

# THE LANCET

## **Supplementary appendix**

This appendix formed part of the original submission and has been peer reviewed.  
We post it as supplied by the authors.

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**Appendix Table A1: Search syntax by database**

Database	Search terms and filters
Pubmed/Medline	<p>Search: physical discipline [tw] OR physical punishment [tw] OR corporal punishment [tw] OR physical chastisement [tw] OR smack* [tw] OR spank* [tw] OR slap* [tw]</p> <p>Filters: tw (Title, Abstract, MeSH headings and Subheadings (includes single words and phrases), Other Terms field (which includes author-supplied keywords)); 2002&gt;onwards; Journal Article; Humans.</p>
PsychInfo	<p>Search: in title or abstract: "physical discipline" OR "physical punishment" OR "corporal punishment" OR "physical chastisement" OR smack* OR spank* OR slap*</p> <p>Filters: 2002-current; human</p>
Web of Science	<p>Topic search: "physical discipline" OR "physical punishment" OR "corporal punishment" OR "physical chastisement" OR smack* OR spank* OR slap*</p> <p>Filters: 2002&gt;onwards; document types: article OR review; excluding proceedings paper OR book chapter OR retracted publication OR data paper; excluding Web of Science categories: (chemistry analytical or engineering civil or biotechnology applied microbiology or computer science artificial intelligence or geology or optics or spectroscopy or film radio television or water resources or veterinary sciences or agriculture dairy animal science or marine freshwater biology or chemistry physical or energy fuels or computer science information systems or engineering mechanical or engineering biomedical or food science technology or nanoscience nanotechnology or physics applied or geosciences multidisciplinary or engineering multidisciplinary or history or materials science multidisciplinary or language linguistics or telecommunications or literature or zoology or anthropology or medieval renaissance studies or parasitology or geochemistry geophysics or chemistry multidisciplinary or plant sciences or engineering electrical electronic or engineering chemical or audiology speech language pathology or mechanics or linguistics or automation control systems or biophysics or computer science interdisciplinary applications or acoustics or physics particles fields or orthopedics or archaeology or sport sciences or business or evolutionary biology or surgery or hematology or hospitality leisure sport tourism or management or music or physics multidisciplinary or art or microbiology or obstetrics gynecology or literary theory criticism or public administration or pharmacology pharmacy or chemistry medicinal or chemistry organic or classics or physics nuclear or geography or astronomy astrophysics or economics or infectious diseases or international relations or literature romance or theater or mathematics applied or meteorology atmospheric sciences or regional urban planning)</p>

**Appendix Table A2: Characteristics of included studies, grouped by outcome**

Author/ year	Country	Dataset / study population	Sample size	Analysis method	Outcome(s) as described by authors	Follow up period	Findings (main effect)	Comments
<b>Externalising behaviour problems</b>								
Akcinar and Baydar 2016 <sup>45</sup>	Turkey	Early Childhood Developmental Ecologies in Turkey Study	1,009	Cross-lagged path analysis	Externalising behaviour	4 years; age at baseline 36-47 months; 4 time points	Detrimental	Reciprocal associations
Bakoula et al. 2009 <sup>22</sup>	Greece	Greek Birth Cohort	2065	Regression models	Externalising behaviour	11 years; age at baseline 7 years	No main effect; Mixed: detrimental for boys / beneficial for girls	Moderation by sex
Barajas-Gonzalez et al. 2018 <sup>54</sup>	USA	Mexican and Dominican American immigrant families	633	Regression models	Externalising behaviour	1 year; age at baseline 4 years	No associations	
Barnes et al. 2013 <sup>46</sup>	USA	Early Childhood Longitudinal Study, Birth Cohort	750	Cross-lagged path analysis	Externalising behaviour	1-2 years; age at baseline 4 years	Detrimental	Reciprocal effects
Baumrind, Larzelere and Owens 2010 <sup>55</sup>	USA	Baumrind's Family Socialization Project	87	MANCOVA; regression models	Externalising behaviour	10 years, mean age at baseline 5 years	No associations	
Beauchaine et al 2005 <sup>48</sup>	USA	Children with oppositional defiant disorder / conduct disorder who took part in interventional studies	514	Latent growth curve models	Externalising behaviour	1 year; age at baseline 3-8 years	Detrimental	Experimental data from RCTs
Callender et al. 2012 <sup>49</sup>	USA	Children at risk for school age conduct problems	245	Structural equation models	Externalising behaviour	2-3 years; age at baseline 3 years	Detrimental	
Coley, Kull and Carrano 2014 <sup>27</sup>	USA	Three City Study - low-income urban African American and Hispanic families	592	Cross-lagged path analysis	Externalising behaviour	6 years; age at baseline 3 years; 3 time points	Detrimental	No reciprocal effects; no moderation by race/ethnicity
Gershoff et al. 2012 <sup>40</sup>	USA	Early Childhood Longitudinal Study – Kindergarten Cohort	10 044	Cross-lagged path analysis	Externalising behaviour	3 years; age at baseline 5 years	Detrimental	Not moderated by race/ethnicity; reciprocal effects

Author/ year	Country	Dataset / study population	Sample size	Analysis method	Outcome(s) as described by authors	Follow up period	Findings (main effect)	Comments
Gershoff, Sattler and Ansari 2018 <sup>41</sup>	USA	Early Childhood Longitudinal Study – Kindergarten Cohort	12 112	Propensity score matching	Externalising behaviour	3 years; age at baseline 5 years	Detrimental	
Gibson and Fagan 2018 <sup>50</sup>	USA	Longitudinal Study of Child Abuse and Neglect	1075	Multilevel growth models	Externalising behaviour	12 years; age at baseline 4-8 years	Detrimental	Moderation by race/ethnicity
Grogan-Kaylor 2005a <sup>47</sup>	USA	National Longitudinal Survey of Youth	1943	Fixed effects models	Externalising behaviour	6 years; age 4-14 years; 4 time points	Detrimental	Not moderated by neighbourhood quality
Laible et al. 2020 <sup>51</sup>	USA	National Institute of Child Health and Human Development Study of Early Child Care and Youth Development	1364	Cross-lagged path analysis	Externalising behaviour	5 years; age at baseline 3 years; 4 time points	Detrimental	
Lansford et al. 2009 <sup>42</sup>	USA	Study 1: Child Development Project	Study 1: 499	Modelling of trajectory groups, ANCOVA	Externalising behaviour	Study 1: 13 years (age 5-16)	Study 1: Detrimental	Not moderated by sex or race/ethnicity
Lansford et al. 2009 <sup>42</sup>	USA	Study 2: Pitt Mother-Child Project	Study 2: 258	Modelling of trajectory groups, ANCOVA	Externalising behaviour	Study 2: 5 years (age 10-15)	Study 2: Detrimental	Not moderated by sex or race/ethnicity
Lansford et al. 2012a <sup>43</sup>	USA	Child Development Project	585	Structural equation models	Externalising behaviour	4 years; age at baseline 5 years	Detrimental	Moderation by race/ethnicity
Lansford et al. 2012b <sup>44</sup>	USA	Child Development Project	585	ANCOVA and cross-lagged path analysis	Externalising behaviour	2 years; age at baseline 6 years; 3 time points	No associations	
MacKenzie et al. 2012 <sup>36</sup>	USA	Fragile Families and Child Wellbeing Study	1110	Regression models	Externalising behaviour	2 years; age at baseline 3 years	Detrimental	
MacKenzie et al. 2013 <sup>37</sup>	USA	Fragile Families and Child Wellbeing Study	1933	Regression models	Externalising behaviour	6 years; age at baseline 3 years	Detrimental	Not moderated by sex or race/ethnicity; dose-response
MacKenzie et al. 2015 <sup>35</sup>	USA	Fragile Families and Child Wellbeing Study	1874	Cross-lagged path analysis	Externalising behaviour	8 years; age at baseline 1 year; 4 time points	Detrimental	Not moderated by sex or race/ethnicity; reciprocal effects

Author/ year	Country	Dataset / study population	Sample size	Analysis method	Outcome(s) as described by authors	Follow up period	Findings (main effect)	Comments
Mendez et al. 2016 <sup>21</sup>	USA	Family Transition project	218	Regression models	Externalising behaviour	1 year; age at baseline 2 years	Mixed: detrimental / no association	Fathers' (not mothers') punishment associated with later externalising
Mulvaney and Mebert 2007 <sup>52</sup>	USA	National Institute of Child Health and Human Development Study of Early Child Care and Youth Development	1028	Regression models	Externalising behaviour	6 years; age at baseline 15 months; 4 time points	Detrimental	Not moderated by race/ethnicity
O'Gara et al. 2020 <sup>56</sup>	USA	Latinos in Context Study	141	Multigroup cross-lagged path analysis	Externalising behaviour	2 years; age at baseline 4 years; 3 time points	No associations	Not moderated by race/ethnicity
Petts and Kysar-Moon 2012 <sup>39</sup>	USA	Fragile Families and Child Wellbeing Study	1214	Regression models	Externalising behaviour	2 years; age at baseline 3 years	Detrimental	Moderation by religious affiliation
Xing et al. 2011 <sup>20</sup>	China	Sample of Chinese elementary school-aged children	454	Structural equation models	Externalising behaviour	6 months; mean age at baseline 10 years	Mixed: detrimental for girls / no association for boys	Moderation by sex
Yoo and Huang 2013 <sup>38</sup>	USA	Fragile Families and Child Wellbeing Study	1234	Structural equation models	Externalising behaviour	5 years; followed from birth; 4 time points	Detrimental	
Yu et al. 2018 <sup>53</sup>	USA	Sample of Chinese Americans	163	Bayesian path analysis	Externalising behaviour	6 months; age at baseline 3-5 years	Detrimental	Moderation by acculturation
<b>Aggressive behaviour</b>								
Altschul, Lee and Gershoff 2016 <sup>57</sup>	USA	Fragile Families and Child Wellbeing Study	3279	Cross-lagged path analysis	Aggressive behaviour	2 years; age at baseline 3 years	Detrimental	Reciprocal effects
Gershoff et al. 2016 <sup>30</sup>	USA	Head Start Impact Study	2063	Cross-lagged path analysis	Aggressive behaviour	1.5 years; age at baseline 3 years; 3 time points	Detrimental	
Grogan-Kaylor et al. 2020 <sup>58</sup>	USA	Fragile Families and Child Wellbeing Study	2703	Bayesian regression methods	Aggressive behaviour	2 years; age at baseline 3 years	Detrimental	Not moderated by neighbourhood disadvantage
Gromoske and Maguire-Jack 2012 <sup>59</sup>	USA	Fragile Families and Child Wellbeing Study	3870	Cross-lagged path analysis	Aggressive behaviour	4 years; age at baseline 1 year; 3 time points	Detrimental	Reciprocal effects

Author/ year	Country	Dataset / study population	Sample size	Analysis method	Outcome(s) as described by authors	Follow up period	Findings (main effect)	Comments
Lee, Altschul and Gershoff 2013 <sup>60</sup>	USA	Fragile Families and Child Wellbeing Study	3279	Cross-lagged path analysis	Aggressive behaviour	4 years; age at baseline 1 year; 3 time points	Detrimental	Not moderated by maternal warmth; reciprocal effects
Lee et al. 2013 <sup>61</sup>	USA	Fragile Families and Child Wellbeing Study	923	Regression models	Aggressive behaviour	2 years; age at baseline 3 years	Detrimental	Dose-response
Lee, Altschul, and Gershoff 2015 <sup>62</sup>	USA	Fragile Families and Child Wellbeing Study	1298	Cross-lagged path analysis	Aggressive behaviour	2 years; age at baseline 3 years	Detrimental	Reciprocal effects for mothers; NS for fathers
Lee et al. 2020 <sup>63</sup>	USA	Fragile Families and Child Wellbeing Study	4149	Cross-lagged path analysis	Aggressive behaviour	9 years; age at baseline 1 year	Detrimental	Moderation by household income; reciprocal effects
Ma and Grogan-Kaylor 2017 <sup>64</sup>	USA	Fragile Families and Child Wellbeing Study	3705	Hierarchical linear models	Aggressive behaviour	2 years; age at baseline 3 years	Detrimental	Dose-response
Ma, Grogan-Kaylor and Lee 2018 <sup>65</sup>	USA	Fragile Families and Child Wellbeing Study	2472	Fixed effects models	Aggressive behaviour	2 years; age at baseline 3 years	Detrimental	
Ma, Grogan-Kaylor and Lee 2020 <sup>66</sup>	USA	Fragile Families and Child Wellbeing Study	2472	Fixed effects models	Aggressive behaviour	2 years; age at baseline 3 years	Detrimental	Not moderated by community violence
Maguire-Jack, Gromoske and Berger 2012 <sup>67</sup>	USA	Fragile Families and Child Wellbeing Study	3870	Cross-lagged path analysis	Aggressive behaviour	4 years; age at baseline 1 year; 3 time points	Detrimental	Reciprocal effects
Neaverson et al. 2020 <sup>73</sup>	Switzerland	Zurich Project on the Social Development from Childhood to Adulthood	1447	Cross-lagged path analysis	Aggressive behaviour	2 years; age at baseline 11 years; 3 time points	Detrimental	
Olson et al. 2011 <sup>74</sup>	USA	Children at risk of school-age conduct problems	199	Regression models	Peer aggression	3 years; age at baseline 3 years	Detrimental	Not moderated by child sex or parental warmth
Piche et al. 2017 <sup>72</sup>	Canada	Quebec Longitudinal Study of Child Development	1686	Regression models	Physical aggression	2 years; age at baseline 3 years	Detrimental	Not moderated by child temperament
Stacks et al. 2009 <sup>75</sup>	USA	Early Head Start Research and Evaluation Study	3001	Regression models	Aggressive behaviour	2 years; age at baseline 1 year; 3 time points	No associations	

Author/ year	Country	Dataset / study population	Sample size	Analysis method	Outcome(s) as described by authors	Follow up period	Findings (main effect)	Comments
Taylor et al. 2010 <sup>68</sup>	USA	Fragile Families and Child Wellbeing Study	2461	Regression models	Aggressive behaviour	2 years; age at baseline 3 years	Detrimental	
Turns and Sibley 2018 <sup>69</sup>	USA	Fragile Families and Child Wellbeing Study	1020	Cross-lagged path analysis	Bullying behaviour	8 years; age at baseline 1 year; 4 time points	No main effect; Mixed: detrimental for boys /beneficial for girls (age 1 to 3 only; age 3 to 5 no association)	Moderation by child sex
Ward et al. 2019 <sup>70</sup>	USA	Fragile Families and Child Wellbeing Study	3632	Cross-lagged path analysis	Aggressive behaviour	4 years; age at baseline 1 year; 3 time points	Detrimental	Not moderated by race/ethnicity; reciprocal effects
Ward et al. 2020 <sup>71</sup>	USA	Fragile Families and Child Wellbeing Study	2211	Cross-lagged path analysis	Aggressive behaviour	4 years; age at baseline 1 year; 3 time points	Detrimental	Moderation by maternal attachment; reciprocal effects
<b>Antisocial behaviour / conduct problems</b>								
Derella et al. 2020 <sup>78</sup>	USA	Pittsburgh Girls Study	2450	Regression models with lagged predictors	Oppositional Defiant Disorder	12 years; age at baseline 5-8 years	Detrimental	
Ellison, Musick and Holden 2011 <sup>76</sup>	USA	National Survey of Families and Households	456	Regression models	Antisocial behaviour	5 years; age at baseline 2-4 years	Detrimental	Moderation by religious affiliation
Grogan-Kaylor 2004 <sup>23</sup>	USA	National Longitudinal Survey of Youth	1811	Fixed effects models	Antisocial behaviour	4 years; mean age 10 years	Detrimental	Not moderated by race/ethnicity; no dose-response
Grogan-Kaylor 2005b <sup>24</sup>	USA	National Longitudinal Survey of Youth	6912	Hierarchical linear models	Antisocial behaviour	10 years; age at baseline 4 years	Detrimental	Not moderated by race/ethnicity; moderation by child age and sex
Lahey et al. 2008 <sup>26</sup>	USA	National Longitudinal Survey of Youth	1,863	GEE models	Conduct problems	10 years (age 4 to 14)	No associations	Moderation by race/ethnicity
Larzelere, Cox and Smith 2010 <sup>25</sup>	USA	National Longitudinal Survey of Youth	785	Regression and structural equation models	Antisocial behaviour	2 years; age at baseline 6-9 years	No associations	
Piche et al. 2017 <sup>72</sup>	Canada	Quebec Longitudinal Study of Child Development	1686	Regression models	Conduct problems	2 years; age at baseline 3 years	Detrimental	Not moderated by child temperament

Author/ year	Country	Dataset / study population	Sample size	Analysis method	Outcome(s) as described by authors	Follow up period	Findings (main effect)	Comments
Wang and Kenny 2014 <sup>77</sup>	USA	Longitudinal Study of Youth Development	862	Cross-lagged path analysis	Conduct problems	4 years; age at baseline 12 years; 3 time points	Detrimental	Not moderated by race/ethnicity or parental warmth; reciprocal effects
<b>Internalising behaviour</b>								
Bakoula et al. 2009 <sup>22</sup>	Greece	Greek Birth Cohort	2065	Regression models	Internalising behaviour	11 years; age at baseline 7 years	Mixed: beneficial for girls / no association for boys	Moderation by child sex
Barajas-Gonzalez et al. 2018 <sup>54</sup>	USA	Mexican and Dominican American immigrant families	633	Regression models	Internalising behaviour	1 year; age at baseline 4 years	No associations	
Baumrind, Larzelere and Owens 2010 <sup>55</sup>	USA	Baumrind's Family Socialization Project	87	MANCOVA; regression models	Internalising behaviour	10 years, mean age at baseline 5 years	No associations	
Coley, Kull and Carrano 2014 <sup>27</sup>	USA	Three City Study - low-income urban African American and Hispanic families	592	Cross-lagged path analysis	Internalising behaviour	6 years; age at baseline 3 years; 3 time points	Mixed: beneficial wave 1 to wave 2 / detrimental wave 2 to wave 3	Moderation by race/ethnicity; no reciprocal effects
Ellison, Musick and Holden 2011 <sup>76</sup>	USA	National Survey of Families and Households	456	Regression models	Internalising behaviour	5 years; age at baseline 2-4 years	Detrimental	
Grogan-Kaylor 2005a <sup>47</sup>	USA	National Longitudinal Survey of Youth	1943	Fixed effects models	Internalising behaviour	6 years; age 4-14 years; 4 time points	No associations	
Gromoske and Maguire-Jack 2012 <sup>59</sup>	USA	Fragile Families and Child Wellbeing Study	3870	Cross-lagged path analysis	Internalising behaviour	4 years; age at baseline 1 year; 3 time points	Detrimental	No reciprocal effects
Ma and Grogan-Kaylor 2017 <sup>64</sup>	USA	Fragile Families and Child Wellbeing Study	3705	Hierarchical linear models	Internalising behaviour	2 years; age at baseline 3 years	Detrimental	
Ma, Grogan-Kaylor and Lee 2020 <sup>66</sup>	USA	Fragile Families and Child Wellbeing Study	2472	Fixed effects models	Internalising behaviour	2 years; age at baseline 3 years	Detrimental	Not moderated by community violence
Maguire-Jack, Gromoske and Berger 2012 <sup>67</sup>	USA	Fragile Families and Child Wellbeing Study	3870	Cross-lagged path analysis	Internalising behaviour	4 years; age at baseline 1 year; 3 time points	Detrimental	No reciprocal effects



Author/ year	Country	Dataset / study population	Sample size	Analysis method	Outcome(s) as described by authors	Follow up period	Findings (main effect)	Comments
Mulvaney and Mebert 2007 <sup>52</sup>	USA	National Institute of Child Health and Human Development Study of Early Child Care and Youth Development	1028	Regression models	Internalising behaviour	6 years; age at baseline 15 months; 4 time points	Detrimental	Not moderated by race/ethnicity
Petts and Kysar-Moon 2012 <sup>39</sup>	USA	Fragile Families and Child Wellbeing Study	1214	Regression models	Internalising behaviour	2 years; age at baseline 3 years	Detrimental	Not moderated by religious affiliation
Wang and Kenny 2014 <sup>77</sup>	USA	Longitudinal Study of Youth Development	862	Cross-lagged path analysis	Depressive symptoms	4 years; age at baseline 12 years; 3 time points	Detrimental	Not moderated by race/ethnicity or parental warmth; no reciprocal effects
Yoo and Huang 2013 <sup>38</sup>	USA	Fragile Families and Child Wellbeing Study	1234	Structural equation models	Internalising behaviour	5 years; followed from birth; 4 time points	Detrimental	
Yu et al. 2018 <sup>53</sup>	USA	Sample of Chinese Americans	163	Bayesian path analysis	Internalising behaviour	6 months; age at baseline 3-5 years	Detrimental	
<b>Total behaviour problems (combined externalising and internalising)</b>								
Ansari and Gershoff 2016 <sup>31</sup>	USA	Family and Child Experiences Survey, 2006 cohort	1020	Structural equation models	Behaviour problems	2 years; age at baseline 41 months; 3 time points	Detrimental	
Keyser, Ahn and Unick 2017 <sup>79</sup>	USA	Fragile Families and Child Wellbeing Study	4898	Growth curve models	Problem behaviour	6 years; age at baseline 3 years; 3 time points	Detrimental	
McLoyd and Smith 2002 <sup>28</sup>	USA	National Longitudinal Survey of Youth	1990	Growth curve models	Behaviour problems	6 years; age at baseline 4-5 years; 4 time points	Detrimental	Moderation by maternal emotional support; no moderation by race/ethnicity
Okuzono et al. 2017 <sup>80</sup>	Japan	Longitudinal Survey of Newborns in the 21 <sup>st</sup> Century	29 182	Propensity Score Matching	Behaviour problems	2 years; age at baseline 3.5 years	Detrimental	Dose-response
Scott et al. 2014 <sup>81</sup>	UK	Growing Up in Scotland Study	1600	Regression models	Emotional and behavioural problems	2 years; age at baseline 2 years	Detrimental	
Slade and Wissow 2004 <sup>29</sup>	USA	National Longitudinal Survey of Youth	1966	Probit models	Behaviour problems	4 years; age at baseline 0-23 months	No main effect; Mixed: detrimental / no association for Hispanic or African American children	Moderation by race/ethnicity

Author/ year	Country	Dataset / study population	Sample size	Analysis method	Outcome(s) as described by authors	Follow up period	Findings (main effect)	Comments
<b>Prosocial behaviour / social competence</b>								
Altschul, Lee and Gershoff 2016 <sup>57</sup>	USA	Fragile Families and Child Wellbeing Study	3279	Cross-lagged path analysis	Child social competence	2 years; age at baseline 3 years	No associations	No reciprocal effects
Baumrind, Larzelere and Owens 2010 <sup>55</sup>	USA	Baumrind's Family Socialization Project	87	MANCOVA; regression models	Adolescent competence	10 years, mean age at baseline 5 years	No associations	
Gershoff et al. 2016 <sup>30</sup>	USA	Head Start Impact Study	2063	Cross-lagged path analysis	Social skills	1.5 years; age at baseline 3 years; 3 time points	No associations	
Piche et al. 2017 <sup>72</sup>	Canada	Quebec Longitudinal Study of Child Development	1686	Regression models	Prosocial behaviour	2 years; age at baseline 3 years	No associations	Moderation by sex
Yu et al. 2018 <sup>53</sup>	USA	Sample of Chinese Americans	163	Bayesian path analysis	Prosocial behaviour	6 months; age at baseline 3-5 years	No associations	
<b>Inattention / ADHD symptoms</b>								
Gershoff et al. 2016 <sup>30</sup>	USA	Head Start Impact Study	2063	Cross-lagged path analysis	Inattention	1.5 years; age at baseline 3 years; 3 time points	No associations	
Morgan et al. 2016 <sup>82</sup>	USA	Early Childhood Longitudinal Study – Kindergarten Cohort	7456	Regression models	ADHD / ADHD-CD symptoms	8 years; age at baseline 5 years	Detrimental	Not moderated by race/ethnicity
<b>Cognitive abilities</b>								
Ansari and Gershoff 2016 <sup>31</sup>	USA	Family and Child Experiences Survey, 2006 cohort	1020	Structural equation models	Approaches to learning; literacy skills; maths skills	2 years; age at baseline 41 months; 3 time points	Mixed: detrimental for approaches to learning; no associations for literacy/maths	
Cuartas et al. 2020 <sup>83</sup>	Colombia	Sample of low income Colombian children living in 95 municipalities; data from an RCT	1167	lagged-dependent variables; difference-in-differences-like approach (DD); DD-like approach with matching	Cognitive skills	2 years; age at baseline 1.5 years	Detrimental	

Author/ year	Country	Dataset / study population	Sample size	Analysis method	Outcome(s) as described by authors	Follow up period	Findings (main effect)	Comments
Font and Cage 2018 <sup>32</sup>	USA	CPS-involved children from National Survey of Child and Adolescent Well-Being	658	Mixed-effects linear models	School engagement; cognitive performance	3 years; age at baseline 8-14 years; 3 time points	Mixed: detrimental for school engagement; beneficial for cognitive performance	
Gershoff et al. 2016 <sup>30</sup>	USA	Head Start Impact Study	2063	Cross-lagged path analysis	Literacy skills (receptive vocabulary, letter-word identification, and spelling)	1.5 years; age at baseline 3 years; 3 time points	Mixed: detrimental for receptive vocabulary only; NS for letter-word; NS for spelling	
MacKenzie et al. 2012 <sup>36</sup>	USA	Fragile Families and Child Wellbeing Study	779	Regression models	Receptive vocabulary	2 years; age at baseline 3 years	Detrimental	
MacKenzie et al. 2013 <sup>37</sup>	USA	Fragile Families and Child Wellbeing Study	1933	Regression models	Receptive vocabulary	6 years; age at baseline 3 years	No associations	
Maguire-Jack, Gromoske and Berger 2012 <sup>67</sup>	USA	Fragile Families and Child Wellbeing Study	3870	Cross-lagged path analysis	Cognitive skills via vocabulary test	4 years; age at baseline 1 year; 3 time points	No associations	No reciprocal effects
Straus and Paschall 2009 <sup>84</sup>	USA	National Longitudinal Survey of Youth	806	ANCOVA, regression models	Maths and reading achievement tests	4 years; age at baseline 2-4 years and 5-9 years	Detrimental	Not moderated by race/ethnicity, maternal supportiveness, maternal cognitive stimulation; dose-response
<b>Interpersonal relationships</b>								
Font and Cage 2018 <sup>32</sup>	USA	CPS-involved children from National Survey of Child and Adolescent Well-Being	658	Mixed-effects linear models	Peer isolation	3 years; age at baseline 8-14 years; 3 time points	No associations	
Laible et al. 2020 <sup>51</sup>	USA	National Institute of Child Health and Human Development Study of Early Child Care	1364	Cross-lagged path analysis	Quality of parent-child interactions	5 years; age at baseline 3 years; 4 time points	Detrimental	Reciprocal effects
Foshee et al. 2005 <sup>33</sup>	USA	Evaluation of "Safe Dates" violence prevention programme	1218	Regression models	Dating violence	1.5 years; age at baseline 14 years	NS for single mothers; detrimental for married mothers, NS for married fathers	Moderated by maternal education and race/ethnicity

Author/ year	Country	Dataset / study population	Sample size	Analysis method	Outcome(s) as described by authors	Follow up period	Findings (main effect)	Comments
<b>Stress reactivity</b>								
Bugental, Martorell and Barraza 2003 <sup>85</sup>	USA	Low-income mothers at risk of future child maltreatment	44	Regression models	Children's cortisol production after exposure to the Strange Situation test	< 1 year; age at baseline 1 year	Detrimental	
<b>Involvement with child protective services</b>								
Lee, Grogan-Kaylor and Berger 2014 <sup>87</sup>	USA	Fragile Families and Child Wellbeing Study	2788	Regression models	Child Protective Services (CPS) involvement between age 1 and 5 years	4 years; age at baseline 1 year	Detrimental	
Ma, Grogan-Kaylor and Klein 2018 <sup>88</sup>	USA	Fragile Families and Child Wellbeing Study	2267	Regression models	Child Protective Services (CPS) involvement between age 3 and 5 years	2 years; age at baseline 3 years	Detrimental	
Slack et al. 2004 <sup>86</sup>	USA	Illinois Family Study	583	Discrete time event history analysis	Physical neglect via Child Protective Services reports	1 year; age at baseline 3 years	Detrimental	Controlled for prior involvement with child protective services