA	Individual items taken from ACES	Self-Report	Child	Not Specified	Not Specified	Study Specific	Self-Report	Child	Last month	-	Physical abuse, sexual abuse, sexual abuse by non-family, drug-use, alcohol use, age, ethnicity, receipt of free school lunch, family structure, region.
Espelage et al. (2014)	1232	Longitudinal	Mean: 13.9 SD: 1.05 Range: 10-15	49.8	Pop	USA	FCHS	Self-Report	Child	Not Specified	Not Specified	IBS	Self-Report	Child	Last 30 days	6 months and 12 months later	Substance use, fighting perpetration, sibling verbal and physical aggression, age, grade, race.

Table 1. *(Continued)*

Study characteristics							Predictor: IPV					Outcome: Bullying behaviours					
Author (Year)	*N*	Design	Age of child at IPV exposure (years)	Gender ratio (% female)	Sample type	Country	Measure	Method	Informant	Perpetrator	Time-frame	Measure	Method	Informant	Time-frame	Time between follow up	Covariates
Ferguson et al. (2009)	603	Cross-sectional	Mean: 12.35 SD: 1.34 Range: 10-14	48.8	Non-pop	USA	FES conflict subscale, CTS	Self-Report	Child	Not Specified	Not Specified	OBVQ	Self-Report	Child	Not Specified	-	Negative life events, family interaction and communication, media violence, depression, aggression, delinquent behaviour
Foshee et al. (2016)	399	Cross-sectional	Mean: 13.6 Range: 12-16	64	Non-pop	USA	FFS	Self-Report	Child	Not Specified	Last 3 months	IBS	Self-Report	Child	Last 3 months	-	Acceptance of dating violence, acceptance of sexual violence, poor conflict management skills, maternal-adolescent discord, low maternal monitoring, low maternal responsiveness, poor mother-adolescent communication, low-mother-adolescent closeness, low family cohesion, depressed affect, feelings of anger, anger reactivity
Grant et al. (2019)	1194	Longitudinal	Mean at baseline: 13.46 Range: 11-15	49.6	Pop	USA	FCHS	Self-Report	Child	Not Specified	Not Specified	IBS	Self-Report	Child	Last 30 days	6, 12, 18 & 24 months	Peer deviance, age grade, race
Gullone and Robertson (2008)	241	Cross-sectional	Mean: 13.8 SD: 1.26 Range: 12-16	57.7	Pop	Australia	FES (Conflict subscale)	Self-Report	Child	Not Specified	Not Specified	PRQ	Self-Report	Child	Last 12 months	-	Animal abuse, witnessing animal abuse, bullying victimisation

Table 1. *(Continued)*

Study characteristics							Predictor: IPV					Outcome: Bullying behaviours					
Author (Year)	*N*	Design	Age of child at IPV exposure (years)	Gender ratio (% female)	Sample type	Country	Measure	Method	Informant	Perpetrator	Time-frame	Measure	Method	Informant	Time-frame	Time between follow up	Covariates
Hemphill et al. (2012)	696	Longitudinal	Mean at grade 7: 12.9, SD: 0.4, Range: 11.9-14.4 Mean at grade 9: 15.2, SD: 0.4, Range: 14.2-16.5	51.8	Pop	Australia & USA	Modified Communities That Care Survey	Self-Report	Child	Not Specified	Not Specified	GBS	Self-Report	Child	"Recently "	24 months	Relational aggression, poor family management, academic failure, low commitment to school, bullying victimisation, interaction with antisocial friends, school suspension, cyberbullying perpetration
Holt et al. (2009)	205	Cross-sectional	Mean: 10.81 SD: 0.59 Range: 10-12	54.1	Pop	USA	Juvenile Victimisation Questionnaire	Self-Report	Child	Not Specified	last 12 months	IBS	Self-Report	Child	Last 30 days	-	Bullying victimisation, parent age, marital status, relationship with child, parental education, income, parent attitude to bullying, family characteristics, parent awareness of child bullying, parent responses to child bullying
Hong et al. (2021)	12490	Cross-sectional	Mean: 14.71 SD; 1.69 Range: 12-17	50	Pop	USA	Study Specific	Self-Report	Mother	Not Specified	Not Specified	Study Specific	Self-Report	Mother	Not Specified	-	Family economic hardship, mother's mental distress, mother's parental frustration, mother age, education & employment, child age, race
Hsieh et al. (2021)	6233	Cross-sectional	Ages 10 or 11	50	Pop	Taiwan	CEVQ	Self-Report	Child	Not Specified	Not Specified	Study Specific	Self-Report	Child	Last 12 months	-	Physical and psychological neglect, physical and psychological abuse, parental substance abuse, child post-traumatic stress disorder symptoms

Table 1. *(Continued)*

Study characteristics							Predictor: IPV					Outcome: Bullying behaviours					
Author (Year)	*N*	Design	Age of child at IPV exposure (years)	Gender ratio (% female)	Sample type	Country	Measure	Method	Informant	Perpetrator	Time-frame	Measure	Method	Informant	Time-frame	Time between follow up	Covariates
Knous-Westfall et al. (2012)	129	Longitudinal	Mean: 12.8 SD: 2.4 Range: 10-18	56.7	Pop	USA	CTS	Self-Report	Parents	Not Specified	Last 12 months	PBS	Self-Report	Child	Not Specified	Mean = 29 months later	Parent affection, parent communication, parental satisfaction, parent monitoring, parent physical punishment, child resistance to parent authority, child externalising problems, child internalising problems, peer victimisation (relational and overt), parent childhood adversities
Laeheem et al. (2009)	1440	Cross-sectional	Age groups: < 8, 9-10, or 11+	54.4	Pop	Thailand	Study Specific	Self-Report	Child	Not Specified	Not Specified	Study Specific	Self-Report	Child	Not Specified	-	School location, age, religion, preference of cartoon type
Le et al. (2017)	1424	Longitudinal	Mean: 14.7 SD: 1.87 Range: 12-17	54.9	Pop	Vietnam	Study Specific	Self-Report	Child	Not Specified	Not Specified	Study Specific	Self-Report	Child	Last six months	6 months	Bully victimisation, cyberbullying perpetration, cyberbullying victimisation, reaction when seeing bullying, online activities, parents' and teachers' supervision of online activities, parents' and teachers' control of internet and mobile phone usage, family friend and school social support, conflict with siblings, perceptions of students and teachers trying to stop bullying, depressive symptoms, psychological distress, self-esteem, suicidal ideation, age, family structure

Table 1. *(Continued)*

Study characteristics							Predictor: IPV					Outcome: Bullying behaviours					
Author (Year)	*N*	Design	Age of child at IPV exposure (years)	Gender ratio (% female)	Sample type	Country	Measure	Method	Informant	Perpetrator	Time-frame	Measure	Method	Informant	Time-frame	Time between follow up	Covariates
Lepisto et al. (2011)	1393	Cross-sectional	Mean: 14.92 SD: 0.4 Range: 14-17	50	Pop	Finland	CTS	Self-Report	Child	Parents, and mother- and father-on siblings	Before 14yrs and in past 12 months	Study Specific	Self-Report	Child	Not Specified	-	Age, family members, family relationships, family financial situation, number of residence changes, self-perceived health, satisfaction with life, parenting practices, adolescents' perception of corporal punishment, sexual experiences, dating, bully victimisation
Low and Espelage (2013)	1023	Longitudinal	Mean: 13.9 SD: 1.05 Range: 10-15	49.8	Pop	USA	FCHS	Self-Report	Child	Not Specified	Last 30 days	IBS	Self-Report	Child	Last 30 days	12 months	Age, grade, race, cyberbullying perpetration, parental monitoring, alcohol & drug use, empathy, hostility, depressive symptoms
Lucas et al. (2016)	3197	Cross-sectional	Range: 14-15	51.5	Pop	Sweden	CTS	Self-Report	Child	Not Specified	Not Specified	Study Specific	Self-Report	Child	Not Specified	-	Sociodemographics, school performance, health, quality of life, attitudes towards upbringing practices, exposure to humiliating treatment by adults and peers
Moretti et al. (2006)	112	Cross-sectional	Mean: 15.4 SD: 1.4 Range: 13-18	56.25	Non-pop	Canada	FBQ	Self-Report	Child	Mother & Father	Not Specified	Modified CTS	Self-Report	Child	Last six months	-	Major psychiatric syndromes, traumatic events, race, age, living arrangements
Mustanoja et al. (2011)	508	Cross-sectional	Mean: 15.4 SD: 1.3 Range: 12-17	59.1	Non-pop	Finland	K-SADS-PL	Int	Child	Not Specified	Not Specified	Modified K-SADS-PL	Int	Child	Not Specified	-	Psychiatric disorders, age, parents' working status

Table 1. *(Continued)*

Study characteristics							Predictor: IPV					Outcome: Bullying behaviours					
Author (Year)	*N*	Design	Age of child at IPV exposure (years)	Gender ratio (% female)	Sample type	Country	Measure	Method	Informant	Perpetrator	Time-frame	Measure	Method	Informant	Time-frame	Time between follow up	Covariates
Odar Stough et al. (2016)	41361	Cross-sectional	Range: 10-17	48	Pop	USA	Study Specific	Self-Report	Parents	Not Specified	Not Specified	Study Specific	Self-Report	Parent	Not Specified	-	Ethnicity, age, family income, weight status, current ADHD, depression & anxiety, self-control, family structure, care-giver relationship satisfaction, maternal/paternal mental health, family ability to "get by" on income, neighbourhood violence, racial/ethnic discrimination
Shin et al. (2014)	227	Cross-sectional	Range: 11-12	46.7	Pop	South Korea	CPIC	Self-Report	Child & mother	Not Specified	Not Specified	Mixed - Study Specific + Peer Nominate	Self-Report	Child & Peers	Not Specified	-	Peer victimisation, parenting behaviour, friendship quality
Tanrikulu and Campbell (2015)	500	Cross-sectional	Range: 10-17	58.4	Non-pop	Australia	CPIC	Self-Report	Child	Not Specified	Not Specified	TBCQ	Self-Report	Child	Last 12 months	-	Age, gender, religious values of school, parent education, trait anger, moral disengagement, child psychological attachment to school, bully victimisation, cyberbully victimisation

Note. Acronyms: ACE = Adverse Childhood Experience, BPI = Behavior Problems Index, CEVQ = Childhood Experiences of Violence Questionnaire, CPIC = Children's Perceptions of Interparental Conflict scale, CTS = Conflict Tactics Scale, FBQ = Family Background Questionnaire, FCHS = Family Conflict & Hostility Scale, FES = Family Environment Scale, FFS = Family, Friends, and Self Assessment Scale, GBS = Gatehouse Bullying Scale, IBS = Illinois Bully Scale, Int= Interview, K-SADS-PL = Schedule for Affective Disorder and Schizophrenia for School-Age Children Present and Lifetime, Non-pop = Non-population sample, OBVQ = Olweus Bully/Victim Questionnaire, PBS = Peer Bullying Scale, Pop = Population sample, PRQ = Peer Relations Questionnaire, TBCQ = Traditional Bullying and Cyberbullying Questionnaire

Measures

IPV exposure

Most studies opted for child informants for IPV exposure measures (*n*=22), with four studies measuring either parents' response. Three studies used mothers as informants, and one study compared child and mother responses on IPV exposure measures. Only two studies specifically took perpetrator gender into account (Baldry, 2003; Moretti et al., 2006).

The majority of studies used self-report questionnaires to assess the level of IPV exposure in children (*n*=29). The most frequently used validated measure of parental conflict was the Conflict Tactics Scale (CTS) (*n*=7), followed by the Children's Perception of Interparental Conflict Scale (CPIC) (*n*=3), and the Family Conflict and Hostility Scale (*n*=3). The CTS is a validated measure of violence between parents, partners and their children (Straus, 1979) and is typically completed by a parent. The original CTS contained 39 items and the updated CTS-2 contains 78 items. Three studies used the original CTS while four used the updated CTS-2. All studies chose to modify or use selected subscales rather than the full measure. The CPIC is traditionally a 48-item self-report measure using a 3-point Likert-type scale (Grych et al., 1992) and specifically targets the child's perception of violence in the family home. The measure is divided into nine subscales and has established validity (Reese-Weber & Hesson-McInnis, 2008). Of the three studies that used the CPIC, two elected to use the frequency subscale only (Cuervo et al., 2018; Tanrikulu & Campbell, 2015) and one combined frequency and intensity subscales (Shin et al., 2014). The Family Conflict and Hostility Scale (Thornberry et al., 2003) is a scale containing three items from a larger survey designed for the Rochester Youth Development Study.

Nine studies developed a bespoke measure of IPV exposure; five of which used a single binary measure for assessing exposure status (i.e., No, or Yes) and the other four using

multiple items to measure IPV exposure (range 2-10 items). Of those four studies using multiple items, three used Likert scale scoring systems. Studies conducted in developing countries were more likely to use a bespoke measure of IPV compared to developed countries (57% vs 22%). In contrast to the use of self-report questionnaires, one study used a clinical interview (e.g. the Schedule for Affective Disorder and Schizophrenia for School-Age Children – Present and Lifetime: K-SADS-PL) with child interviewees (Mustanoja et al., 2011).

The majority of studies did not specify a time period for which IPV exposure could have occurred (n=23), with the remaining studies assessing the previous 30 days (n=1), three months (n=1) or twelve months (n=4). Bauer et al. (2006) measured separate IPV exposures when the parents were age 24 and 27 although did not specify a timeframe, and Lepisto et al. (2011) provided a separate measure of IPV exposure for children at age 14 as well as the previous twelve months.

Bullying perpetration

The majority of studies opted for self-report questionnaires (n=28), whilst one study conducted structured interviews with mothers and teachers (Bowes et al., 2009) and another interviewed children with the modified K-SADS-PL (Mustanoja et al., 2011). The majority of studies used child self-report to measure bullying perpetration (n=24). Two studies used parent informants, with a further two specifically using mothers' reports. Bowes et al. (2009) opted to combine mothers' and teachers' reports on child bullying perpetration, whilst Shin et al. (2014) combined child self-report measures with peer nominations and reports. Only one study used a measure that specifically included an item about bullying perpetration as part of a group (Gullone & Robertson, 2008).

The most frequently used measure of bullying perpetration was the Illinois Bully Scale (IBS) (*n*=5). The IBS consists of 18 items on relational and overt bullying behaviours, as well as fighting, that are rated for frequency on a seven-point Likert scale (Espelage & Holt, 2001); all but one study (Foshee et al., 2016) used the full scale in their report. The second most frequently used scale was the Olweus Bully/Victim Questionnaire (OBVQ) (*n*=3) (Solberg & Olweus, 2003). The original OBVQ contains 36 items that investigate 'direct' and 'indirect' forms of bullying perpetration, whilst the revised questionnaire (OBVQ-R) involves 42 items and was expanded to include sexual bullying and cyberbullying. One study used the original OBVQ (Baldry, 2003) and two used the OBVQ-R (Bauer et al., 2006; Ferguson et al., 2009).

Half of the included studies opted for their own study-specific report of bullying perpetration rather than a recognised measure (*n*=15). Of these study-specific measures, nine used a single item to quantify bullying perpetration; four of which used binary outcomes and five used Likert scale scoring. The remaining six study-specific measures used multiple items to measure bullying perpetration (range=2-10, mode=6), all of which used Likert scale scoring. Studies conducted in developing countries were more likely to use a bespoke measure of bullying perpetration than developed countries (100% vs 39%).

Twelve studies did not specify a timeframe for participants to have perpetrated bullying. The remaining studies used a range of timeframes including the last 30 days (*n*=7), last three months (*n*=2), last six months (*n*=2) and last twelve months (*n*=5). One study asked mothers and teachers to rate the frequency of a child bullying between the ages of five and seven (Bowes et al., 2009) and another study asked children whether they had bullied "recently" (Hemphill et al., 2012).

Assessment of methodological quality

The assessment of methodological quality revealed a level of variability among included studies (see Table 2). As demonstrated in Table 2, seven studies were in the Poor range, fifteen in the Fair range, and eight in the Good range. Seven studies in the Good range employed a longitudinal design that collected exposure data at a prior time-point to outcome data, with a sufficient follow-up period to reasonably expect to see an association if it existed. These studies also typically allowed for varying levels of exposure to be recorded. All but one of these studies (Low & Espelage, 2013) reported loss to follow-up as 20% or less.

Common limitations of those studies rated Fair or Poor included: dichotomous exposure measures (eg. *exposed* vs *not exposed* to IPV*)*, exposure simultaneously assessed with outcome at a single time-point, or study-specific exposure and/or outcome measures (see Measures). All studies rated Fair or Poor used a cross-sectional design.

Table 2. *Quality assessment of included studies using the National Institutes of Health (NIH) tool for observational cohort and cross-sectional studies.*

Author	Criteria 1	Criteria 2	Criteria 3	Criteria 4	Criteria 6	Criteria 7	Criteria 8	Criteria 9	Criteria 10	Criteria 11	Criteria 12	Criteria 13	Criteria 14	Quality Rating
Ameli et al. (2017)	Y	Y	Y	Y	N	NA	N	CD	N	CD	CD	NA	N	Poor
Baek et al. (2019)	Y	Y	NR	Y	N	NA	N	CD	N	CD	CD	NA	Y	Poor
Baldry (2003)	Y	Y	Y	Y	N	NA	Y	Y	N	Y	Y	NA	Y	Good
Bauer et al. (2006)	Y	Y	CD	Y	N	NA	Y	Y	Y	Y	Y	NA	Y	Fair
Bowes et al. (2009)	Y	Y	Y	Y	Y	Y	N	Y	N	Y	Y	Y	Y	Good
CDC (2011)	Y	Y	Y	Y	N	NA	N	CD	N	Y	CD	NA	Y	Fair
Chesworth et al. (2019)	Y	Y	CD	Y	N	NA	N	Y	N	Y	Y	NA	Y	Fair
Christie-Mizell (2003)	Y	N	NR	Y	N	N	Y	Y	N	Y	Y	NR	Y	Fair
Cuervo et al. (2018)	Y	Y	Y	Y	N	NA	Y	Y	N	Y	CD	NA	N	Fair
Duke et al. (2010)	Y	Y	Y	Y	N	NA	N	Y	N	Y	Y	NA	Y	Fair
Espelage et al. (2014)	Y	Y	NR	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Good
Ferguson et al. (2009)	Y	Y	NR	Y	N	NA	Y	Y	N	Y	CD	NA	N	Fair
Foshee et al. (2016)	Y	Y	Y	Y	N	NA	Y	Y	N	Y	CD	NA	Y	Fair
Grant et al. (2019)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Good
Gullone et al. (2008)	Y	Y	N	Y	N	NA	Y	Y	N	Y	CD	NA	Y	Fair
Hemphill et al. (2012)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Good
Holt et al. (2009)	Y	Y	N	Y	N	NA	N	Y	N	Y	CD	NA	N	Poor
Hong et al. (2021)	Y	Y	N	Y	N	NA	N	N	N	N	Y	NA	Y	Poor
Hsieh et al. (2021)	Y	N	NR	Y	N	NA	Y	Y	N	Y	CD	NA	N	Poor
Knous-Westfall et al. (2012)	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Good
Laeheem et al. (2009)	Y	Y	Y	Y	N	NA	N	N	N	N	Y	NA	Y	Fair
Le et al. (2017)	Y	Y	Y	Y	Y	Y	N	Y	N	Y	CD	Y	Y	Good
Lepisto et al. (2011)	Y	Y	Y	Y	N	NA	Y	Y	N	N	Y	NA	N	Fair
Low et al. (2013)	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	CD	Y	Good
Lucas et al. (2016)	Y	Y	Y	Y	N	NA	Y	Y	N	Y	CD	NA	Y	Fair
Moretti et al. (2006)	Y	Y	CD	Y	N	NA	Y	Y	N	Y	CD	NA	N	Fair
Mustanoja et al. (2011)	Y	Y	Y	N	N	NA	N	Y	N	Y	CD	NA	Y	Fair
Odar-Stough et al. (2016)	Y	Y	NR	Y	N	NA	N	CD	N	CD	Y	NA	Y	Poor
Shin et al. (2014)	Y	N	NR	Y	N	NA	Y	Y	N	Y	N	NA	N	Poor
Tanrikulu et al. (2015)	Y	N	CD	Y	N	NA	Y	Y	N	Y	N	NA	Y	Fair

Note. Quality of the selected study was assessed using the NIH Quality Assessment tool for Observational Cohort and Cross-Sectional Studies. Criteria 1. Was the research question or objective in this paper clearly stated? Criteria 2. Was the study population clearly specified and defined? Criteria 3. Was the participation rate of eligible persons at least 50%? Criteria 4. Were all the subjects selected or recruited from the same or similar populations (including the same time period)? Were inclusion and exclusion criteria for being in the study prespecified and applied uniformly to all participants? Criteria 5. EXCLUDED. Criteria 6. For the analyses in this paper, were the exposure(s) of interest measured prior to the outcome(s) being measured? Criteria 7. Was the timeframe sufficient so that one could reasonably expect to see an association between exposure and outcome if it existed? Criteria 8. For exposures that can vary in amount or level, did the study examine different levels of the exposure as related to the outcome (e.g., categories of exposure, or exposure measured as continuous variable)? Criteria 9. Were the exposure measures (independent variables) clearly defined, valid, reliable, and implemented consistently across all study participants? Criteria 10. Was the exposure(s) assessed more than once over time? Criteria 11. Were the outcome measures (dependent variables) clearly defined, valid, reliable, and implemented consistently across all study participants? Criteria 12. Were the outcome assessors blinded to the exposure status of participants? Criteria 13. Was loss to follow-up after baseline 20% or less? Criteria 14. Were key potential confounding variables measured and adjusted statistically for their impact on the relationship between exposure(s) and outcome(s)? The overall judgment is determined by Poor, Fair, Good. CD = cannot determine; NA = not applicable; NR = not reported.

Main findings and synthesis

A summary of effect sizes for significant associations between children's exposure to IPV and bullying perpetration are reported in Table 3. Post hoc effect sizes were calculated if a study did not report an effect size, but it was possible to calculate an effect size based on the data provided in the published manuscript (e.g. Hierarchical regressions, odds ratios etc). Effect sizes were computed as correlation coefficient *r* as this was the most commonly reported association metric. When it was not possible to extract an effect size, 'unobtainable' was recorded in the column.

Popular guidance for interpreting effect sizes as small, moderate and large (r = 0.1, 0.3 and 0.5 respectively (Cohen (1992) or r = 0.2, 0.5 or 0.8 (Ferguson, 2016)) have recently been criticised for using too stringent, arbitrary guidelines (Adachi & Willoughby, 2015) and underestimating the potentially consequential impact of small effects over time (Funder & Ozer, 2019). Gignac and Szodorai (2016) reported that <3% of correlations in behavioural and cognitive research were found to be as large as r = 0.5. To facilitate detailed comparison of effect sizes, this review has adopted the alternative guidelines proposed by Gignac and Szodorai (2016) of 0.1, 0.2 and 0.3 to indicate small, moderate and large effects. Effect sizes that are smaller than 0.1 will be referred to as 'very small' rather than negligible, on the basis that such effects may be consequential when aggregated to the population level (Ozer & Benet-Martinez, 2006).

Table 3. *Study analyses, results, and limitations*

Author (Year)	Data Analysis	Tests of mediation/ moderation	Tests of gender differences	Primary results: Bullying Perpetration	Primary results: Effect size (significant findings only)	Mediation / Moderation analysis	Main limitations
Ameli et al. (2017)	Bivariate and multivariate logistic regression	No	Yes	Bullying perpetration was associated with witnessing domestic violence among boys but not girls.	Boys = Small	N/A	Sample: Cross-sectional. Non-random population. Measures: Non-validated measures of IPV and bullying perpetration. Uses binary outcomes. Other: Did not account for confounding variables in community
Baek et al. (2019)	Bivariate analysis and structural equation modelling	Yes	No	When controlling for covariates, exposure to family violence significantly increased bullying perpetration	Large	Depression did not mediate the effect of exposure to family violence on bullying. Anger was a substantially more important mediator for female students compared to males.	Sample: Cross-sectional. Measures: Only included two types of negative affect in mediation analysis.
Baldry (2003)	Odds ratios, hierarchical regression	No	Yes	When adjusting for covariates, exposure to IPV significantly predicts bullying. Mother-violence-against-father and mother-threatening-father particularly associated with bullying perpetration. Girls more likely to be affected by IPV exposure than boys. Multiple regression showed mother's violence against father significantly increased variance of final model	Overall IPV on Bullying = small	N/A	Sample: Cross-sectional. Non-random. Measures: Only one item included on child abuse whilst IPV had five. Other: Did not provide confidence intervals for data, although reported if odds ratios significantly >1

Table 3. *(Continued)*

Author (Year)	Data Analysis	Tests of mediation/ moderation	Tests of gender differences	Primary results: Bullying Perpetration	Primary results: Effect size (significant findings only)	Mediation / Moderation analysis	Main limitations
Bauer, et al. (2006)	Bivariate, logistic regression	No	No	When adjusting for covariates, did not find an association between parental IPV and child-reported bullying	*ns*	N/A	Sample: Cross-sectional. Small sample size compared to other studies. Measures: Did not use full measures of IPV exposure or bullying perpetration. Bullying measure focused on relational bullying rather than physical. Child respondents not given a description of bullying prior to measure. Other: Did not measure confounding variables such as exposure to community violence
Bowes, et al. (2009)	Multivariate multinomial logistic regression	No	No	When adjusting for child internalising and externalising behaviours, witnessing domestic violence was still associated with increased risk of being a bully	Very small	N/A	Sample: Twin studies may not be generalisable to singleton. Measures: Relied on mother and teacher reports, which may not be as accurate as child self-reports.

Table 3. *(Continued)*

Author (Year)	Data Analysis	Tests of mediation/ moderation	Tests of gender differences	Primary results: Bullying Perpetration	Primary results: Effect size (significant findings only)	Mediation / Moderation analysis	Main limitations
CDC (2011)	Bivariate, multivariate	No	No	When adjusting for covariates, adjusted odds ratios for bullying perpetration were significantly elevated for witnessing violence in family	Moderate	N/A	Sample: Cross-sectional. Low response rate from middle school students (55.8%). Only public schools selected. Measures: A more detailed description was provided to participants for bully victimisation than perpetration. Other: Did not provide gender data for AOR
Chesworth, et al. (2019)	Hierarchical multiple linear regression	No	No	When controlling for covariates, the main exposure variable, exposure to IPV revealed a statistically significant positive relationship on a 5-point bullying scale	Moderate	NA	Sample: Cross-sectional. Survey data from one source. Parent informant may be less reliable than child self-report.
Christie-Mizell (2003)	Path analysis	Yes	No	A correlation between interparental discord and bullying behaviour was positive and significant When adjusting for covariates, direct effects model revealed a significant effect of interparental discord on bullying behaviour	Very small	Child's self-concept significantly predicted bullying. Positive self-concept acts as a protectant against aggression.	Sample: Cross-sectional. Selected mothers who are married and living with spouse. Used mother ratings instead of child self-report. Measures: Causal link difficult to establish as data collected on bullying 2 years (T1) before data collected on IPV exposure (and T2 bullying)

Table 3. *(Continued)*

Author (Year)	Data Analysis	Tests of mediation/ moderation	Tests of gender differences	Primary results: Bullying Perpetration	Primary results: Effect size (significant findings only)	Mediation / Moderation analysis	Main limitations
Cuervo et al. (2018)	Logistic regression	No	No	Parental conflict increased probability of belonging to aggressors' group	Large	N/A	Sample: Cross-sectional. Measure: Uses an outcome measure on aggression towards peers, not specifically bullying
Duke et al. (2010)	Multivariate linear and logistic regression	No	Yes	When adjusting for covariates, significant odds ratios reported, for boys and girls separately, for bullying perpetration when witnessing physical abuse by a family member on another family member	Girls = small Boys = small	N/A	Sample: Cross-sectional. Measures: Binary measures. Abuse measures may serve as a proxy for other exposures e.g. Poverty. Other: Does not provide an overall OR for bullying perpetration, only separated by gender.
Espelage et al. (2014)	Structural equation modelling	Yes	Yes	Family conflict at Time 1 correlated with Bullying at Time 1, 2 and 3.	Significance not reported	Bullying perpetration mediated the relation between family violence and substance use only for boys.	Sample: Data from one urban community Measure: IPV measure did not distinguish between direct and indirect violence exposure. Other: Reported male and female results separately. No report on significance of correlations, instead reports significant difference between genders

Table 3. *(Continued)*

Author (Year)	Data Analysis	Tests of mediation/ moderation	Tests of gender differences	Primary results: Bullying Perpetration	Primary results: Effect size (significant findings only)	Mediation / Moderation analysis	Main limitations
Ferguson et al. (2009)	Bivariate, Hierarchical multiple regression, structural equation modelling	No	No	Bullying behaviour was predicted by family conflict (FES) and parental use of psychological abuse in romantic relationships (CTS) but not physical assault between parents	FES = small CTS = moderate	N/A	Sample: Hispanic majority.
Foshee et al. (2016)	Adjusted odds ratio, multivariable generalised estimating equation	No	No	When adjusting for covariates, a significant single-risk factor that was shared across all three forms of aggression was family conflict (bullying perp + dating violence + sexual harassment). Family conflict was not a significant risk factor in multivariable model.	Small	N/A	Sample: Cross-sectional. Prevalence of dating violence, bullying and sexual harassment higher than general population of adolescents. Primarily low SES. Only included father-on-mother violence. Measure: Did not factor power-imbalance or repeated acts of aggression against the same person. Only included father-on-mother violence. Did not account for community violence.
Grant et al. (2019)	Between and within person main effects, random effects	Yes	No	When adjusting for covariates, significant between-person main effects were found, with individuals who reported higher levels of family violence also reporting higher average levels of bullying perpetration. When adjusting for covariates, within-person analysis reported that when individuals reported higher levels of family violence, they also reported higher levels of bullying perpetration at the same occasion.	Small	Increasing the level of peer deviance at a given time moderated the relation between family violence exposure and levels of bullying perpetration	Sample: Middle school students from one county. Grade 7 cohort were not followed into high school and did not contribute data to Wave 4.

Table 3. *(Continued)*

Author (Year)	Data Analysis	Tests of mediation/ moderation	Tests of gender differences	Primary results: Bullying Perpetration	Primary results: Effect size (significant findings only)	Mediation / Moderation analysis	Main limitations
Gullone and Robertson (2008)	Pearson's correlation, multiple regression	No	No	Family conflict was not found to be significantly positively correlated with engagement in bullying perpetration In hierarchical multiple regression analysis, family conflict did not predict bullying behaviours either.	*ns*	N/A	Sample: Cross-sectional. Low response rate.
Hemphill et al. (2012)	Logistic regression	No	No	When adjusting for covariates, family conflict in Grade 7 predicted an increase in traditional bullying in Grade 9	Very small	N/A	Measure: Binary measure of bullying perpetration. Time frame non-specific for bullying perpetration.
Holt et al. 2009)	Unclear	No	No	Child self-reports suggested that bullies are significantly more likely to live in homes in which domestic violence is occurring. No significant results reported for individual items of IPV and bullying perpetration	Unobtainable	N/A	Sample: Cross-sectional. Youth from only one district. Large component of minority urban youth. Parents of bullies may be less likely to agree to participate. Other: Unclear statistical analysis – only *p*-value provided.

Table 3. *(Continued)*

Author (Year)	Data Analysis	Tests of mediation/ moderation	Tests of gender differences	Primary results: Bullying Perpetration	Primary results: Effect size (significant findings only)	Mediation / Moderation analysis	Main limitations
Hong et al. (2021)	Multivariate, path analysis	Yes	No	When adjusting for covariates in path analysis, violence in the home was positively associated with bullying perpetration	Small	Exposure to violence in the home, mother's mental distress, and mother's parental frustration significantly mediated the relationship between family economic hardship and child's bullying but consideration of these three mediators did not eliminate the significant relationship between family economic hardship and bullying	Sample: Cross-sectional. Measures: Single items for IPV exposure and bullying perpetration. Covariates specific to mothers only. Maternal self-report only. Timeframes not specified for either measure. Other: Path analysis only included IPV exposure as a mediator between family economic hardship and bullying
Hsieh et al. (2021)	Pearson's correlation, hierarchical regression, mediation analysis	Yes	No	Significant correlation between witnessing inter-parental violence and bullying perpetration. When controlling for gender, hierarchical regression showed witnessing IPV is positively associated with bullying perpetration	Small	PTSD partially mediated the association between each of the 5 ACEs and bullying	Sample: Cross-sectional. Measures: Some measures used single items (e.g. Parent substance use).

Table 3. *(Continued)*

Author (Year)	Data Analysis	Tests of mediation/ moderation	Tests of gender differences	Primary results: Bullying Perpetration	Primary results: Effect size (significant findings only)	Mediation / Moderation analysis	Main limitations
Knous-Westfall et al. (2012)	Partial correlations, hierarchical linear regressions	Yes	Yes	Severe IPV was significantly associated with higher relational peer bullying but not overt bullying. Any IPV was not significantly associated with overt peer bullying or relational peer bullying. When adjusting for covariates and externalising/internalising symptoms, linear regression models showed that parental reports of severe IPV significantly predicted higher relational peer bullying (but not overt). Severe IPV predicted overt bullying for males but not females. Any IPV did not predict bullying.	Large	Parenting factors did not mediate the relationship between parental IPV and child peer bullying.	Sample: Small sample size. Measure: Parental report of parental IPV may be biased. Parenting measures collected from different sources.
Laeheem et al. (2009)	Multivariate analysis, logistic regression	No	No	When adjusting for covariates, the students who had seen family physical abuse between their parents were significantly more likely to report bullying other children than those who had not.	Large	N/A	Sample: Cross-sectional. Measures: Single item for IPV. No estimates of reliability or validity provided.
Le et al. (2017)	Multinomial logistic regression	No	No	When adjusting for covariates, students who witnessed parental violence had higher odds of being in perpetration at Time 1 than at Time 2 (i.e., the Declining Group - high bullying at Time 1, lower at Time 2) compared to those not involved in bullying.	Declining Group = moderate	N/A	Measures: No time frame specified for exposure to IPV. Other: Category of "no/rarely" for IPV exposure includes participants who have never witnessed as well as sometimes witnessed IPV.

Table 3. *(Continued)*

Author (Year)	Data Analysis	Tests of mediation/ moderation	Tests of gender differences	Primary results: Bullying Perpetration	Primary results: Effect size (significant findings only)	Mediation / Moderation analysis	Main limitations
Lepisto et al. (2011)	Spearman's rank correlation coefficient	No	No	The adolescent's role as a bully was not correlated with domestic violence between mother and father. Role as a bully correlated with domestic violence between mother and siblings, and between siblings	*ns*	N/A	Sample: Single location. Limited to those students who attended on that day. Measures: Subject to hoax responses that needed to be removed. Other: Does not report coefficient values, just the significance levels.
Low and Espelage (2013)	Hierarchical linear regression	Yes	No	Family violence correlated with non-physical bullying at Waves 1 and Waves 3. When adjusting for covariates, family violence and non-physical violence was significantly correlated but mediated by affect.	Moderate	Family violence was mediated by child hostility (for white males) and depressive symptoms (for black males)	Sample: Child report only. Measure: Only included item on non-physical bullying.
Lucas et al. (2016)	Pearson chi-square, binary logistic regression	No	Yes	When adjusting for covariates, "Witnessed violence between parents/caregivers" was associated with "ever bullied someone" (although not for girls) as well as "bullied someone else many times" "Frequently witnessed violence between parents/caregivers" was associated with "bullying someone else many times", but not "ever bullied someone else".	Witnessed & ever bullied = small Witnessed & bullied many times = large Frequently witnessed & bullied many times = large	N/A	Sample: Cross-sectional. Limited to those present on the day. Data removed for "mischievous" individuals. Measures; Single item for bullying perpetration. No specified timeframe for measures. Wide confidence intervals.

Table 3. *(Continued)*

Author (Year)	Data Analysis	Tests of mediation/ moderation	Tests of gender differences	Primary results: Bullying Perpetration	Primary results: Effect size (significant findings only)	Mediation / Moderation analysis	Main limitations
Moretti et al. (2006)	Structural equation modelling	Yes	Yes	Girls who observed their mothers' aggressive behaviour toward partners were significantly more aggressive toward friends. Similarly, boys who witnessed their fathers' aggression were significantly more aggressive toward friends	Girls witness mother = large Boys witness father = large	Sex moderates the relation between IPV by father and aggression toward friends; this reflects the finding that paternal IPV was significantly related to aggression toward friends in boys but not girls. Relation between IPV and aggression toward friends stronger for female youth diagnosed with PSTD	Sample: Cross-sectional. Small sample size. Sample from referrals for moderate to severe behavioural problems. Other: Only included sex-separated data analysis. Unable to perform moderator/ mediator analysis on boys due to small number of boys in sample
Mustanoja et al. (2011)	Pearson χ^2 test or Fisher Exact test. Logistic regression model	No	Yes	When controlling for covariates, no significant association found between witnessing IPV and bully perpetration in males or females	*ns*	N/A	Sample: Cross-sectional. Acute psychiatric inpatient sample. Measure: Overlap between "conduct disorder" and "bullying behaviour" on K-SADS-PL. Bullying measure did not specify severity or type of bullying.
Odar Stough et al. (2016)	Multinomial logistic regression	No	No	Children who had seen or heard parents or adults in the home slap, hit, punch, or beat each other were more likely to always, sometimes, or rarely bully versus never bully. When controlling for covariates, children who were exposed to IPV were more likely to sometimes bully versus never bully	Small	N/A	Sample: Cross-sectional. Limited to children with BMI data available. Measure: Care-giver report. Single item to measure IPV and bullying perpetration.

Table 3. *(Continued)*

Author (Year)	Data Analysis	Tests of mediation/ moderation	Tests of gender differences	Primary results: Bullying Perpetration	Primary results: Effect size (significant findings only)	Mediation / Moderation analysis	Main limitations
Shin et al. (2014)	Bivariate correlations, one-way MANOVA	No	No	Significant correlations between aggression towards peers and parental conflict (both self-report and mother-report).	Moderate	N/A	Sample: Cross-sectional. One year group. Measures: Peer-nominations were capped at 3 students. Self-report and peer-reports identified different number of children for victim group. Peer-reports of bully subgroup did not correlate with self-report
Tanrikulu and Campbell (2015)	Independent *t*-tests, multinomial logistic regression	No	No	When adjusting for covariates, interparental conflict was not associated with traditional bullying perpetration, but was for traditional bully-victims	*ns*	N/A	Sample: Included cohort of students from a private institute espousing Islamic values

Associations between IPV exposure and bullying perpetration

Of the 30 studies included in this review, 24 reported statistically significant associations between childhood exposure to IPV and child bullying perpetration, whilst five reported non-significant associations and one failed to provide significance values. All studies rated Good on the NIH quality tool reported significant associations, bar one (Espelage et al., 2014), which was the study that did not report significance levels.

When studies provided significant associations for *overall IPV exposure* and *overall bullying perpetration* (*n*=18), a range of effect sizes were observed, included very small (*n*=3), small (*n*=6), moderate (*n*=5) and large (*n*=4). Most of these studies (*n*=16) adjusted for covariates in their analysis, with two studies that did not (Cuervo et al., 2018; Shin et al., 2014). Studies conducted in developed countries were most likely to report small effect sizes (*n* = 6, 26%), whilst studies conducted in developing countries were most likely to report large effects (*n* = 3, 43%).

In addition, three studies reported on different types of IPV exposure and bullying perpetration. Baek et al. (2019) reported small to moderate effect sizes for exposure to parental violence on six items of bullying perpetration, with the greatest effects for items on bullying others when part of a group and being mean to other students when angry. In a longitudinal study, Low and Espelage (2013) reported a moderate association between family violence and non-physical bullying at Wave 1, and a large association at Wave 3, twelve months later. Lucas et al. (2016) compared two levels of IPV exposure (‘witnessed’ vs ‘frequently witnessed’) against two levels of bullying perpetration (‘ever bullied’ vs ‘bullied many times’). Large effect sizes were reported for both IPV frequency levels and ‘bullied many times.’ A small effect was reported for ‘witnessed’ family violence and ‘ever bullied’, but no significant association was reported between ‘frequently witnessed’ and ‘ever bullied’.

One study was recorded as ‘unobtainable’ (Holt et al., 2009) as it was not possible to calculate an effect size for IPV exposure on bullying as only the *p*-value was reported. However, their study data was included in the narrative synthesis as it reported a significant likelihood that children self-reporting bullying are more likely to live in homes in which domestic violence is occurring. In their longitudinal study, Espelage et al. (2014) reported moderate to large correlations between family conflict at Time 1 and bullying perpetration at Times 1, 2 and 3. However, the authors did not report significance values for these associations and were therefore excluded from the calculations of effect size.

Five studies reported non-significant findings. All five studies were cross-sectional by design, rated Fair on the NIH quality assessment tool, and were conducted in developed countries. However, four of these studies had sample sizes in the lowest third included in this review ($N < 509$) (Bauer et al., 2006; Gullone & Robertson, 2008; Mustanoja et al., 2011; Tanrikulu & Campbell, 2015). Given that the effects of IPV on bullying perpetration may be small, it is possible that reduced sample sizes lowered the power to detect an effect. Methodological limitations may also have accounted for the lack of significant associations, including the use of samples that are not representative of the population (Mustanoja et al., 2011; Tanrikulu & Campbell, 2015), low response rates (Gullone & Robertson, 2008), removal of hoax responses (Lepisto et al., 2011) and including items that parents may find difficult to detect, such as relational and not overt bullying behaviours (Bauer et al., 2006).

It should be noted that eight studies included in this review did not explicitly adjust for covariates when presenting their analysis on the relationship between IPV exposure and bullying perpetration. Six of these studies reported significant associations between IPV and bullying perpetration (Ameli et al., 2017; Cuervo et al., 2018; Ferguson et al., 2009; Holt et al., 2009; Moretti et al., 2006; Shin et al., 2014); caution should be taken when interpreting

these findings as the observed effects are likely inflated by a failure to account for correlated risk factors.

Frequency, severity, and type of IPV exposure

Only four of 30 studies assessed for varying levels of IPV exposure. Lucas et al. (2016) assessed the impact of frequency of exposure to IPV by comparing children who had 'witnessed' IPV against those who had 'frequently witnessed' IPV (based on giving the response 'yes, several times' on the IPV measure). When adjusting for individual and family-related variables, a trend towards increased effect size was seen for increasing frequency of IPV violence and risk of bullying perpetration. However, caution should be exercised when interpreting these large effects; odds ratios (OR) calculated for 'frequently witnessed' and 'bullied someone else many times' included wide confidence intervals; and significant effects for girls included OR of less than 1.

Knous-Westfall et al. (2012) assessed IPV severity by combining IPV measures with parental reports of injuries sustained from partner aggression. If a parent reported an act of aggression, they were considered as 'Any IPV', while those who also sustained an injury were considered 'Severe IPV'. A moderate association was found between Severe IPV and higher relational bullying but not overt bullying. No associations were found between Any IPV and relational or overt bullying.

Ferguson et al. (2009) used subscales of the CTS to measure parental physical assaults and psychological aggression separately. The authors reported a significant moderate association between psychological aggression and child bullying perpetration, but not for physical assaults.

Only one study assessed for different behaviours as part of IPV exposure (Baldry, 2003), which included verbal violence, hitting, harming, threatening and throwing items at a partner. Violence categories depended on the gender of the perpetrator in relation to significant associations with child bullying: verbal violence, hitting and harming were significant if perpetrated by the father; throwing items was significant if perpetrated by the mother. The exception was threats to partner, which was significant for both mother and father.

Gender of IPV perpetrator

Only two of 30 studies provided separate analyses for mother- and father-perpetrated violence (Baldry, 2003; Moretti et al., 2006). In addition to providing global measures of IPV exposure, Baldry (2003) assessed mother- and father-perpetrated physical and verbal violence. Both mother- and father-perpetrated violence were significantly associated with overall bullying perpetration, although the largest association was seen with mother-perpetrated violence. Moretti et al. (2006) reported that children were significantly more aggressive towards their friends only when their gender matched that of the IPV perpetrator.

Child gender differences

Eight of 30 studies tested for gender differences. Three studies reported larger associations between IPV exposure and bullying perpetration for girls (Baldry, 2003; Duke et al., 2010; Espelage et al., 2014), whilst three other studies found larger effects for boys (Ameli et al., 2017; Knous-Westfall et al., 2012; Lucas et al., 2016). One study reported that girls were more likely to be aggressive towards peers if they observed their mothers' aggressive behaviours, with the same occurring for boys that witnessed their fathers' violence

(Moretti et al., 2006). One study reported no significant difference between genders (Mustanoja et al., 2011).

When looking in more detail at gender differences, Baldry (2003) found that the most significant differences for girls occurred in relation to direct bullying rather than indirect bullying. When larger effects were observed for boys, the difference was associated with higher frequency of IPV (Lucas et al., 2016) or higher severity IPV (Knous-Westfall et al., 2012).

Type of bullying perpetration

While most studies (n=25) used a global or composite measure for child bullying perpetration, four studies explored different types of child bullying behaviours. Two studies explored overt and relational bullying separately. Knous-Westfall et al. (2012) found an association only occurred for relational bullying when exposed to severe IPV, whilst no significant associations were found for overt bullying. On the other hand, Baldry (2003) did not find an association between IPV exposure and overall direct or indirect bullying. However, when exploring gender differences, significant associations for girls were found for both direct and indirect bullying, but not for boys.

A further two studies opted to only explore relational forms of bullying (Bauer et al., 2006; Low & Espelage, 2013). Whilst Low and Espelage (2013) reported a moderate association between family violence and relational bullying perpetration across time, Bauer et al. (2006) did not find a significant association. In their discussion, Bauer et al. (2006) suggested this is likely due to under-reported bullying perpetration by parent measures, particularly as relational bullying is harder to detect and less likely to be reported by the victims.

Mechanisms underlying the association between childhood IPV exposure and bullying perpetration

Seven studies explored mediators or moderators that could explain the identified associations between IPV exposure and bullying perpetration. Two studies explored the role of affective variables (Baek et al., 2019; Low & Espelage, 2013). Baek et al. (2019) found that child depression did not mediate the effect of IPV exposure on bullying, whilst child anger was a substantially more important mediator for female students than males. Low and Espelage (2013) found that the association between IPV exposure and non-physical bullying was mediated by hostility for white male children, and depressive symptoms for black male children.

A further two studies explored the role of post-traumatic stress disorder (PTSD) on the relationship between IPV exposure and bullying. Hsieh et al. (2021) found evidence that PTSD partially mediated the relationship between six types of ACEs (IPV exposure included) and child bullying perpetration. A similar finding was reported by Moretti et al. (2006), where the relation between IPV and aggression towards friends was stronger for female youth diagnosed with PTSD. However, it should be noted that the findings by Moretti et al. (2006) are limited due to the low number of boys with PTSD diagnoses precluding examination of sex differences.

One study explored the role of the child's self-worth on the relationship between IPV exposure and bullying. Christie-Mizell (2003) reported that the effects of interparental discord were mediated by the influence of the child's self-concept. More specifically, positive self-concept acted as a protective factor against aggression.

The remaining two studies explored the role of external factors on IPV and bullying perpetration. Grant et al. (2019) found a moderating effect for peer deviance, where

increasing levels of peer deviance at a given time exacerbated the relationship between IPV exposure and levels of bullying perpetration. Knous-Westfall et al. (2012) studied the role of parenting practices on IPV exposure and bullying, but found no mediating effects, regardless of IPV severity.

DISCUSSION

This review systematically evaluated the evidence relating to IPV exposure and child bullying perpetration. Thirty studies met the inclusion criteria. Most studies (80%) reported a significant association between childhood exposure to IPV and the perpetration of bullying behaviours towards peers. There was a high degree of variability regarding effect sizes, ranging from very small effects ($r<0.1$) to large effects ($r>0.3$), although the majority of studies (61%) reported small to medium effect sizes.

There was limited evidence for child gender differences in the association between IPV and bullying perpetration, with an equal number of studies reporting stronger effects for boys and girls. However, gender differences became more apparent when studies explored the impact of IPV severity and frequency. These studies observed a trend towards increased risk of child bullying perpetration when exposed to frequent IPV, or to more severe types of IPV, particularly for boys. In line with social learning theory (Bandura & Walters, 1977), higher frequency and severity IPV increases the number of opportunities the child has to observe and then imitate such aggression.

Very few studies specified the impact of IPV perpetrator gender, and none explicitly identified the effects of same-sex relationships. Whilst there is limited evidence that children of the same sex as the IPV perpetrator are more likely to perpetrate bullying (Moretti et al., 2006), there is not yet enough data to conclude this with confidence. Several studies only

examined mother reports of father-perpetrated violence (Bowes et al., 2009; Christie-Mizell, 2003; Hong et al., 2021), with many others reporting low rates of father informants despite recruiting either parent. One criticism of the literature is the assumption that IPV is primarily perpetrated by the father, which leads to sampling bias and failure to enquire about mother-perpetrated violence (Dutton & White, 2013). However, some studies have shown that in community-based dual parent households, children are 2.5 times more likely to be exposed to IPV by their mother than their father (McDonald et al., 2009). In addition, female partners of victimised men have been reported to use 5-6 times more physical and severe psychological aggression compared to males (Hines & Douglas, 2011). Children living in homes where female-perpetrated aggression is more common have increased opportunity to observe and imitate such aggressive behaviour. This could account for the larger effects of mother-perpetrated aggression reported by Baldry (2003). However, this effect is likely to be masked in other studies that simply report the existence of violence between parents or those that only measure mother reported IPV.

The quality of studies in this review varied, with only eight studies rated as Good. All seven longitudinal studies included in this review were rated within this category, reflecting their powerful design and ability to explore pathways of interaction. However, the longest follow-up period was 29 months, meaning it is difficult to accurately assess the long-term effects of IPV exposure. The remaining studies were typically limited by their cross-sectional design, which did not show temporality in the order of hypothesised exposures and outcomes, thereby limiting the ability to infer causality.

There was a wide range of IPV measures used in the articles reviewed, with just under a third using study-specific measures and the remaining 21 studies using 11 different validated scales; several of which were modified or shortened. There are strengths and limitations of the two most commonly used validated measures: the Conflict Tactics Scale

(CTS) and the Children's Perceptions of Interparental Conflict Scale (CPIC). The latest version of the CTS – the CTS-2 – is a comprehensive measure of parent-partner aggression that provides a specific 12-month timeframe and seven-point frequency Likert-scale for scoring. However, the CTS-2 is designed to be parent-reported and may be at risk of under-reporting a child's exposure to violence (Jaffe et al., 1990). On the other hand, CPIC contains fewer items than the CTS and a more restrictive 3-point Likert scale. However, the CPIC is child-reported and contains subscales designed to assess the child's perception of threat and extent to which they blame themselves for the aggression. These subscales could shed light on the causal mechanisms behind whether a child subsequently bullies others after witnessing their parents' violence.

Similar issues affected the measurement of bullying perpetration – with half of all studies using their own study-specific measure, and the other half using nine different validated scales. In addition, Bauer et al. (2006) noted their response rate to the item "I bullied others" was 4.5%, compared to 9.8-19.6% for specific acts of bullying, which suggests that using single items to measure bullying may be subject to social desirability. Furthermore, children exposed to IPV may be more likely to hold positive views of aggression and therefore less likely to see their behaviour as 'bullying.' Whilst some measures, such as the Olweus Bullying Scale (OBS), provide detailed definitions on the term *bullying*, there may be issues of comprehension that affect a child's ability to rate the scale. For instance, the revised OBS describes friendly and playful teasing as examples of behaviours that are not bullying. A child that has grown up in a violent family home may believe that their aggressive behaviour is an appropriate way to act, therefore believing it to be friendly and leading to an underestimated prevalence of bullying.

Although this review reported evidence from a range of countries, the majority of published research took place in developed countries (77%), with just under half of all studies

conducted in the USA. This raises questions around cultural bias and the applicability of the findings to developing countries, particularly those in Africa, Latin America, or the Caribbean, which were considerably under-represented within this review. Whilst recognised measures such as the Olweus Bullying Questionnaire have been shown to have validity across different cultures (Bushina & Muminova, 2021; Gaete et al., 2021; Gonçalves et al., 2016), this review raises concerns around the use of study-specific measures. Many studies opted to use bespoke measures of IPV exposure or bullying perpetration, which may have been normed or validated on certain national, ethnic, or socio-racial groups.

This review adopted revised thresholds for interpreting effect sizes in behavioural and cognitive research (Gignac & Szodorai, 2016), rather than conventional guidelines (Cohen, 1992; Ferguson, 2016). Whilst this enabled more accurate comparisons of the magnitude of effect sizes relative to others reported in the literature, caution should be taken to ensure the findings of this review are not conflated with others that preferred conventional guidelines for reporting effect sizes. Overall, the findings of this systematic review indicate that there is a small/moderate elevated risk of the child perpetrating bullying when exposed to IPV.

Implications for future research

There are several methodological considerations for future research. First, research needs to distinguish IPV as a separate exposure from domestic violence – several studies reported ‘exposure to IPV’ but it was not clear from the measures used whether this specifically excludes the child being victimised. Clarification may help us better understand the causal mechanisms behind children perpetrating bullying after IPV exposure.

Second, greater consistency needs to be applied to the use of exposure and outcome measures. Where possible, validated measures of IPV exposure and bullying perpetration

should be used. If not, then the use of multiple items to explore overt and relational bullying behaviours may provide a more valid measure of bullying perpetration. This should be combined with increased rigour in setting timeframes for self-report measures – simply asking "have you ever witnessed" or "have you ever bullied" is non-specific. Measures also need to be tailored to the child's developmental stage and cognitive ability.

Third, researchers need to consider the impact of different levels of IPV exposure. Several studies dichotomously quantified exposure to IPV as "exposed" or "not exposed" (e.g. Chesworth et al. (2019); Duke et al. (2010)), with no accounting for frequency or intensity of such experiences. This runs the risk that associations are not adequately measured as the "exposed" group accepts varying levels of exposure, including one-off exposures. Frequent and long-term exposure to IPV provides children with increased opportunity to observe and imitate aggressive behaviours, compared to those with sporadic, short-term exposures. In contrast, infrequent or one-off exposures may be due to exceptional circumstances within the family home, such as medication side-effects, bereavement, or job loss. These parents may be more likely to recognise the significance of these aggressive behaviours for their child and be inclined to repair any ruptures within the family, therefore mitigating any long-term negative outcomes.

Fourth, future measurement of IPV exposure would benefit from separating mother- and father-perpetrated violence. Equally, this review found no evidence of research into same-sex parent-child relationships, and this should be addressed in future research. Early evidence in this review suggests there may be different effects depending on which adult perpetrates the aggression, with male children more likely to bully if they witness their father's aggression, and female children more likely to bully if they witness their mother's aggression.

Fifth, researchers may wish to explore child attitudes towards IPV and bullying perpetration. How the child appraises the IPV in the first place may help determine the mechanisms that underpin whether a child goes on to perpetrate bullying against their peers. The CPIC is a validated measure that could address this issue, given that it contains subscales on the child's perception of threat and self-blame when witnessing parental violence.

Finally, an important consideration for bullying measurements is the fluidity of bullying experiences. As highlighted by Le et al. (2017), up to 75% of participants are likely to experience unstable bullying roles when assessed over time. This has important considerations for cross-sectional data that uses binary outcomes to determine bullying roles at a certain time point, which may under- or over-estimate bullying prevalence as a result. Prospective cohort studies that measure bullying perpetration across multiple time points may eliminate this issue.

Implications for clinical practice

The finding that IPV exposure is associated with child bullying behaviours provides support for a preventative and systemic approach to school behaviour problems. Historically, much attention has been paid to school and peer factors behind bullying behaviours, with a focus on reactive intervention programmes. This review has demonstrated that childhood experiences in the family home have significant consequences for the child's social and behavioural development, highlighting the need for family involvement in preventative interventions. Early evidence suggests that bullying prevention programmes are more effective when they involve basic parenting skills (Ttofi & Farrington, 2011).

The findings also have important implications for those involved in risk-assessing child welfare. The identification of bullying behaviours in children may serve as an indicator

for exposure to violence in the family home, which may typically be overlooked in the absence of tangible warning signs such as injuries or broken equipment.

Strengths and limitations of the current review

The findings of the review are the result of a rigorous, systematic attempt to synthesise a large body of research. Systematic criteria (i.e. PRISMA) were used to identify studies and a quality assessment tool was used to critically appraise the studies. Despite these strengths, there are several limitations to consider. Only articles published in English were reviewed, which means that relevant articles published in other languages may have been overlooked. In addition, this review was limited to peer-reviewed journals and elected to exclude grey literature. This was done to avoid including studies that had not been rigorously reviewed, that provided incomplete or inaccurate information, or that duplicated data from another peer-reviewed study. However, it is acknowledged that the inclusion of grey literature may reduce the likelihood of publication bias, and that evidence from a range of sources other than peer-reviewed journals may enrich the findings of this review. It is also acknowledged that the quality assessment tool involves a degree of subjectivity.

Furthermore, inconsistent presentation of results across the included studies rendered a meta-analysis difficult and beyond the scope of the current paper. This review was also limited to parental violence, and as such other forms of aggression such as parent-sibling violence, were not considered. Finally, cyberbullying was also beyond the remit for this review but should be considered alongside the physical and relational types of bullying in future reviews.

Conclusion

There is growing evidence that childhood exposure to intimate parental violence is associated with child bullying perpetration, particularly when frequency and severity of exposure is increased. However, there is a high degree of variability in methodological approaches and improving the design of such studies will enable a better understanding of the effects of IPV on bullying behaviours. Such research could lead to the improved identification of at-risk children and early implementation of prevention and intervention plans.

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Paper 2: Empirical Paper

The Role of Low Self-Control in the Relationship Between Parental Violence and Bullying: A Moderated Mediation Analysis

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This paper was written in accordance with the guidelines for authors for the Journal *Child Abuse & Neglect* (Appendix A). To enable sufficient coverage of the findings the word and page count adheres to Cardiff University guidance.

ABSTRACT

Background: Low self-control has been found to mediate the relationship between a range of parenting practices and offending behaviours. However, few studies have examined the role that self-control may play in the relationship between exposure to parental violence and bullying perpetration and victimisation.

Objective: To explore the mediating role of low self-control on the relationship between parental violence and involvement in bullying perpetration and victimisation, moderated by sex.

Participants: Using cross-sectional data from the Montevideo Project on the Social Development of Children and Youths (m-proso), 2200 students (50.8% female, mean age = 15.15 years) from 82 different schools in Montevideo, Uruguay, completed a battery of questionnaires.

Methods: Results were analysed using hierarchical multiple regression and bootstrapped moderated mediation analysis to examine whether adolescent-reported low self-control mediated the association between parental conflict and corporal punishment, and bullying perpetration and victimisation. Sex was examined as a moderator for any significant relationships.

Results: Results indicate that that adolescents with higher bullying perpetration or victimisation were more likely to report parental violence at home than adolescents with lower bullying involvement. Furthermore, low self-control fully mediated the association between parental conflict and bullying perpetration. Gender did not moderate the mediating role of low self-control, although did moderate the direct relationship between parental conflict and bullying perpetration.

Conclusions: This study provides evidence that parental violence, and the subsequent impact on self-control, have important implications in the development of bullying behaviours. Clinical implications for the intervention and prevention of parental violence are discussed.

Keywords: 'parental conflict', 'corporal punishment', 'self-control', 'bullying', 'moderated mediation'

INTRODUCTION

Bullying involves a power imbalance and the repeated use of pre-meditated physical and relational aggression (Farrington, 1993; Olweus, 1994). Bullying is a global concern, with a recent meta-analysis estimating that 35% of all adolescents experience it prior to adulthood (Modecki et al., 2014). Several studies have demonstrated significant associations between being bullied and negative life outcomes, such as anxiety, depression, self-esteem and substance abuse (Garnefski & Kraaij, 2014; Lereya et al., 2015; Luk et al., 2010; O'Moore & Kirkham, 2001). Similar risks are identified in those that bully others, along with increased future risk of offending behaviours (Ttofi & Farrington, 2011) and intimate partner violence (Falb et al., 2011).

A range of family factors have been identified in relation to increased bullying involvement, including low family income (Jansen et al., 2011; Tippett & Wolke, 2014), parental mental health problems (Shetgiri et al., 2013), and punitive parenting styles (Hong et al., 2017). One factor that is receiving increasing focus in the literature is the role of parental aggression, with a positive correlation between exposure to parental violence and bullying perpetration demonstrated in several studies (Baldry, 2003; Knous-Westfall et al., 2012; Lucas et al., 2016), as well as bullying victimisation (Bowes et al., 2009; Lereya et al., 2013). In a similar vein, children who witness domestic violence are more likely to demonstrate externalising (ie. Aggressive or oppositional behaviour) and internalising (ie. anxious or depressive symptoms, withdrawal) behaviours than non-exposed children (Grych et al., 2000; Renner & Boel-Studt, 2017), with some studies suggesting a stronger association with externalising behaviours than internalising (Karakuş & Göncü-Köse, 2022; McCabe et al., 2005).

Despite the growing evidence for a link between parental violence and bullying, not all children exposed to violence go on to perpetrate aggression. This suggests the presence or absence of additional factors that enable the development of aggression following exposure. Identifying psychological and social factors that underlie the development of aggressive behaviours will help clinicians recognise risk factors in children exposed to violence in the family home. However, relatively few studies have explored the mediating mechanisms underlying this relationship. The limited research thus far has indicated that factors such as hostility and depression (Baek et al., 2019; Grant et al., 2019; Low & Espelage, 2013), post-traumatic stress disorder (Moretti et al., 2006), and peer deviance (Grant et al., 2019), influence the relationship between exposure to violence and perpetration of bullying. The role of psychological factors that influence this relationship have not been sufficiently explored and warrant further investigation.

One interesting development in the field of bullying research is the observation that adolescents who engage in bullying are also most likely to be bullied themselves (Cho, 2019; Pauwels & Svensson, 2011). This overlap between bullying and victimisation suggests there are shared characteristics or lifestyles that increase the exposure to antisocial behaviours. One individual trait that has received a lot of attention in relation to aggressive behaviours is self-control. According to Gottfredson and Hirschi's (1990) general theory of crime, parenting style is critical to the child developing self-control; parents who monitor, identify, and correct aggressive behaviours are more likely to see their child develop high levels of self-control. In contrast, when parental behaviour management does not occur, particularly in the presence of family violence, the children are more likely to show difficulties with self-control (Willems et al., 2018). Gottfredson & Hirschi (1990) suggest that people with low levels of self-control are more likely to be impulsive, insensitive to others, and short-sighted, increasing their likelihood of engaging in aggressive behaviours. Gottfredson and Hirschi's (1990) theory

defined low self-control as composed of six inter-connected elements: 1) impulsivity, 2) preference for simple activities, 3) risk-seeking, 4) preference for physical activities, 5) egocentrism, and 6) temper regulation difficulties. Low self-control has consistently been shown to predict criminal behaviours (Vazsonyi et al., 2017), and there is growing evidence that low self-control is also positively associated with bullying perpetration (Cho & Lee, 2021; Chui & Chan, 2013; Moon et al., 2011), particularly in relation to high impulsivity traits (Jolliffe & Farrington, 2011). Low self-control has also been suggested as a factor behind bullying victimisation. Schreck (1999) argued that individuals with low self-control would be less likely to anticipate the consequences of their actions, effectively increasing the likelihood of participating in situations that pose a risk to their own safety. Furthermore, individuals who are self-centred and aggressive are more likely to experience grievances with others, and may be targeted by bullies as a result (Schreck et al., 2006). Consequently, individuals find themselves trapped in a cycle of risk and victimisation. Evidence suggests that low self-control is a significant predictor of victimisation of violence at school, even when controlling for confounders such as peer delinquency and supervision (Cho, 2019; Schreck et al., 2002).

The original self-control theory suggests that self-control becomes a relatively stable trait from ages 8-10 years (Hirschi, 2004); whilst individuals may experience increases in absolute self-control (i.e. within-individual change) over time, their self-control ranking relative to others in the same age-range (between-individual change) should remain fixed after the first decade of life. This implies that there is a short window of opportunity for developing self-control and that interventions after this period are unlikely to be effective (Meldrum et al., 2012). However, this appears at odds with the neurological literature which demonstrates that brain development continues through adolescence and into early adulthood. From a neurodevelopmental perspective, the prefrontal cortex – responsible for executive

function skills such as flexible thinking, planning, organising, switching attention, and weighing up consequences – is one of the slowest regions of the brain to develop and continues to mature into the 20s (Arain et al., 2013; Gavin et al., 2009; Kolk & Rakic, 2022; Lebel et al., 2019).

The proposition that self-control continues to change through adolescence has gained traction in recent years and led to claims that the stability hypothesis has been falsified (Burt, 2020). Indeed, there is growing evidence that self-control fluctuates temporally, particularly in relation to social factors (Burt et al., 2006; Hay & Forrest, 2006; Meinert & Reinecke, 2018; Na & Paternoster, 2012; Ray et al., 2013). For example, in their longitudinal study of 12-17 year olds, Meldrum et al. (2012) demonstrated both within- and between-individual differences in changes to self-control over a two year period; changes which also occurred in relation to the level of self-control and delinquency among their peers, suggesting that socialisation processes continued to play an important role in the developent of self-control well into adolescence. Similar findings were reported by Burt et al. (2006), where approximately half of participants aged 10 to 12 years moved quartiles in self-control ranking over a two-year period. A further study by Hay and Forrest (2006) reported that 16% of 7 to 15 year olds experienced significant fluctuation in absolute self-control, with 5% in the bottom rankings at age 7 moving to the top ranking by age 15, and 11% decreasing in self-control. Hay and Forrest (2006) suggested this finding was due to self-control remaining subject to parental socialisation throughout the study, meaning problems in the quality of parenting reduced their childs' self-control. Taken together, these studies contradict the original self-control theory's assertion that levels of self-control are fixed by 10 years of age, and instead suggest that parents can continue to affect their child's self-control during adolescence. Furthermore, they suggest that individuals can follow different trajectories in

developing self-control, with some successfully achieving it at a slower rate and later time point than others.

One final consideration in the development of self-control in adolescents exposed to violence is the role of sex, with numerous studies showing males to exhibit lower self-control than females (Chapple et al., 2021; Chapple et al., 2010; Gibson et al., 2010; Jo & Bouffard, 2014). Gottfredson and Hirschi's (1990) original theory argued that parenting practices differed for boys and girls, with boys' behaviour less monitored, recognised and corrected than females. Studies have consistently shown that males report lower levels of supervision and higher rates of corporal punishment than females (Chapple & Johnson, 2007; Chapple et al., 2010; Gibson et al., 2010). Whilst non-physical punishment is associated with higher self-control (Unnever et al., 2003), the use of corporal punishment has been shown to predict lower levels of self-control (Beaver et al., 2007). In addition, exposure to violence and adverse childhood experiences have been associated with increased impulsivity in males compared to females (Chapple et al., 2021; Monahan et al., 2015). Overall, evidence suggests that males are more likely to exhibit signs of low self-control than females in relation to family aggression.

Recent research has identified low self-control as a mediator between various family and adolescent aggression factors, including: family violence and adolescent aggression (Agbaria & Natur, 2018), family violence and adolescent fighting (Wang et al., 2021), parental management and adolescent delinquency (Baek et al., 2022), and parental attachment and adolescent bullying (Cho et al., 2017). However, the role of low self-control in the relationship between family violence and bullying warrants further investigation. Of clinical interest is the recent finding that self-control is a malleable characteristic that can be improved, with positive changes in self-control observed in school-based programs targeting delinquent behaviours (Piquero et al., 2016; Piquero et al., 2010) as well as improving

educational attainment (Ursache et al., 2012). There is also limited evidence that interventions that target parenting behaviours such as vigilance and responsive communication lead to long term improvments in adolescent self-control (Brody et al., 2005). In the context of continued socialisation throughout adolescence, this implies that self-control can be targeted, both directly and indirectly, in aggression prevention and intervention work with adolescents and their families.

Current study

Using data from the Montevideo Project on the Social Development of Children and Youths (m-proso) study (Trajtenberg & Eisner, 2015), the present study aims to examine the relationship between exposure to parental conflict and corporal punishment and adolescent bullying perpetration and bullying victimisation. The mediating role of low self-control is proposed through four separate mediation models (see Figure 1). Finally, the moderating role of sex on the mediation of low self-control is examined.

Hypotheses:

1. Adolescent reports of parental conflict and corporal punishment will have direct associations with adolescent low self-control.
2. Adolescent reports of parental conflict, corporal punishment, and low self-control will predict adolescent bullying perpetration and bullying victimisation.
3. Low adolescent self-control will mediate the association between:
    a. parental conflict and adolescent bullying perpetration (Model A)

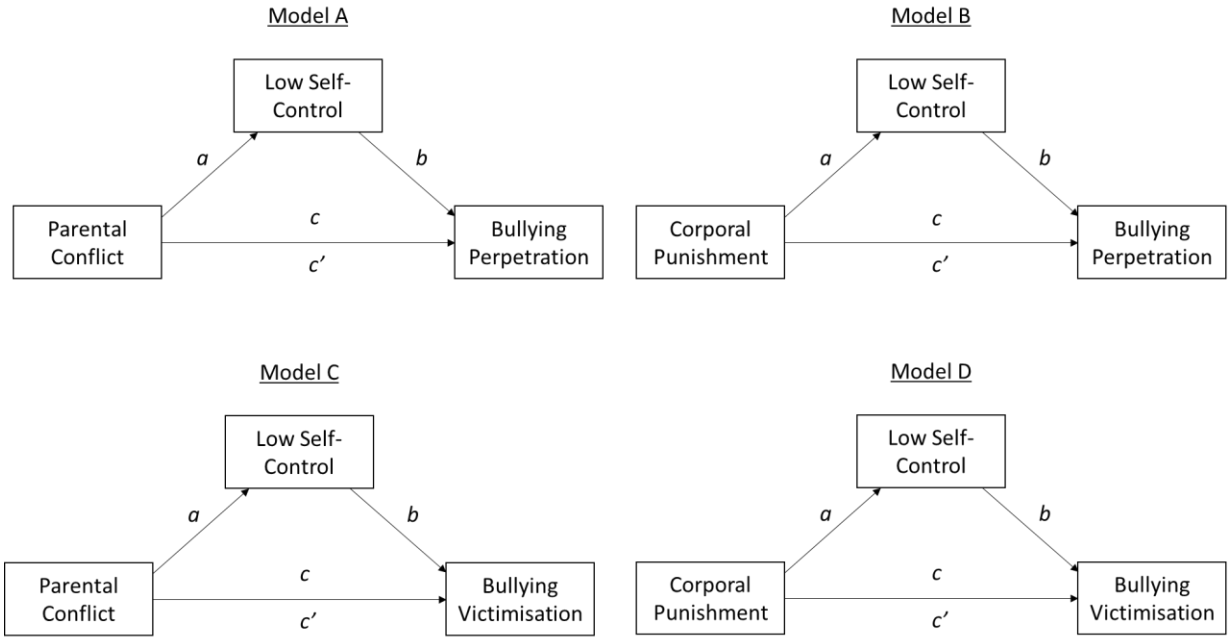
b. corporal punishment and adolescent bullying perpetration (Model B)

c. parental conflict and adolescent bullying victimisation (Model C)

d. corporal punishment and adolescent bullying victimisation (Model D)

4. Sex will moderate the mediation of low self-control

Figure 1. *Mediation models for Hypotheses 3a-3d*



Path *a* indicates the effect of independent variable on mediator variable, path *b* indicates the effect of mediator variable on outcome variable, path *c* indicates the total effect, path *c'* indicates the direct effect of independent variable on outcome variable, and path *a*b* indicates the indirect effect (IE).

METHOD

Participants

The distribution of demographic variables is summarised in Table 1. The study employed a cross-sectional design and included 2200 students (50.8% female) from 82 different schools in Montevideo, Uruguay. Their age ranged from 13 to 18 years, with a mean of 15.15 years (*SD* = .91). The final sample slightly over-represents private schools (34.4% vs target population of 32.7%) and technical schools (7.1% vs 4.1%) and under-represents public schools (58.5% vs 63.2%). Parental level of education was calculated using the highest level of educational attainment of either the mother or father.

Table 1. *Distribution of demographic variables*

Criteria	Value	Distribution %	*N*
Sex	Male	49.2	1082
	Female	50.8	1118
Age	13 years	<0	1
	14 years	22	475
	15 years	52.1	1127
	16 years	16.3	353
	17 years	7.7	167
	18 years	1.9	41
School	Public	58.5	1286
	Technical	7.1	157
	Private	34.4	757
Parent status	Together	58.8	1276
	Separated	34.2	742
	Never lived together	7	152
Living with mother	Yes	97.8	2143
	No	2.2	49
Parents education level	Primary	40.3	859
	Secondary	36.3	772
	University	23.4	499

Procedure

In Uruguay, studies on populations under the age of 18 years require the youth's informed consent alongside approval from the National Administration of Public Education (ANEP), both of which were obtained. Additional approval was obtained from the Association of Private Catholic High Schools (AUDEC) and Association of Private Secular High Schools (AIDEC). A letter to parents was also sent prior to data collection, outlining the nature of the research, and asking for their permission to conduct the study. No parents expressed a wish for their child to be excluded from the study.

Adolescents were randomly selected using a cluster-randomised approach. Randomisation occurred within three strata: i) private high schools; ii) public high schools; and iii) technological schools that include a basic education cycle. Sampling for each stratum was proportional to the number of adolescents in the respective school type in the total population. A total of 90 classes in 85 schools were selected to participate. Three private schools refused to participate (4%), leaving 87 classes in 82 schools to participate in the survey. Selected schools were sent a letter on behalf of ANEP and the University of Cambridge before telephone calls were made to introduce the project in further detail. Finally, the survey goals and protocol were outlined in person, during a meeting between the researchers and the director and teachers responsible for each class.

Data collection took place between 15th July and 17th September 2013. A total of 486 pupils were not present in school the day the survey was due, and no data was provided for their absence. A team leader and 14 undergraduate students from the School of Social Sciences were hired to help administer the survey. To ensure confidentiality, the survey was conducted by two fieldworkers in the classroom under exam conditions where students were unable to talk to each other or view each other's responses. Teachers and other authorities of

the school were not present during the administration of the survey, nor did they have access to the completed questionnaires. Fieldworkers introduced the project and outlined the questionnaire. The questionnaire consisted of approximately 380 items and students were allocated 90 minutes to complete it.

The original ethical approval for the m-proso study was granted by the Ethics Committee of the Institute of Criminology, University of Cambridge. Ethical approval to use the m-proso dataset for the current study was provided by Cardiff University (Appendix C) after receiving a letter of approval from the University of Cambridge (Appendix B). To ensure confidentiality, all data was anonymised by removing all identifiable information.

Measures

The m-proso study is based on the questionnaire used in Wave 6 of the Zurich Project on the Social Development from Childhood to Adulthood (z-proso). The questionnaire was designed to measure violent perpetration and victimisation amongst adolescents, alongside key risk factors for aggressive behaviours. The original questionnaire was translated from German into Spanish by a Spanish-speaking translator familiar with social science projects (see Appendix D for exemplar of Spanish questionnaire). Where necessary, and where English language versions of the questionnaire were available, a second translator compared the Spanish and English versions for validation purposes. For the current study, the following scales were selected for analysis:

Parental conflict. This scale was adapted from the Alabama Parenting Questionnaire (APQ) (Shelton et al., 1996) and the Parenting Scale from the Kriminologisches Forschungsinstitut Niedersachsen (KFN) (Wetzels et al., 2001) (Appendix E). Exposure to

parental conflict was measured using a three-item scale on the extent of disagreement, conflict, and inadequate communication between parents. Students could choose from a 4-point Likert scale ranging from: 1 = 'never' to 4 = 'often'. The items included: 'your parents are fighting each other', 'your parents went a long time without speaking to each other' and 'your parents were offended or insulted each other'. Overall exposure to parental conflict was measured by adding the scores obtained from each of the three items (Cronbach's $\alpha = .78$). No time frame was specified for exposure to have occurred.

Corporal punishment. This scale was also adapted from the APQ (Shelton et al., 1996) and the Parenting Scale from the KFN (Appendix F). The corporal punishment subscale of the APQ has acceptable internal consistency and construct validity (Essau et al., 2006). This scale measured the extent to which students were subject to physical punishment by their parents. There were a total of three items and students could choose from a 4-point Likert scale ranging from: 1 = 'never' to 4 = 'often'. The items included: 'your parents slap you', 'your parents hit you with a belt or other object' and 'your parents pull your ears or hair'. Overall exposure to corporal punishment was measured by adding the scores obtained from each of the three items (Cronbach's $\alpha = .71$). No time frame was specified for exposure to have occurred.

Self-control. This scale was measured using the Self-Control scale by Grasmick et al. (1993) and is based on the self-control theory proposed by Gottfredson and Hirschi (1990) (Appendix H). It measures the young person's ability to resist temptations and to predict the negative consequences of their actions. The scale consisted of six sub-dimensions: 1) impulsivity, 2) egocentrism, 3) risk-seeking, 4) preferencing for physical activities, 5) temper, and 6) preference for simple activities. Each subscale has good internal consistency

(Cronbach's α ranging from .72 to .91) (DeLisi et al., 2003). There were a total of 24 items relating to self-control and students could choose from a 4-point Likert scale ranging from: 1 = 'totally disagree' to 4 = 'totally agree'. Examples of items include: 'I almost always act without thinking', 'when things get complicated, I quit' and 'I think about my interests first, even when it causes problems for others'. Overall self-control was measured by adding the scores from each of the 24 items (Cronbach's α = .87), with higher scores indicating lower self-control. No time frame was specified for this scale.

Bullying perpetration. Bullying perpetration was measured using a modified version of the Olweus Bullying Scale (Olweus, 1996) and adapted by Alsaker (2012) (Appendix G). The measure has acceptable internal consistency although has been shown to be higher for males than females (Murray et al., 2021). Students were provided with a brief description of bullying as 'sometimes teens can be pretty mean to each other'. Students were also provided with example settings in which bullying behaviours could occur, including at school, on the way to school, when going out, at home or on the Internet. Students were asked to respond based on experiences in the last 12 months.

Bullying perpetration was measured using five items and students could choose from a 6-point Likert scale ranging from 1 = 'never' to 6 = 'almost every day'. Students were asked how many times they had: 'ignored or excluded another teenager', 'laughed at, insulted, or made fun of other teen', 'hit, bit, kicked, or pulled another teen's hair', 'taken, broken, or hidden things on purpose from another teen', and 'sexually harassed another adolescent'. Overall bullying perpetration was measured by adding the scores obtained from each of the five items (Cronbach's α = .73).

Bullying victimisation. Bullying victimisation was measured using a modified version of the Olweus Bullying Scale (Olweus, 1996) and adapted by Alsaker (2012) (Appendix G). Bullying victimisation was measured using the same five items and 6-point Likert scale as bullying perpetration, except each item began with 'how many times have other teenagers…'. Overall bullying victimisation was measured by adding the scores obtained from each of the five items (Cronbach's $\alpha = .70$).

Data Analysis

Data from the 2200 participants were screened for missing scores. Excluding demographic variables, a total of 1795 data points were missing from the total 90,200 data points (2%). As this ratio was smaller than 5%, the mean replacement method was employed to calculate the missing values (Tabachnick et al., 2007). In addition, Mahalanobis distance analyses were performed, which identified 70 participants (3.2%) as multivariate outliers and were subsequently excluded from the data set. The final sample included 2130 participants.

Variables were also examined for normality of distribution. Following the criteria set out by West et al. (1995) variables are considered significantly skewed if the value is greater than 2, and/or the kurtosis value is greater than 7. Therefore, variables that were significantly skewed and/or kurtotic were $\log_{10}$ transformed (Harrison et al., 2020).

Statistical analysis was performed using SPSS for Windows, version 27. First, descriptive statistics were calculated to assess the distribution of bullying perpetration, bullying victimisation, level of self-control, and exposure to parental conflict and corporal punishment. Exposure to parental conflict and corporal punishment was calculated using the percentage of participants who reported a mean score of "2 = sometimes" or higher on each subscale. Bullying perpetration and victimisation prevalence over the past 12 months was

calculated using the percentage of participants who reported a mean score of "2 = one or two times" or higher on each subscale. Second, a correlational analysis using Pearson's *r* coefficient was conducted to examine the interrelationships among each of the variables.

Third, hierarchical linear regressions were conducted to examine the effects of exposure to parental conflict, corporal punishment, and low self-control on children's bullying perpetration and victimisation, controlling for age, sex, and parent education. Prior to conducting linear regression, the relevant assumptions of this analysis were tested. First, the sample size of 2130 was deemed sufficient as five independent variables were to be included in the statistical analysis (Tabachnick et al., 2007). Second, exploration of the correlations did not reveal any independent variables with a correlation higher than .7. Third, collinearity statistics were examined (tolerance and variance inflation factor) and all variables were within the normal range, which indicated that collinearity was not a concern (Hair et al., 1998). Fourth, Cook's Distance values were calculated and no values were above 1 (Cook & Weisberg, 1982). Finally, the Durbin-Watson test statistic revealed a value of 1.54, which indicated that the residuals were not correlated (Durbin & Watson, 1951). When conducting separate regression models for bullying perpetration and victimisation, the first step added the demographic variables of age, sex and parent education into the regression model (Models 1 and 4). In the second step, the family violence variables of parental conflict and corporal punishment were entered in the regression model (Model 2 and 5). In the third and final step, the low self-control variable was entered into the regression model (Model 3 and 6).

Finally, a series of bootstrapped mediation models were computed using the PROCESS macro and syntax for SPSS (Hayes, 2017; Preacher & Hayes, 2008). This analysis involved 5000 bootstrapped random samples to obtain 95% confidence intervals, estimates, and *P* values (Preacher & Hayes, 2008) and was used to test for indirect effects of parental conflict and corporal punishment on bullying perpetration and victimisation via low

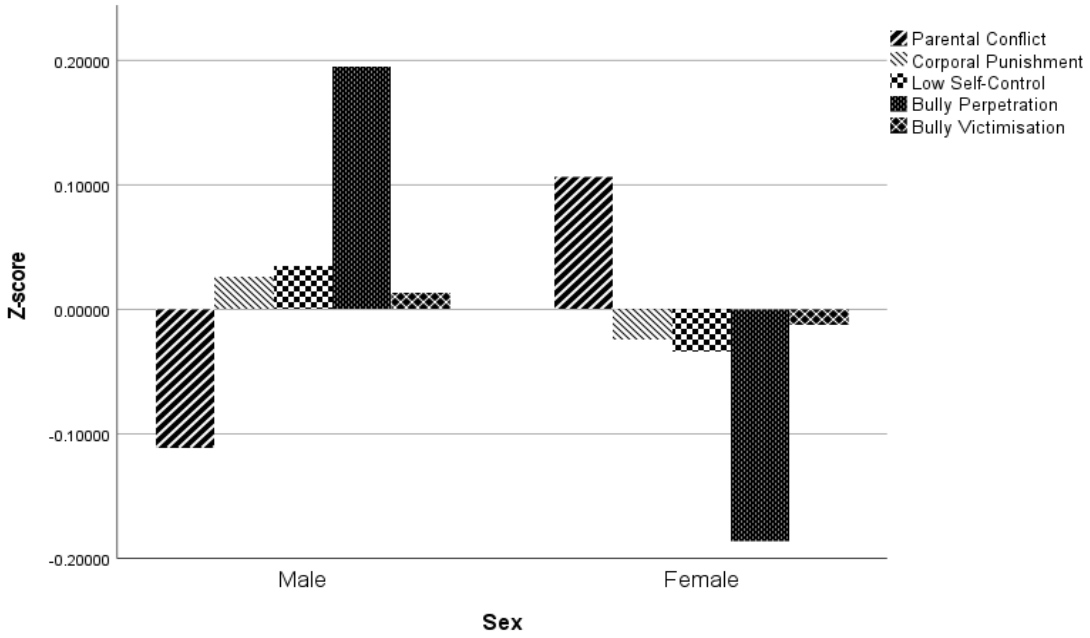
adolescent self-control. Separate analyses were conducted for parental conflict and corporal punishment, and for bullying perpetration and bullying victimisation. In addition, a moderated mediation analysis for sex on the paths between parental violence and bullying was conducted.

RESULTS

Descriptive statistics

Approximately 43.8% of participants had witnessed their parents in conflict and 5.9% had received corporal punishment. Females were significantly more likely to report exposure to parental conflict (M = 5.99, SD = 2.55) than males (M = 5.45, SD = 2.33), (t = 5.06, df = 2128.7, $p < .001$). No statistically significant gender difference was observed for exposure to corporal punishment. Similarly, no significant gender difference was observed for low self-control. Regarding bullying involvement, 15.3% of participants had perpetrated bullying against their peers and 22.8% had been the victim of bullying behaviours. Males were significantly more likely to report bullying perpetration (M = 7.76, SD = 3.04) than females (M = 6.76, SD = 2.03), (t = 8.97, df = 2128, $p < .001$). No statistically significant gender difference was observed for bullying victimisation. To facilitate the visualisation of the data, z-scores were created to standardise the scores across variables (Figure 2).

Figure 2. *Sex differences in Parental Conflict, Corporal Punishment, Low Self-Control, Bully Perpetration, and Bully Victimisation*



Note. Higher scores on measure of self-control indicate lower self-control.

Correlations

Bivariate correlations were performed to examine the relationship between study variables (see Table 2). As expected, sex was associated with parental conflict, with females reporting higher levels of parental conflict than males. Sex was also associated with bullying perpetration, with males more likely to report bullying other people than females. Parent education was significantly associated with age, parental conflict, bullying perpetration and bullying victimisation. Parental conflict was also significantly associated with corporal punishment, bullying perpetration, bullying victimisation, and low self-control. Corporal punishment was significantly associated with parental conflict, bullying perpetration, bullying victimisation, and low self-control. Bullying perpetration was significantly

associated with parental conflict, corporal punishment, bullying victimisation, and low self-control. Bullying victimisation was significantly associated with age, parental conflict, corporal punishment, bullying perpetration, and low self-control. Low self-control was significantly associated with parental conflict, corporal punishment, bullying perpetration, and bullying victimisation.

Does parental violence predict adolescent bullying perpetration and victimisation?

Bullying Perpetration. A hierarchical linear regression analysis was run to examine whether the parental conflict, corporal punishment, and low self-control were significant contributors to adolescent bullying perpetration, after controlling for age, sex, and parent education. Table 3 summarises the hierarchical regression analysis.

Table 2. *Bivariate correlation matrix, means, and standard deviations for all study variables*

	1	2	3	4	5	6	7	8
1. Sex	-							
2. Age	-.05*	-						
3. Parent Education	.01	-.23**	-					
4. Parent Conflict	.11**	.03	-.11*	-				
5. Corporal Punishment	-.03	-.03	-.04	.17**	-			
6. Bully Perpetration	-.19**	.02	.07**	.06**	.10**	-		
7. Bully Victimisation	-.01	-.08**	.06*	.15**	.17**	.38**	-	
8. Low Self-control	-.03	.06**	-.01	.15**	.07**	.32**	.16**	-
Mean	-	15.15	5.54	5.73	.53	7.25	7.85	52.36
SD	-	.94	2.47	2.46	.10	2.62	2.93	9.47

*$p < .05$. **$p < .01$. *SD* = standard deviation. Corporal punishment $\log_{10}$ transformed.

Table 3. *Summary of hierarchical regression for variables predicting bullying perpetration (n=2130)*

	Model 1			Model 2			Model 3		
Variables	*B*	*SE B*	*β*	*B*	*SE B*	*β*	*B*	*SE B*	*β*
Step 1: Demographics									
Age	.09	.06	.03	.10	.06	.03	.04	.06	.02
Sex	.99	.11	.19***	1.03	.11	.20***	.95	.11	.18***
Parent Education	.08	.02	.08***	.10	.02	.09***	.09	.02	.08***
Step 2: Family Violence									
Parental Conflict				.08	.02	.08***	.03	.02	.03
Corporal Punishment				2.29	.56	.09***	1.89	.53	.07***
Step 3: Self-Control									
Low Self-Control							.08	.01	.30***
Model Fit									
R^2 Change			.04			.02			.09
ΔR^2			.04			.06			.15

Note. Model = "Enter" method in SPSS Statistics v27; *B* = unstandardised regression coefficient; *SE B* = standard error of the coefficient; β = standardised coefficient; R^2 = coefficient of determination; ΔR^2 = adjusted R^2.

*** $p < .001$

The results show that in Model 1, the demographic variables significantly contributed to the regression model $F(3, 2126) = 31.36$, $p < .001$, and accounted for 4.1% of the variance in adolescent bullying perpetration ($\Delta R^2 = .041$, $p < .001$). In Model 2, the family violence variables of parental conflict and corporal punishment significantly contributed to the regression model, $F(5, 2124) = 26.10$, $p < .001$, and accounted for an additional 1.6% of the variance (R^2 change $= .016$, $p < .001$). Adolescents who had been exposed to violence in the family home were more likely to perpetrate bullying than adolescents without these exposures. In the final model, the addition of low self-control significantly contributed to the regression model ($F(6, 2123) = 61.25$, $p < .001$) and explained an additional 9% of the variance in adolescent bullying perpetration (R^2 change $= .09$, $p < .001$). In total, the final model significantly explained 14.5% of the variance in adolescent bullying perpetration ($\Delta R^2 = .145$, $p < .001$). Among the predictors in Model 3, low self-control played the most

significant role in predicting bullying perpetration (β = .30, p < .001), followed by being male (β = .18, p < .001), parent education (β = .08, p < .001), and then exposure to corporal punishment (β = .07, p < .001). Adolescent age was not predictive of involvement in bullying perpetration. Interestingly, after adding low self-control to Model 3, the role of parental conflict became non-significant.

Gender Differences in Bullying Perpetration. As participant sex was a significant predictor, these hierarchical regression models were repeated separately for males and females. After adding the family violence variables, parental conflict and corporal punishment significantly contributed to the regression model, $F(4, 1034) = 5.38$, $p < .001$, and accounted for an additional 1.8% of the variance. In the final model, the addition of low self-control significantly explained an additional 10.9% of the variance in male adolescent bullying perpetration, $F(5, 1033) = 30.60$, $p < .001$. In total, the final model significantly explained 12.5% of the variance in male adolescent bullying perpetration (ΔR^2 =.125, p < .001). The regression coefficients for the final model indicate that experiencing corporal punishment (B = 2.05, SE(B) = .86, β = .07, p = .02), and having low self-control (B = .11, SE(B) = .01, β = .33, p < .001) are positively associated with male adolescent bullying perpetration. Interestingly, parental conflict originally predicted male adolescent bullying perpetration (B = .12, SE(B) = .04, β = .09, p < .01), however, after controlling for low self-control, parental conflict no longer predicted bullying perpetration (B = .07, SE(B) = .04, β = .06, p = .07).

For females, adding the family violence variables of parental conflict and corporal punishment significantly contributed to the regression model, $F(4, 1086) = 9.05$, $p < .001$, and accounted for an additional 1.6% of the variance. In the final model, the addition of low

self-control significantly explained an additional 8.1% of the variance in female adolescent bullying perpetration, $F(5, 1085) = 27.82$, $p < .001$. In total, the final model significantly explained 11% of the variance in female adolescent bullying perpetration ($\Delta R^2 = .11$, $p < .001$). The regression coefficients for the final model indicate that parent education ($B = .11$, SE(B) = .02, $\beta = .13$, $p < .001$), experiencing corporal punishment ($B = 1.72$, SE(B) = .60, $\beta = .08$, $p < .01$), and having low self-control ($B = .06$, SE(B) = .01, $\beta = .29$, $p < .001$) are positively associated with female adolescent bullying perpetration. Interestingly, parental conflict originally predicted female adolescent bullying perpetration ($B = .05$, SE(B) = .02, $\beta = .06$, $p < .05$), however, after controlling for low self-control, parental conflict no longer predicted female bullying perpetration ($B = .01$, SE(B) = .02, $\beta = .01$, $p = .68$).

Bullying Victimisation. A hierarchical linear regression analysis was run to examine whether the parental conflict, corporal punishment, and low self-control were significant contributors to adolescent bullying victimisation, after controlling for age, sex, and parent education. Table 4 summarises the hierarchical regression analysis.

The results show that in Model 4, the demographic variables significantly contributed to the regression model $F(3, 2126) = 5.57$, $p < .001$, and accounted for 0.6% of the variance in adolescent bullying victimisation ($\Delta R^2 = .006$, $p < .001$). In Model 5, the family violence variables of parental conflict and corporal punishment significantly contributed to the regression model, $F(5, 2124) = 24.65$, $p < .001$, and accounted for an additional 4.7% of the variance (R^2 change $= .047$, $p < .001$). Adolescents who had been exposed to violence in the family home were more likely to be victims of bullying than adolescents without these exposures. In Model 6, low self-control significantly contributed to the regression model ($F(6, 2123) = 27.22$, $p < .001$) and explained an additional 1.7% of the variance in adolescent

bullying perpetration (R^2 change =.017, $p < .001$). In total, the final model significantly explained 6.9% of the variance in adolescent bullying victimisation (ΔR^2 =.069, $p < .001$). Among the predictors in Model 6, exposure to corporal punishment ($\beta = .14$, $p < .001$) and low self-control ($\beta = .13$, $p < .001$) played the most significant role in predicting bullying victimisation followed by parental conflict ($\beta = .11$, $p < .001$), being younger ($\beta = .07$, $p < .001$), and parent education ($\beta = .06$, $p < .01$). Sex was not a predictor of adolescent involvement in bullying victimisation.

Table 4. *Summary of hierarchical regression for variables predicting bullying victimisation (n=2130)*

	Model 4			Model 5			Model 6		
Variables	*B*	*SE B*	*β*	*B*	*SE B*	*β*	*B*	*SE B*	*β*
Step 1: Demographics									
Age	-.22	.07	-.07**	-.21	.07	-.06**	-.23	.07	-.07***
Sex	.10	.13	.02	.16	.16	.03	.13	.12	.02
Parent Education	.05	.03	.04	.08	.03	.06**	.07	.03	.06**
Step 2: Family Violence									
Parental Conflict				.16	.03	.13***	.14	.03	.12***
Corporal Punishment				4.43	.63	.15***	4.23	.62	.14***
Step 3: Self-Control									
Low Self-Control							.04	.01	.13***
Model Fit									
R^2 Change			.01			.05			.02
ΔR^2			.01			.05			.07

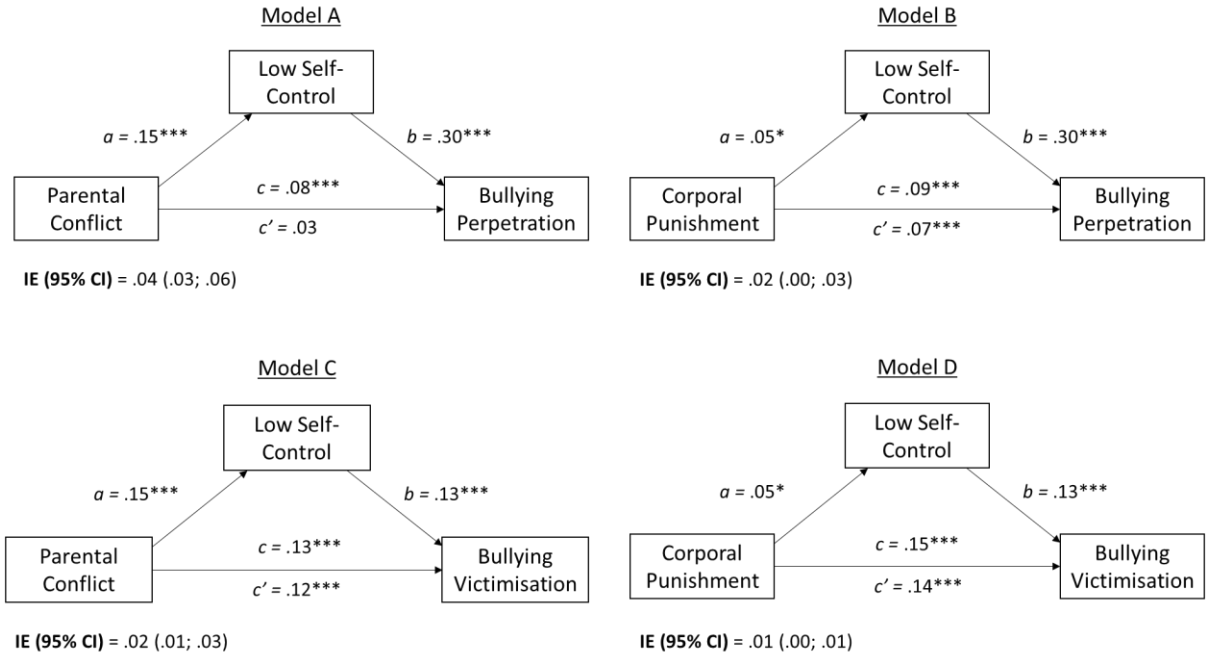
Note. Model = "Enter" method in SPSS Statistics v27; *B* = unstandardised regression coefficient; *SE B* = standard error of the coefficient; β = standardised coefficient; R^2 = coefficient of determination; ΔR^2 = adjusted R^2.

** $p < .01$. *** $p < .001$

Does low self-control mediate the association between parental violence and bullying/victimisation?

To test the hypothesis that family violence increases the likelihood of involvement in bullying via low self-control, a series of bootstrapped simple mediation models were constructed (see Figure 3). Models A and B tested for the indirect effects of family violence (eg. Parental conflict or corporal punishment) on adolescent bullying perpetration through low self-control. Models C and D tested for the indirect effects of family violence on adolescent bullying victimisation.

Figure 3. *Low self-control mediation models of the relationship between parent conflict, corporal punishment, bullying perpetration and bullying victimisation, controlling for age, sex, and parental education.*



Note. Standardised coefficients based on PROCESS macro for SPSS v27 using 5,000 bootstrap samples. All four models reported significant indirect effects. IE (95% CI) = indirect effect (95% confidence interval). Path *a* indicates the effect of independent variable on mediator, path *b* indicates the effect of mediator variable on outcome variable, path *c* indicates the total effect, path *c'* indicates the direct effect of independent variable on outcome, and path *a*b* indicates the IE. * $p < .05$. *** $p < .001$

In Model A the outcome variable was bullying perpetration, the predictor variable was parental conflict, and the mediator variable was low self-control. Results from the simple mediation analysis indicate that parental conflict is indirectly related to bullying perpetration via its relationship with low self-control. First, exposure to parental conflict was related to low self-control (a = .15, p < .001), and low self-control was subsequently related to bullying perpetration (b = .30, p < .001). A 95% confidence interval based on 5000 bootstrap samples indicated that the indirect effect was above zero ($a*b$ = .04, CI = [.03; .06]) and the mediator, low self-control, accounted for approximately 58.1% of the total effect on bullying perpetration. Furthermore, after taking into account parental conflict's indirect effect through low self-control, the direct effect of parental conflict reduced and was no longer a significant predictor of bullying perpetration (c' = .03, p = .12). Therefore, low self-control fully mediated the relationship between parental conflict and adolescent bullying perpetration.

In Model B the outcome variable was bullying perpetration, the predictor variable was corporal punishment, and the mediator variable was low self-control. Results indicate that corporal punishment is indirectly related to bullying perpetration via its relationship with low self-control. First, exposure to corporal punishment was related to low self-control (a = .05, p < .05), and low self-control was subsequently related to bullying perpetration (b = .30, p < .001). A 95% confidence interval indicated that the indirect effect was above zero ($a*b$ = .02, CI = [.00; .03]) and the mediator, low self-control, accounted for approximately 17.7% of the total effect on bullying perpetration. After taking into account corporal punishment's indirect effect through low self-control, the direct effect of corporal punishment reduced but was still a significant predictor of bullying perpetration (c' = .07, p < .001). Therefore, low self-control partially mediated the relationship between corporal punishment and adolescent bullying perpetration.

In Model C the outcome variable was bullying victimisation, the predictor variable was parental conflict, and the mediator variable was low self-control. Results indicate that parental conflict is indirectly related to bullying victimisation via its relationship with low self-control. First, exposure to parental conflict was related to low self-control ($a = .15$, $p < .001$), and low self-control was subsequently related to bullying victimisation ($b = .13$, $p < .001$). A 95% confidence interval indicated that the indirect effect was above zero ($a*b = .02$, CI = [.01; .03]) and the mediator, low self-control, accounted for approximately 14.2% of the total effect on bullying victimisation. After taking into account parental conflict's indirect effect through low self-control, the direct effect of parental conflict reduced but was still a significant predictor of bullying victimisation ($c' = .12$, $p < .001$). Therefore, low self-control partially mediated the relationship between parental conflict and adolescent bullying victimisation.

In Model D the outcome variable was bullying victimisation, the predictor variable was corporal punishment, and the mediator variable was low self-control. Results indicate that corporal punishment is indirectly related to bullying victimisation via its relationship with low self-control. First, exposure to corporal punishment was related to low self-control ($a = .05$, $p < .05$), and low self-control was subsequently related to bullying victimisation ($b = .13$, $p < .001$). A 95% confidence interval indicated that the indirect effect was above zero ($a*b = .01$, CI = [.00; .01]) and the mediator, low self-control, accounted for approximately 4.4% of the total effect on bullying victimisation. After taking into account corporal punishment's indirect effect through low self-control, the direct effect of corporal punishment reduced but was still a significant predictor of bullying victimisation ($c' = .14$, $p < .001$). Therefore, low self-control partially mediated the relationship between corporal punishment and adolescent bullying victimisation.

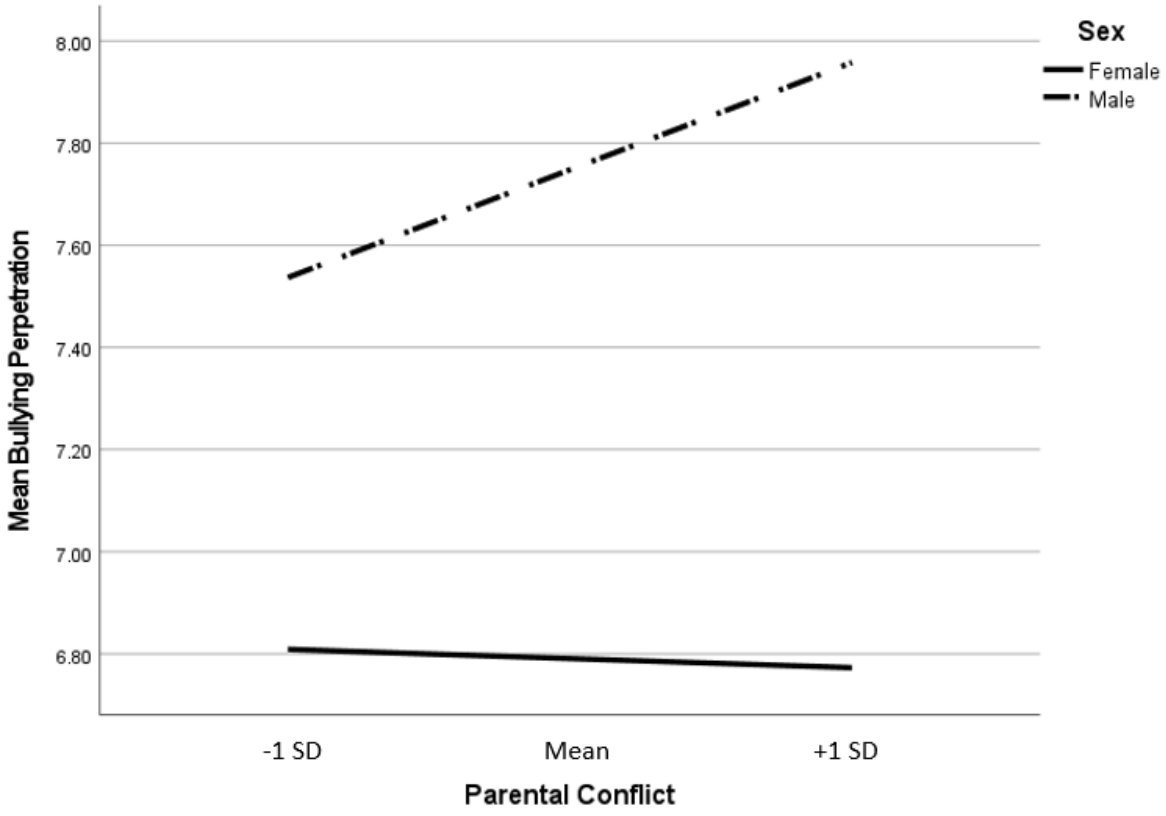
Does gender moderate the mediating effect of low self-control on the association between parental violence and bullying perpetration?

As gender was identified as a significant predictor of adolescent bullying perpetration but not bullying victimisation, separate moderated mediation analyses were conducted for each of the family violence mediation models. Firstly, the moderating effect of sex on the paths between parental conflict and low self-control (path *a*), parental conflict and bullying perpetration (path *c'*), and finally the mediating effect of parental conflict on bullying perpetration via low self-control (path *a*b*), was explored. Whilst sex did not moderate the path between parental conflict and low self-control (*B* = -.14, *t* = -.83, *p* = .41), it did moderate the direct path between parental conflict and bullying perpetration (*B* = .09, *t* = .2.20, *p* = .03) with the effect between parental conflict and bullying perpetration significant for males (*B* = .09, *t* = 2.31, *p* = .02) but not females (*B* = .01, *t* = .34, *p* = .74). A plot of parental conflict on bullying perpetration, separately for males and females, can be seen in Figure 4 (1 *SD* above the mean and 1 *SD* below the mean). However, the 95% confidence interval bootstrap confirmed that the mediating effect of parental conflict on bullying perpetration through low self-control was not moderated by sex. Specifically, the indirect effect was non-significant (*B* = −.11, SE = .01, CI = [-.04, .02]) as the confidence interval included the value of zero. Therefore, sex did not moderate the mediating role of low self-control on the relationship between parent conflict and bullying perpetration, however, did moderate the direct path between parent conflict and bullying perpetration in males.

Secondly, the moderated mediation analysis was repeated for the effect of sex on the paths between corporal punishment and low self-control (path *a*), corporal punishment and bullying perpetration (path *c'*), and finally the partial mediating effect of corporal punishment on bullying perpetration via low self-control (path *a*b*). Sex did not moderate the path between corporal punishment and low self-control (*B* = -1.13, *t* = -.30, *p* = .77), and it did not

moderate the direct path between corporal punishment and bullying perpetration (B = .95, t = .83, p = .41). The 95% confidence interval bootstrap confirmed that the mediating effect of corporal punishment on bullying perpetration through low self-control was not moderated by sex. Specifically, the indirect effect was non-significant (B = −.10, SE = .32, CI = [-.74, .53]) as the confidence interval included the value of zero. Therefore, sex did not moderate the partial mediating role of low self-control on the relationship between corporal punishment and bullying perpetration, and did not moderate the direct path between corporal punishment and bullying perpetration either.

Figure 4. *Sex moderates the relationship between parental conflict and bullying perpetration.*



Note. SD = standard deviation

DISCUSSION

Consistent with the first hypothesis, direct associations were observed for parental conflict and corporal punishment, and low self-control. This replicates previous studies where adolescents exposed to family violence were more likely to express signs of low self-control (Willems et al., 2018). The second hypothesis was also confirmed, with adolescents exposed to parental conflict, corporal punishment, and having low self-control, all positively correlating with involvement in bullying perpetration and victimisation. Again, this supports previous studies where involvement in bullying was related to family violence (Baldry, 2003; Bowes et al., 2009), as well as low self-control (Cho & Lee, 2021; Moon et al., 2011). Specifically, when controlling for demographic covariates, adolescent reports of parental conflict and corporal punishment predicted involvement in bullying perpetration and victimisation, replicating similar findings in the literature (Hsieh et al., 2021; Knous-Westfall et al., 2012).

However, when low self-control was factored into the regression model, parental conflict no longer predicted bullying perpetration. A subsequent mediation analysis partially confirmed the third hypothesis, with low self-control fully mediated the relationship between parental conflict and bullying perpetration (hypothesis 3a). This provides support for Gottfredson and Hirschi's (1990) argument that parental practices influence the development of self-control, which subsequently influences involvement in aggressive behaviours. This finding is consistent with previous studies where self-control mediates the link between parental practices and adolescent delinquency (Baek et al., 2022). Furthermore, this mediation was demonstrated on a population of 14–16-year-olds, which supports previous evidence that parents can continue to affect their child's self-control during adolescence (Burt, 2020; Meinert & Reinecke, 2018; Meldrum et al., 2012). This study also found additional evidence that low self-control partially mediates the relationship between corporal

punishment and bullying perpetration, as well as the relationships between both types of violence exposure and bullying victimisation (hypotheses 3b, 3c, and 3d). The failure of self-control to fully mediate these relationships demonstrates that parental violence remains predictive of adolescent involvement in bullying perpetration and victimisation, and replicates previous research that has found similar partial mediation effects of low self-control (Finkenauer et al., 2005; Jo & Zhang, 2014; Muftić & Updegrove, 2018). Regarding bullying victimisation specifically, this appears to challenge the assumption by Schreck (1999) that adolescents with low self-control are more likely to be victimised as a result. There may be other mechanisms that better explain the relationship between family violence and bullying involvement, including opportunity, social modelling, emotion regulation difficulties, and trauma responses.

The fourth and final hypothesis was not confirmed, as sex did not moderate the mediating role of family violence on bullying perpetration through low self-control. This appears to contradict the original assumptions of Gottfredson and Hirschi's (1990) self-control theory that males would develop lower levels of self-control due to parenting differences in monitoring, recognising, and correcting inappropriate behaviours. This may reflect a limitation of the study design, as previous studies have failed to observe a relationship between parenting variables and self-control once bio-genetic factors have been controlled for (Jackson & Beaver, 2013; Wright & Beaver, 2005). Other studies have shown that parenting interacts with genetics to influence self-control and criminal behaviours (Watts & McNulty, 2016) and it may be that genetic differences between males and females have not been accounted for in this study. Unfortunately, biological measures were not included within the original data set and this study was unable to explore the issue further.

However, sex was found to moderate the direct effect of parent conflict on bullying perpetration, with males displaying higher levels of bullying perpetration when exposed to

higher levels of parental conflict. This finding is in line with previous studies that suggest males are more likely to perpetrate bullying after witnessing parental violence (Ameli et al., 2017; Knous-Westfall et al., 2012; Lucas et al., 2016); however, this finding is not universal and several other studies have reported larger effects for females (Baldry, 2003; Duke et al., 2010; Espelage et al., 2014). There are two potential explanations for this difference: firstly, it has been suggested that children are more likely to perpetrate aggressive behaviours if they witness a parent of the same sex perpetrate violence (Moretti et al., 2006). Whilst this study used a relatively equal sample of male and female adolescents, it did not account for the gender of the parental violence perpetrator. It may be that this study was skewed towards male-perpetrated parent violence, leading to an underestimated effect on female participants. Secondly, the severity of parental conflict has been associated with higher levels of male bullying perpetration (Knous-Westfall et al., 2012). Whilst this study focused on frequency of exposure of parental conflict, and not severity, it is possible that the males in the sample were exposed to more severe forms of violence between parents.

Exposure to family violence, as well as bullying, can have life-long implications for those involved. This study's results can be used to inform evidence-based clinical interventions that aim to mitigate the effects of exposure to family violence on children and adolescents. More specifically, children's services should be mindful of the increased likelihood of children being involved in bullying, either through perpetration or victimisation, following exposure to family violence. First, families could be targeted with intervention work aimed at preventing the lowering of self-control in children (Brody et al., 2005; Ursache et al., 2012). Education programmes and therapeutic interventions that enabled families to understand the risks of exposing children to violence, as well as explore alternative strategies to conflict management, would reduce the future risk of their child being involved in bullying. Second, strategies could be put in place to increase the child's self-control – for

example, Mindfulness-Based Cognitive Therapy has been shown to improve externalising symptoms, such as anger, in children (Lee et al., 2008). Intervening at the mediator stage may prevent the cycle of parent-child aggression. Third, child involvement in bullying – both perpetration and victimisation – could serve as an indication to schools, social services, and health professionals that the child is being exposed to violent practices in the home environment.

Strengths, Limitations, and Future Research

This study provides an important addition to the growing literature exploring the indirect effects of parenting practices on delinquent behaviours via self-control (Baek et al., 2022; Cho, 2019; Cho et al., 2017). To the authors knowledge, this study represents a novel analysis of the mediating role of self-control in relation to family violence and bullying. The results are also based on a large, representative sample of adolescents in Montevideo, Uruguay, and is the first to provide this type of analysis in a South American setting.

However, there are several limitations of this study that need to be addressed. First, the analyses were conducted on a cross-sectional dataset, which makes it difficult to infer causality about the temporal order of the research models. Although this study interprets the findings as evidence that parental violence precedes adolescent low self-control and involvement in bullying, it is equally possible that parental violence is a response to adolescent-related factors. For example, the adolescents' involvement in bullying may be the source of parental conflict, or the adolescents' low self-control may have led parents towards more punitive consequences, such as corporal punishment. Future studies would need to employ a longitudinal design to test the models fully.

Second, data were collected from a single source, with predictor, outcome, and mediator variables all provided by adolescent self-report. Future research may wish to collect data from other sources, such as parents or teachers, to reduce the likelihood of shared method variance and increase the validity of the findings.

Third, there were a limited number of measures used to capture family violence in this study – as such, only parental conflict and corporal punishment scales were used in the analysis. Furthermore, these two subscales only used three items to measure their construct, and it may be that data collected for this study underestimates the true level of exposure to family violence. It is also recognised that these constructs are unlikely to occur in the absence of other forms of violence, and future research may wish to explore the effects of other forms of violence exposure, such as child abuse, sibling aggression or community violence.

Fourth, the subgroup of bully-victims was not included in the analysis. This omission was made so that data analysis could remain linear, rather than categorical. Whilst categorising participants into bullies, victims, bully-victims, and non-victims is a viable approach, it runs the risk of within-group variability (e.g., one participant with a single exposure to bullying in a year, and another with weekly exposure to bullying, could both be classed as 'victims').

Fifth, this study employed a school-based sampling method that could not account for children absent on day of assessment. Whilst some level of child absence from school is inevitable, students who are bullied are more likely to be absent more frequently (Nakamoto & Schwartz, 2010). Therefore, their omission from this procedure may skew the data towards the non-exposed group.

Finally, only one prominent theoretical base was used to underpin this research. There are several other mechanisms that may also explain the indirect effect of family violence on

bullying involvement, and future studies may wish to explore the role of factors such as social modelling, attachment style, or trauma responses.

Finally, the potential role of cultural bias should be considered. This study analysed Latin American data through the lens of an Anglo-European research culture. Whilst Gottfredson and Hirschi's self-control theory assumed that self-control would not vary across cultures, this appears to be a simplistic view of the multitude of family, religious, social, and economic differences that occur across nations and ethnicities. Recent research has suggested that Latin America does not fit the oversimplified dichotomy of Western, independent, individualist versus Eastern, interdependent, and collectivist societies (Vignoles, 2018); most notably, Latin American societies favour both independent forms of selfhood as well as collectivist cultural values (Krys et al., 2022). Individualist cultures typically favour a nuclear model of parents and children, whilst collectivist cultures often adhere to an extended model of family, usually involving multigenerational households or an extended network of reciprocal relationships, such as aunts/uncles and godparents. This is likely to impact the values, duties, and responsibilities expected within family homes, as well as the exposure children have to multiple authority figures and role models. Children exposed to violence in multigenerational homes may have access to other adults or siblings who are able to reduce the likelihood that they will perpetrate future violence themselves. This may, in turn, lead to cultural variations in how self-control is developed in children, as well as differences in how 'low' self-control is perceived (i.e. egocentrism may be viewed as a more severe form of low self-control in collectivist societies). The use of Euro-American measures of parental violence, self-control, and bullying may disadvantage Latin American participants who are less familiar with the Westernised categorisation of these concepts.

Conclusion

In this study, adolescents with higher involvement in bullying perpetration and victimisation were more likely to report parental conflict and corporal punishment at home than adolescents with lower involvement in bullying. This study also found that parental conflict indirectly affects child bullying perpetration through low self-control. Adolescents who reported exposure to family violence were more likely to have lower self-control, which effectively increased their risk of involvement in bullying perpetration and victimisation. Public health messages should increase parent awareness of the negative outcomes of exposing children to violence, whilst bullying prevention efforts in schools could focus on introducing or improving self-control strategies in adolescents.

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Declaration of Competing Interest

Declarations of interests: none.

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Appendix A

Child Abuse & Neglect Author Information Pack

GUIDE FOR AUTHORS

Types of contributions

1. **Research Article**: Child Abuse and Neglect publishes quantitative, qualitative, and mixed-method research. Particular focus will be placed on thorough and appropriate methods, strong data analysis and discussion of implications for the field.

Abstracts should follow a structured format of no more than 250 words including the following sections: Background, Objective, Participants and Setting, Methods, Results (giving specific effect sizes and their statistical significance), and Conclusions. Download the template here.

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[redacted]
Reader in Experimental Criminology

UNIVERSITY OF CAMBRIDGE
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Professor [redacted]

26 July 2021

'Towards a more effective violence prevention policy in Uruguay'

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Yours sincerely,

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Appendix C

Ethical approval from Cardiff University Ethics Committee

Ethics Feedback - EC.21.09.14.6397

[redacted]@cardiff.ac.uk>
Tue 07/09/2021 16:53
To: Tom Wright <[redacted]@cardiff.ac.uk>
Cc: [redacted]
Dear Tom,

The Ethics Committee has considered your PG project proposal: *Self-control and coping strategies as mediators of parental risk factors in adolescence bullying* (**EC.21.09.14.6397**).

The project has been approved.

Please note that if any changes are made to the above project then you must notify the Ethics Committee.

Best Wishes,
[redacted]

CARDIFF UNIVERSITY
PRIFYSGOL CAERDYDD

This mailbox is monitored by members of the Education Team

[redacted]

Appendix D

Example of original Spanish questionnaire used in m-proso study

Vos y tus padres

Marcá si lo que se menciona abajo sucede en tu casa *nunca*, *raras veces*, *algunas veces* o *a menudo*. *"Los padres" son los adultos que se ocupan de vos en tu hogar.*

	nunca	raras veces	algunas veces	a menudo/ siempre
P300. Cuando hacés algo bueno tus padres te lo reconocen.	❍	❍	❍	❍
P301. Tus padres juegan o hacen actividades contigo	❍	❍	❍	❍
P302. Tus padres son muy estrictos con vos cuando no hacés exactamente lo que ellos te dicen.	❍	❍	❍	❍
P303. Tenés que decirles a tus padres con quién te juntás en tu tiempo libre.	❍	❍	❍	❍
P304. Cuando hacés algo bueno tus padres te dan un premio.	❍	❍	❍	❍
P305. Tus padres están peleados entre ellos.	❍	❍	❍	❍
P306. Cuando salís tus padres te dicen a qué hora tenés que volver a casa.	❍	❍	❍	❍
P307. Cuando estás triste, tu madre o tu padre te abrazan para hacerte sentir mejor.	❍	❍	❍	❍
P308. Tus padres te dan órdenes todo el tiempo y no te permiten protestar.	❍	❍	❍	❍
P309. Tus padres pasaron mucho tiempo sin hablarse después de una pelea entre ellos.	❍	❍	❍	❍
P310. Tus padres te preguntan por las cosas que hacés en tu tiempo libre.	❍	❍	❍	❍
P311. Tus padres te muestran que ellos son los que mandan.	❍	❍	❍	❍
P312. Tus padres se interesan por las cosas que hacés.	❍	❍	❍	❍
P313. Cuando salís en tu tiempo libre, tus padres te preguntan dónde vas.	❍	❍	❍	❍
P314. Tus padres se ofendieron o insultaron entre ellos.	❍	❍	❍	❍
P315. Tus padres te felicitan cuando te va especialmente bien en la escuela, en los deportes o en tus pasatiempos.	❍	❍	❍	❍
P316. Cuando tenés problemas, podés contárselos a tus padres.	❍	❍	❍	❍

Appendix E

English-translated items on parenting style, including parental conflict items

You and your parents

Check if what is mentioned below happens in your house *never* , *rarely* , *sometimes* or *at often* . *"Parents" are the adults who take care of you in your home.*

	never	rare times	some times	often/ forever
P300. When you do something good, your parents recognize it.	❍	❍	❍	❍
P301. Your parents play or do activities with you	❍	❍	❍	❍
P302. Your parents are very strict with you when you don't do exactly what that they tell you.	❍	❍	❍	❍
P303. You have to tell your parents who you hang out with in your free time.	❍	❍	❍	❍
P304. When you do something good your parents give you an award.	❍	❍	❍	❍
P305. Your parents are fighting each other.	❍	❍	❍	❍
P306. When you go out, your parents tell you what time you have to come home.	❍	❍	❍	❍
P307. When you are sad, your mother or father hug you to make you feel best.	❍	❍	❍	❍
P308. Your parents give you orders all the time and don't allow you to protest.	❍	❍	❍	❍
P309. Your parents went a long time without speaking after a fight among them.	❍	❍	❍	❍
P310. Your parents ask you about the things you do in your free time.	❍	❍	❍	❍
P311. Your parents show you that they are the ones in charge.	❍	❍	❍	❍
P312. Your parents are interested in the things you do.	❍	❍	❍	❍
P313. When you go out in your free time, your parents ask you where you are going.	❍	❍	❍	❍
P314. Your parents were offended or insulted each other.	❍	❍	❍	❍
P315. Your parents congratulate you when you are doing especially well in school, sports or your hobbies.	❍	❍	❍	❍
P316. When you have problems, you can tell your parents about them.	❍	❍	❍	❍

Appendix F

English-translated items on parent punishment, including corporal punishment items

When you do something wrong or disobey, what do your parents do?
Do your parents do the things mentioned below with you *never* , *rarely* , *sometimes* or *at often* ?
"Parents" are the adults who take care of you in your house / home.

	never	rare times	some times	often/ forever
P317. Your parents yell at you.	❍	❍	❍	❍
P318. You manage to convince your parents not to punish you.	❍	❍	❍	❍
P319. Your parents threaten to punish you, but then they don't.	❍	❍	❍	❍
P320. Your parents slap you.	❍	❍	❍	❍
P321. Your parents reduce the punishment they initially *gave you (eg. allow you to watch TV again or leave earlier than agreed.)*	❍	❍	❍	❍
P322. Your parents hit you with a belt or other object.	❍	❍	❍	❍
P323. Your parents are pulling your ears or hair.	❍	❍	❍	❍

Appendix G

English-translated items on bullying victimisation and perpetration

❺ Now let's talk about **bullying, maltreatment or harassment** . Sometimes teens can be treated pretty bad to each other. How is your experience? Were you abused by other teens in the last year, that is, **since July 2012** ? *For example, it may have happened to you at school, on the way to school, when You go out, at home or also on the Internet.*

*How many times **since July 2012** other teenagers...*	never	from 1 to 2 times	from 3 to 10 times	around of a time per month	around at once by week	(almost) everyone the days
P806… were you ignored or excluded on purpose?	❍	❍	❍	❍	❍	❍
P807 ... they laughed at you, insulted you or made fun of you?	❍	❍	❍	❍	❍	❍
P808 ... you were hit, bitten, kicked or pulled hair?	❍	❍	❍	❍	❍	❍
P809… things were taken from, broken or hidden from purpose?	❍	❍	❍	❍	❍	❍
P810… you were sexually harassed (eg sexual compliments offensive, groped you)?	❍	❍	❍	❍	❍	❍

And you? Did you bully or mistreat other teens in the last year, that is, **since July 2012** ?
It may have happened for example at school, on the way to school, when you go out, at home or also on the Internet.

*How many times **since July 2012** ...*	never	from 1 to 2 times	from 3 to 10 times	around of a time per month	around at once per week	(almost) everyone the days
P811… purposely ignored or excluded another Teen?	❍	❍	❍	❍	❍	❍
P812… you laughed, insulted or made fun of another Teen?	❍	❍	❍	❍	❍	❍
P813… hit, bit, kicked or pulled the hair of another teenager?	❍	❍	❍	❍	❍	❍
P814… you purposely removed, broke or hid things from another teenager?	❍	❍	❍	❍	❍	❍
P815… sexually harassed another teenager (e.g. offensive sexual compliments, did you grope him / her)?	❍	❍	❍	❍	❍	❍

Appendix H

English-translated items on low self-control

How do you see yourself

Now we have a few general questions again. First, let's talk about how you see yourself.
Check how much you agree with these sentences.

	totally in disagreement	in disagreement	of agreement	totally agree
P1100. I almost always act without thinking.	❍	❍	❍	❍
P1101. I try to get what I want, even when it brings them problems to others.	❍	❍	❍	❍
P1102. I like to take risks just because it amuses me.	❍	❍	❍	❍
P1103. I prefer to go out and do something than stay at home reading or thinking.	❍	❍	❍	❍
P1104. When others get angry about things I did, their problem.	❍	❍	❍	❍
P1105. I lose control pretty fast.	❍	❍	❍	❍
P1106. I'd rather do physical things than think.	❍	❍	❍	❍
P1107. I always do what I feel like doing in the short term, without think about the consequences it could have in the long term.	❍	❍	❍	❍
P1108. For me, emotion and adventure are more important than security.	❍	❍	❍	❍
P1109. I don't waste time or effort planning my future.	❍	❍	❍	❍
P1110. I never lie.	❍	❍	❍	❍
P1111. I always do what I want in the moment, even knowing that for Acting like this I miss opportunities in the future.	❍	❍	❍	❍
P1112. When I disagree with someone, I find it very difficult talk about it without getting angry.	❍	❍	❍	❍
P1113. When I am very angry, it is better for people to stay away from me.	❍	❍	❍	❍
P1114. When I'm mad at people, I feel like hurting them more than talking to them.	❍	❍	❍	❍
P1115. When someone else has problems, I have a hard time putting myself in their place.	❍	❍	❍	❍
P1116. I think about my interests first, even when it causes problems for others.	❍	❍	❍	❍
P1117. I like to try myself doing risky things.	❍	❍	❍	❍
P1118. Sometimes I have fun doing things that can get me into trouble.	❍	❍	❍	❍
P1119. When things get complicated, I quit.	❍	❍	❍	❍
P1120. I tend to avoid difficult tasks.	❍	❍	❍	❍
P1121. My classmates when they answer this survey they lie in the responses.	❍	❍	❍	❍
P1122. The things I like the most are the easiest to do.	❍	❍	❍	❍
P1123. I do not like doing difficult tasks that require me to go to the limit of my skills.	❍	❍	❍	❍
P1124. I feel better when I'm doing things than when I I stay still.	❍	❍	❍	❍
P1125. I have more energy and need to do things than most people my age.	❍	❍	❍	❍