



School performance in children exposed to neglect, abuse or maltreatment and in orphans

A rapid systematic review



Title	School performance in children exposed to neglect, abuse or maltreatment and in orphans: A rapid systematic review
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Regional Center for Child and Adolescent Mental Health, Eastern and Southern Norway (RBUP) establishes status of knowledge in relevant fields, conducts research, runs educational programs to professionals and supports quality improvements in services. The centre was established in 1998 by the Ministry of Health and Care Services. RBUP is dedicated to improving child and adolescent mental health, and to protection of child development. Our vision is to contribute to positive differences in the lives of children and families, through prevention and service improvement.

Note This review has not been peer reviewed.

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Plain language summary

School performance in children exposed to neglect, abuse or maltreatment, and orphaned children

We conducted a review of school performance in children who had been exposed to abuse, maltreatment or neglect. After searching for relevant studies up to 15 August 2016, we included 14 studies that enrolled 267,805 children and adolescents. We also searched for studies on school performance in orphaned children, and included 29 potentially relevant studies. We did not analyse these further, but assembled them in a separate list.

Why is this important?

Children who experience lack of adequate care, abuse or neglect are at increased risk of psychological, social, and behavioral impairment. Whereas orphans may struggle to attend school for practical reasons (such as lack of funds, having to work or care for younger siblings); both orphans and children who experience other types of inadequate care may have experienced or be experiencing traumatic events that affect their abilities to learn.

We wanted to answer the following questions:

- 1) How does child neglect and child abuse affect children's learning outcomes?
- 2) How does being an orphan affect children's learning outcomes?

Research findings

Question 1): Abuse/maltreatment/neglect

Poor school performance

We found that the risk of poor school performance was higher among children exposed to abuse or neglect than among unexposed children. Poor school performance occurred more than twice as frequently among children exposed to sexual abuse than among unexposed children (low quality evidence).

School performance

Children exposed to abuse or neglect had poorer school performance than unexposed children. We found a large difference in school performance between children exposed to neglect and unexposed children, where unexposed children did better in school than abused/neglected children (moderate quality evidence).

Question 2): Orphans

We found 29 potentially relevant studies concerning school performance in orphans, but did not analyse these further.

Authors' conclusions

The research evidence suggests that children who have been exposed to abuse, maltreatment or neglect in childhood perform worse in school than unexposed children. The studies we found vary in methodological quality, and better quality research is needed to confirm these findings.

The scientific literature regarding school performance in orphans is yet to be explored, although the number of potentially relevant studies identified in our search suggests that a systematic review of these studies might prove useful.

Executive summary

Background

SOS Children's Villages is working to help ensure access to quality education for children who lack adequate care, and needs research based evidence for the associations between lack of care and children's learning outcomes. For this reason, RBUP Øst og Sør (Regional Center for Child and Adolescent Mental Health, Eastern and Southern Norway) was asked to systematically review research on the consequences of lack of care on children's educational outcomes.

Objectives

Our objective was to answer the following research questions:

- 1) How does child neglect and child abuse affect children's learning outcomes?
- 2) How does being an orphan affect children's learning outcomes?

We sought to answer question 1) by conducting a rapid systematic review, and to answer question 2) by producing a systematic mapping of relevant studies.

Methods

For question 1), we searched for observational studies comparing abused children to nonabused children, where outcomes related to school performance were reported. For question 2), we searched for observational studies comparing orphaned children to nonorphaned children, where outcomes related to school performance were reported.

On August 15, 2016, we systematically searched the following electronic databases for relevant studies: PsycINFO, Medline, Cochrane Library, Web of Science, ERIC, Pilots, Social Services Abstracts and Sociological Abstracts. Two persons assessed all references for inclusion independently of each other. All references considered potentially relevant to question 1) were assessed in full text. One person extracted data, assessed the methodological quality of the studies, synthesised the results and used GRADE to assess the certainty of the results; and another person double-checked each step. References considered relevant to question 2) were assessed by one person. These studies were not analysed further.

Results

Question 1): Abuse/maltreatment/neglect

For question 1), we identified 28 relevant studies; however, as we had insufficient time to analyse all, we decided to include studies reporting overall school performance outcomes only. 5 studies reported outcomes relevant to overall poor school outcomes, 8 studies reported outcomes relevant to school outcomes in general, and one study reported both outcomes.

Poor school performance

6 studies reported some measure of poor school performance. The number of studied children totalled 264,868. The quality of the included studies varied between a score of 4/10 and 9/10. The studies compared exposed and unexposed children's poor school performance, either self-reported, teacher-reported, or as provided in school registries.

We found that the risk of poor school performance was higher among children exposed to abuse or neglect than among unexposed children. There was a risk difference of poor school performance for all types of abuse or neglect, but we rated the quality of the evidence as very low for non-specified abuse and sexual abuse. There was low quality evidence of poor school performance occurring more than twice as frequently among children exposed to sexual abuse than among unexposed children.

School performance

9 studies reported some measure of children's overall school performance. The number of studied children totalled 4,830. The quality of the included studies varied between a score of 2/10 and 8/10.

The studies compared exposed and unexposed children's grade point averages (GPAs), either self-reported or as provided in school registries; test scores; teacher ratings; or a combination of these.

Children exposed to abuse or neglect had poorer school performance than unexposed children. There was a difference in school performance for all types of abuse or neglect, but we rated the quality of the evidence as very low for non-specified abuse, physical abuse and sexual abuse. There was moderate quality evidence of a large difference in school performance between children exposed to neglect and unexposed children, in favour of unexposed children.

Question 2): Orphans

We identified 29 studies relevant for question 2); these are listed in Appendix 4.

Discussion

The 14 studies included in our review generally show that abused children generally perform less well in school than nonabused children. However, considering the complexity of the exposure in question, and the importance of identifying potential confounders in the data set, we will never know whether all such confounders have been measured, or if this is at all possible. This makes a firm conclusion impossible, and we may only conclude that our results are indications of a correlation rather than causation.

A strength of our review is the fact that we were able to conduct meta-analyses of the results of the included studies. Being able to synthesise data gives us stronger trust in the results of the studies. Furthermore, the results of the studies are consistent, across populations, exposures, outcomes, and methodological quality.

Conclusion

The research evidence suggests that children who have been exposed to abuse, maltreatment or neglect in childhood perform worse in school than unexposed children. The studies we found vary in methodological quality, and better quality research is needed to confirm these findings.

The scientific literature regarding school performance in orphans is yet to be explored, although the number of potentially relevant studies identified in our search suggests that a systematic review of might prove useful.

Background

Objective

SOS Children's Villages is working to help ensure access to quality education for children who lack adequate care, and needs research based evidence for the associations between lack of care and children's learning outcomes. For this reason, RBUP Øst og Sør (Regional Center for Child and Adolescent Mental Health, Eastern and Southern Norway) was asked to systematically review research on the consequences of lack of care on children's educational outcomes.

Description of the problem

According to UNICEF, there were over 132 million orphans¹ in sub-Saharan Africa, Asia, Latin America and the Caribbean in 2005 (UNICEF, 2015). 13 million children in this region have lost both parents. Concurrently, child maltreatment occurs at high rates. Annually, 3,6 million cases of child abuse and neglect are reported in the USA alone, of which 900 000 reports are determined to be severe (LaPrairie, 2010). In Norway, about 2 500 new cases of child neglect and around 500 new cases of child physical abuse are reported each year (Malt, 2014). Furthermore, according to Statistics Norway, 9 611 Norwegian children received a care intervention through the child welfare authorities in 2014 (Norway, 2014). Twenty-one percent of all youths in a recent Norwegian study (Mossige, 2016) stated that they had been exposed to violence from a parent, and 6% had experienced severe violence from a parent.

Why it is important to do this review

Children who experience lack of adequate care, abuse or neglect are at increased risk of psychological, social, and behavioral impairment (Pacheco, Irigaray, Werlang, Nunes, & Argimon, 2014). Whereas orphans may struggle to attend school for practical reasons (such as lack of funds, having to work or care for younger siblings); both orphans and children who experience other types of inadequate care may have experienced or be experiencing traumatic events that affect their abilities to learn. This is illustrated by Berger et al (Berger, Cancian, Han, Noyes, & Rios-Salas, 2015), who found no evidence of a causal relationship between out-of-home placement and academic achievement in children. However, the authors found consistent evidence of low average math and reading achievement among children involved with child protective services in general – suggesting that the cognitive development of all children experiencing maltreatment may be affected, regardless of placement.

SOS Children's Villages is working to help ensure access to quality education for children who lack adequate care, but is in need of documentation of how lack of care affects children's learning outcomes. We identified numerous studies on the topic of academic achievement in maltreated, neglected and/or abused children, as well as reviews synthesizing such studies. We were, however, not able to find any reviews that are systematic in the sense that they were a) sufficiently

¹ Orphans are defined as children who has lost one or both parents.

comprehensive and b) mindful of the various degrees of methodological quality in the reviewed studies and c) synthesizing study results statistically, i.e. through meta-analyses.

As the scope of the problem described was very wide, and resources limited, we divided this report into two, more specifically:

- 3) How does child neglect and child abuse affect children's learning outcomes?
- 4) How does being an orphan affect children's learning outcomes?

We sought to answer question 1) by conducting a rapid systematic review, and to answer question 2) by producing a systematic mapping of relevant studies.

Methods

Definitions

The terminology used for describing child abuse, maltreatment and/or neglect is not uniform, and varies from study to study and context to context. It is, for instance, not clear whether "child abuse" is a parent term, synonymous to "child maltreatment". Furthermore "physical abuse" might, or might not be synonymous to "harsh discipline", depending on the study context. SOS Children's Villages provides the following definitions and categorization of the relevant terms in our review:

"Physical abuse is the actual or potential physical harm caused by an action or lack of action, which is reasonably within the control of the parent or person in a position of responsibility, power, or trust. Physical abuse may involve hitting, spanking, shaking, throwing, poisoning, burning or scalding, drowning and suffocating. It can also mean causing physical harm to a child by fabricating the symptoms of, or deliberately causing, ill health to a child. The incidents may be single or repeated.

Sexual abuse is evidenced by an activity between a child and an adult or another child who, by age or development, is in a relationship of responsibility, trust or power; the activity being intended to gratify or satisfy the needs of the other person. Child sexual abuse involves forcing or enticing a child to take part in sexual activities, whether or not the child is aware of what is happening. The activities may involve physical contact and penetrative or non-penetrative acts. This may also include involving children in looking at, or in the production of, pornographic material, or encouraging children to behave in sexually inappropriate ways.

Neglect and negligent treatment is the inattention or omission on the part of the caregiver to provide for the development of the child in: health, education, emotional development, nutrition, shelter and safe living conditions, in the context of resources reasonably available to the family or caretakers and which causes, or has a high probability of causing, harm to the child's health or physical, mental, spiritual, moral or social development. This includes the failure to properly supervise and protect children from harm as much as is feasible.

Emotional abuse is the persistent emotional ill treatment of a child that adversely affects his or her self-perception and development. It may involve conveying to the child that he or she is worthless, unloved, and inadequate, or there only to meet the needs of another person; or imposing inappropriate

expectations upon him/her. Acts include restricting movement, threatening, scaring, discriminating, scape-goating, corrupting, ridiculing, degrading, bullying, humiliating (e.g. asking potentially embarrassing questions, demanding potentially embarrassing action) or other non-physical forms of hostile or rejecting treatment.” (SOS-Kinderdorf, 2008)

We do acknowledge, however, the fact that the terms will be used interchangeably, and possibly also inseparably, in the included studies, and hence will not re-code the terms provided in the primary studies.

Inclusion criteria

Question 1): Abuse/maltreatment/neglect

For question 1), we pre-specified the following inclusion criteria:

Table 1: Inclusion criteria, question 1)

Population	School-aged children (aged 5-18)
Exposure	Having experienced neglect, maltreatment or abuse (physical or sexual); regardless of placement.
Comparison	Not having experienced child neglect or abuse
Outcomes	<p>All outcomes related to academic achievement, learning abilities, attainment of learning objectives or acquisition of skills and competencies.</p> <p>The primary outcomes are: Grades/Grade Point Averages (GPAs) Subject specific skills (reading, writing, mathematics, foreign language)</p> <p>Examples of other relevant outcomes include: Problem-solving skills Ability to think critically</p> <p>Outcomes may be measured at any point in time after having experienced the exposure in question.</p>
Study design	Observational studies comparing the population in question to an unexposed control group; longitudinal or cross-sectional. Studies must include data on individuals to be eligible for inclusion. Evaluations based on ecological data and qualitative studies were not eligible.

Question 2): Orphans

For question number 2; we pre-specified the following inclusion criteria:

Table 2: Inclusion criteria, question 2)

Population	School-aged children (aged 5-18)
Exposure	Having lost one or both parents.
Comparison	Not having lost any parents
Outcomes	<p>All outcomes related to academic achievement, learning abilities, attainment of learning objectives or acquisition of skills and competencies.</p> <p>The primary outcomes are: Grades/Grade Point Averages (GPAs) Subject specific skills (reading, writing, mathematics, foreign language)</p> <p>Examples of other relevant outcomes include: Problem-solving skills Ability to think critically</p> <p>Outcomes may be measured at any point in time after having experienced the exposure in question.</p>
Study design	Observational studies comparing the population in question to an unexposed control group; longitudinal or cross-sectional. Studies must include data on individuals to be eligible for inclusion. Evaluations based on ecological data and qualitative studies were not eligible.

Exclusion criteria

We did not include studies that concerned academic achievement in relation to socioeconomic factors.

Literature search

We developed detailed search strategies for each database to identify studies for inclusion in the review. These were based on the search strategy developed for PsycINFO, but adapted for each database. The search strategies used a combination of controlled vocabulary and free-text terms. Research librarian Sølvi Biedilæ planned and executed the literature searches, in collaboration with the project leader.

We searched the following electronic resources on 15 August 2016. The complete search strategies are attached in Appendices 5 and 6.

PsycINFO (Ovid)
Medline (Ovid)
Cochrane Library
Web of Science (ISI)
ERIC (ProQuest)
Pilots (ProQuest)

Social Services Abstracts (ProQuest)

Sociological Abstracts (ProQuest)

There were no restrictions on language or date of publication when searching the electronic databases; however, we excluded studies in languages other than English or Scandinavian at the full text screening stage.

Selection of studies

Question 1): Abuse/maltreatment/neglect

Two review authors (SB and KTH) independently screened the retrieved titles/abstracts, and independently assessed articles for inclusion according to the above criteria. We resolved disagreements by discussion. We ordered all eligible or potentially eligible articles in full text. As this is a rapid review, with limited time, the project plan stated the number of studies relevant for inclusion might be greater than what may realistically be handled and synthesised within the resources allocated to this review. The number of studies meeting the specified criteria was 71 (see flow chart), and we needed to prioritise the inclusion of relevant studies further. For fear of introducing bias by selecting e.g. only larger studies, or newer studies, we decided to include studies that contained the necessary data to perform meta-analyses. Hence, all potentially eligible full text articles were dually screened by review authors SB, EN, HK, BA and KTH. We resolved disagreements by discussion. This selection process produced 28 eligible studies, all relevant and with sufficient data for analysis. However, the outcomes measured in the 28 studies were on different levels, i.e. some providing overall judgements of school performance, and some providing specific outcomes such as reading or spelling skills. Including all of these studies would result in a number of meta-analyses, and for this reason we decided to include studies on overall school performance only. Thus, we included 14 studies; 5 studies reported outcomes relevant to overall poor school outcomes, 8 studies reported outcomes relevant to school outcomes in general, and one study reported both outcomes.

Studies screened in full text, but excluded from the review, are listed in Appendix 3 (Excluded studies). Studies screened in full text, found thematically relevant, but excluded for lack of data necessary for meta-analysis, are listed with titles and abstracts in Appendix 2. Studies measuring outcomes more specific than school performance or poor school performance are also listed in Appendix 2.

Question 2): Orphans

Two review authors (SB and KTH) independently screened the retrieved titles/abstracts, and independently assessed articles for inclusion according to the above criteria. We resolved disagreements by discussion. SB assessed potentially relevant studies; these are listed in Appendix 4.

Assessment of methodological quality of included studies

Question 1): Abuse/maltreatment/neglect

Using a tool based on the checklist for assessing the methodological quality of case-control studies, cohort studies and prevalence studies (Appendix 7), SB and BA assessed the methodological quality of

the included studies. KTH checked the assessments for accuracy. We did not translate these results into judgements of high, moderate or low quality, as our checklist has not been evaluated for validity or consistency. Instead, we provide the total score for each study in table 3.

Question 2): Orphans

As specified in the project plan, we did not appraise the the methodological quality of the studies included in the systematic mapping.

Data extraction

Question 1): Abuse/maltreatment/neglect

For references included in the rapid review, SB and BA extracted data from the included studies and KTH checked the data extraction for accuracy. Data were extracted concerning: author, title, date and country of publication, study design, number and characteristics of participants, type of exposure, type of control group, length of follow-up (if relevant), and relevant outcome measures.

Question 2): Orphans

For references included in the systematic mapping, the abstracts of the potentially relevant studies are presented as is in Appendix 4.

Analyses

Question 1): Abuse/maltreatment/neglect

We describe the included studies, and the results, narratively and in tables, along with the appraisal of their methodological quality.

Meta-analyses

We carried out all meta-analyses in Cochrane's Review Manager software. We calculated standardised mean differences (SMD) with 95% confidence intervals (CI) for continuous outcome measures. The SMD is also known as Hedge's g. For dichotomous data, we calculated risk ratios (RR) with 95% CIs. We organised the meta-analyses in subgroups according to the type of abuse or neglect study participants were exposed to.

Question 2): Orphans

As specified above, we did not analyse the identified studies pertaining to question 2) further.

GRADE

Question 1): Abuse/maltreatment/neglect

Having completed our analyses, assessed the certainty of the synthesised evidence for outcomes using GRADE (Grading of Recommendations, Assessment, Development, and Evaluation).

GRADE is a method for assessing the certainty of the evidence in systematic reviews, or the strength of recommendations in guidelines. GRADE has four levels of certainty:

High quality: Further research is very unlikely to change our confidence in the estimate of effect.

Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.

Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.

Very low quality: We are very uncertain about the estimate.

Assessments are done for each outcome and are based on evidence coming from the individual primary studies contributing to the outcome. For more information on GRADE visit www.gradeworkinggroup.org.

Question 2): Orphans

We did not use GRADE to assess studies pertaining to question 2).

Peer review

This review has not been peer reviewed.

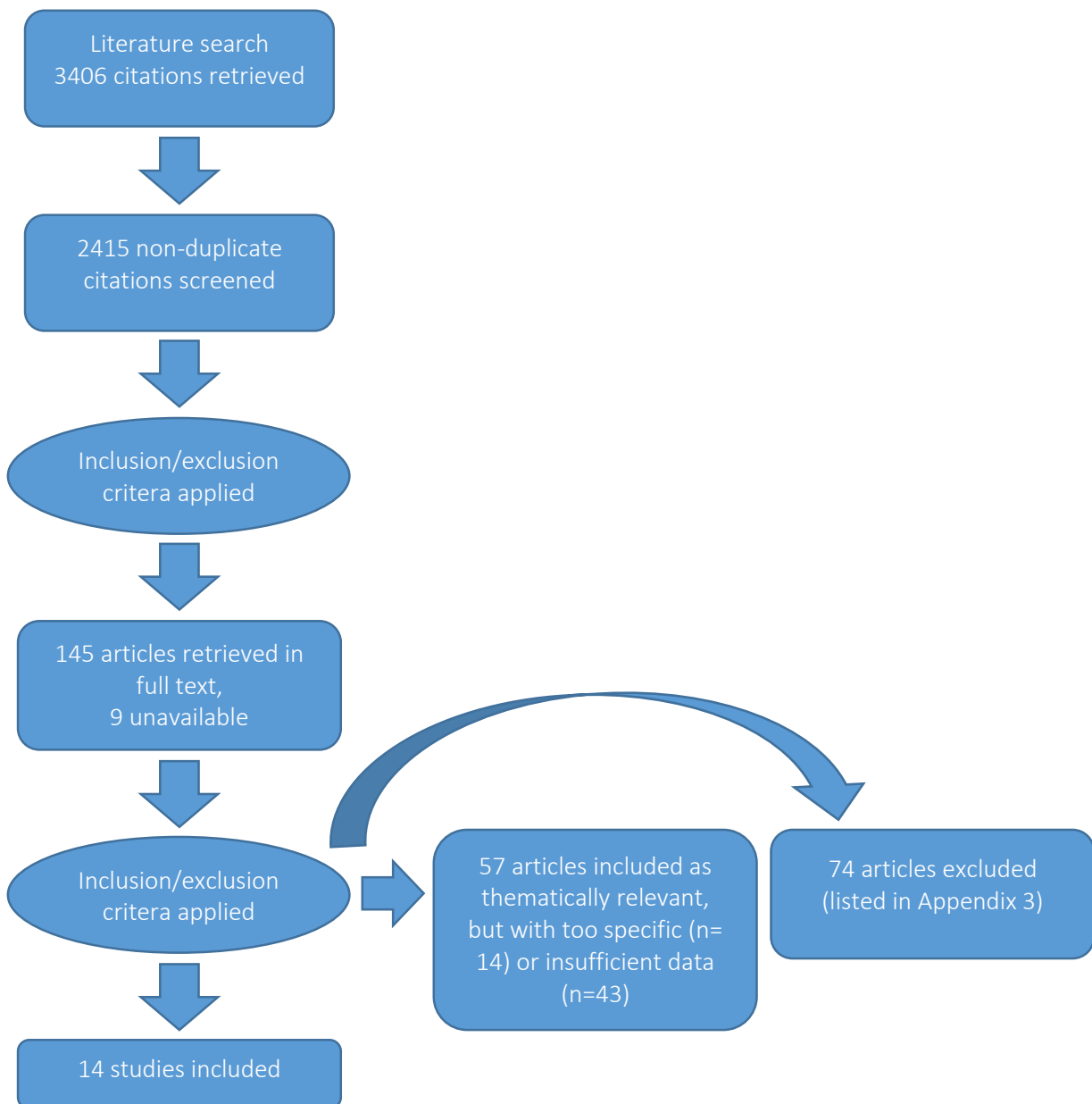
Results

Literature search

Question 1): Abuse, maltreatment and neglect

Our search returned 3,406 citations; 2,415 unique after exclusion of duplicates. After title and abstract screening we ordered 145 references in full text; 9 of these were unavailable. Hence, we read 136 studies in full text. 14 of these were included as meeting all our criteria; 57 were included as thematically relevant, but with insufficient or too specific data for our meta-analyses, and 74 were excluded. The most common reasons for exclusion were wrong outcomes (n=17) or wrong comparator (n=16). Excluded studies are listed in Appendix 3.

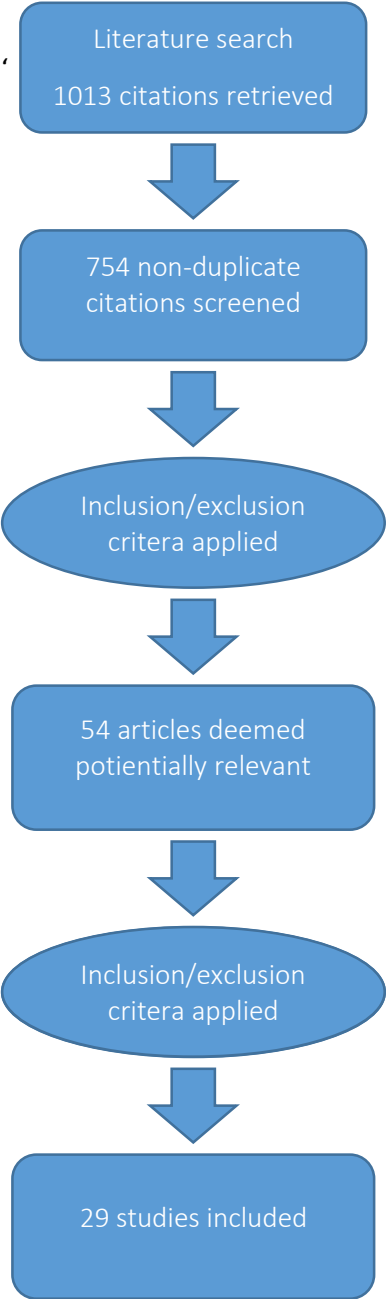
Figure 1: Abuse, maltreatment and neglect: Flowchart of literature



Question 2): Orphans

Our search returned 1,013 citations; 754 unique after exclusion of duplicates. After title and abstract screening, 54 articles were deemed potentially relevant. SB screened abstracts and full texts where available, and 29 were included as meeting all our criteria, and are listed in Appendix 2.

Figure 2: Orphans: Flowchart of literature



Description of included studies

Question 1): Abuse, maltreatment and neglect

The 14 included studies are presented in table 3, as well as narratively, below, and tabulated in Appendix 1.

12 of the included studies were conducted in the USA, one was from Canada, and one was conducted in the UK. The included studies were not uniform in defining the type of abuse/maltreatment the children had been exposed to, and they measured a number of outcomes. In some studies the type of abuse or maltreatment was not specified, in other studies separate analyses were conducted per exposure type. All included studies calculated an overall measure of school performance or poor school performance. For this reason we decided to conduct two meta-analyses; one for outcomes representing school outcomes, and one for outcomes representing school performance in general.

5 studies reported outcomes relevant to overall poor school outcomes, 8 studies reported outcomes relevant to school outcomes in general, and one study reported both outcomes.

Barnett et al (1996) compared 50 maltreated children to 26 nonmaltreated children. The exposed children were already participants in a maltreatment intervention program, maltreatment was documented, and 84% of the families contacted completed the study. No information was provided regarding non-completers. The children were interviewed by a researcher. Assessments of school performance were self-reported, and results show that younger maltreated children were more likely to have an inflated view of their own competence, whereas older children did not. However, the authors concluded that maltreatment probably disrupts psychological processes accounting for children's scholastic performance.

Chandy et al (1997) derived data from the Adolescent Health Survey in Minnesota, in which 370 adolescent males reported having experienced sexual abuse. They were compared to a matched group of males in the same survey, who did not report a history of sexual abuse. Information regarding response rates in the overall survey was not reported in the study. The adolescents self-assessed their academic performance, and listed their GPA (grade point average) at the time of the study. The authors found that those who had been exposed to sexual abuse perceived themselves as performing lower academically, than those who had not been exposed to sexual abuse, and concludes that sexual abuse is a risk factor for a variety of adverse behaviors.

Einbender et al (1989) compared 46 sexually abused girls to a matched group of 46 nonabused girls. The abuse was not substantiated through child service registries, but the exposure group was recruited from agency and therapist referrals. The authors did not report any information on non-participants. The girls were tested using a number of different instruments, overall school performance was measured by the Wide Range Achievement Test-Revised (WRAT-R). Sexually abused girls were found to demonstrate lower school performance than unexposed girls.

Elmer et al (1977) compared 17 children who had been exposed to abuse and taken to hospital, with 17 nonabused children who were also taken to hospital, but for accident related injuries. These

children were characterised as traumatised, but not abused. The nature of the abuse was not specified in the study. In addition, these children were matched and compared to 25 children who had not been traumatised. The children were followed up 8 years after hospitalization. All 34 hospitalised children were located and followed up, but the study has no information of how many children were asked to participate from the start of the study. The children's school records were used to rate their achievement levels, as either below average or average. Results from the study show that the abused children tended to perform below average in school, compared to nonabused and unhospitalised children, but this difference was not statistically significant. The authors conclude that the poor socioeconomic conditions of the children in the study might be as detrimental as abuse.

Flisher et al (1997) surveyed 665 children in New York and Puerto Rico to document associations between physical abuse and psychosocial characteristics. The children's caretakers (most often mothers) were interviewed, and reported e.g. physical abuse, psychiatric disorders and school grades. The authors did not report the number of refusals to participate, and whether they differed from those who participated. Results from this study show that the abused children scored lower than the unexposed children on a number of outcomes, as well as school grades. After adjusting their analysis controlling for control variables, the differences in school grades were not statistically significant. The authors concluded that this, which is not in concordance with similar studies, suggests that results from previous studies are not generalizable. Furthermore, the authors points to the self-reporting of outcomes in this study as possibly different from studies in which the population has been referred to child protective services, and that this might help explain the difference in results.

Frothingham et al (2000) followed up a previous cohort of sexually abused children, and compared 105 exposed children to 83 matched unexposed children. Data was missing or partially missing for 43 of the original study children. The authors used hospital and school health records to compare the two groups 8 years later, and measured educational problems as documented by school health records as an outcome. Results show that the sexually abused children had significantly more educational problems than the unexposed group, and the authors concluded that sexual abuse predicts serious future problems for children

Kendall-Tackett et al (1996) compared a sample of 324 maltreated children and adolescents to a matched group of 420 nonmaltreated children. Maltreatment was confirmed by a local Child Protection Services registry. As the study was based on data from a registry, there were no refusals to participate. The authors used data on school performance from school registries. Results from the study show that both neglected and neglected/abused children in the study had worse school performance than the unexposed children, and the authors conclude that both neglect and neglect combined with abuse was equally detrimental.

Leiter et al (1994) sampled a study group of 660 from a local child abuse registry, maltreatment was substantiated for all children. These children were compared to nonabused children from a random social services sample, as well as a random sample of the general school population (n=330). School performance was assessed by e.g. CAT scores (Cognitive Abilities Test) in school registries. As the study was based on registry data, there were no non-participants; however, data was missing for between 15-20% of children in all groups. The authors found that abused children did worse than both

comparison groups, an all reported school outcomes, and concluded that their findings underline maltreatment's effect on cognitive achievement.

Lisak et al (1994) surveyed 90 adult male students for physical (n=22), sexual abuse (n=16) or both physical and sexual abuse (n=15) in childhood, and compared those who reported abuse to those who did not (n=37). The authors did not provide information of non-participants. School performance was self-reported, and results show that both sexually and physically abused men reported more educational problems (lower GPA) than non-abused men. The authors conclude that childhood abuse may contribute to difficulties in adolescent and adult education.

McCourt et al (2013) compared academic performance in a sample of more than 150,000 children reported to child protective services for suspected maltreatment, to 450,000 children with no known maltreatment history. The nature of the maltreatment was not specified in the study. The study was based on data from maltreatment and education registries, and hence there was no drop-out or refusal to enroll. To control for e.g. socioeconomic confounders, the authors recorded parental education levels and whether or not the subjects were eligible for subsidised school lunches. School performance was operationalised as competence, and was calculated based on test scores and grade retention. The results showed that maltreated children were significantly less competent in school than non-maltreated children, and the authors concluded that maltreatment is serious a public health problem.

Paradise et al (1994) compared 154 sexually abused children (verified in a recent hospital visit) to 53 children who had not been sexually abused, but who went to hospital for other reasons. The children's parents were interviewed within 8 weeks of the hospital visits, and again 6 months later. Relevant information was also drawn from school records. Fifty nine percent of eligible children were enrolled in the study; parental refusal was the most common reason for not enrolling. Among the children whose parents refused to enroll, more had documented episodes of prior physical abuse or neglect. There were some differences between the exposed and the unexposed children; more abused children were white, fewer had health insurance or had previously received care at a study hospital, and more of these children had previously received psychiatric treatment. Results show the children who had been exposed to sexual abuse, did less well in school than the comparison children.

Pears et al (2010) compared a group of 117 maltreated children living in foster care to a matched group of nonmaltreated children. The number of non-participants was not provided, and maltreatment included both physical and sexual abuse, as well as emotional maltreatment and neglect. A composite measure of school reports and teachers' assessment was computed, and results from the study show that maltreated children performed worse in school than the unexposed control group. The authors concluded that maltreated children are at high risk of experiencing difficulties in school performance, even as early as school entry.

Tanaka et al (2015) used data from a previous health study, and compared physically or sexually abused children to unexposed children. The study was conducted retrospectively, i.e. participants were asked 17-18 years after the first study whether or not they had been exposed to abuse; and their school performance from the first study was then analysed. However, little/no information was

presented regarding non-participants, although there were 1401 drop-outs after the first measurement. Educational data from the first study were parent and teacher reported, and the authors found that physical abuse, especially, affected educational attainment, and that sexual abuse affected educational attainment in later years.

Wodarski et al (1990) compared 22 physically abused children and 47 neglected children to 70 children with no history of maltreatment. The abuse was substantiated by local Family and Children's Services. No data was reported on the number of refusals to participate. The children's caretakers were interviewed, and a composite index was calculated from the children's school records. Both abused and neglected children had worse school performance than unexposed children, and the authors conclude that abuse and neglect may be associated with cognitive delays.

Table 3: Included studies

Authors	Year	Country & setting	Method	Number of participants ²	Type of exposure	Quality score (max 10)
D. Barnett, J. I. Vondra and S. M. Shonk (Barnett et al., 1996)	1996	USA, low income families	Comparative cross-sectional study	76	Documented child abuse and/or neglect. Physical abuse (54%), physical neglect (80%), psychological maltreatment (44%), and sexual abuse (10%):	8
J. M. Chandy, R. W. Blum and M. D. Resnick (Chandy et al., 1997)	1997	USA	Comparative, matched cross-sectional study	740	Sexual abuse	6
A. J. Einbender and W. N. Friedrich (Einbender & Friedrich, 1989)	1989	USA	Comparative, matched cross-sectional study	92	Sexual abuse	5

² The number of participants provided here is the number of participants included in the studies. However, due to factors such as drop-out and missing data, the number of participants included in the studies' final analyses may differ

Authors	Year	Country & setting	Method	Number of participants ²	Type of exposure	Quality score (max 10)
E. Elmer (Elmer, 1977)	1977	USA	Comparative, matched cross-sectional study	42	Abuse, not specified	4
A. J. Flisher, R. A. Kramer, C. W. Hoven and S. Greenwald (Flisher et al., 1997)	1997	USA	Comparative cross-sectional study	665	Physical abuse	5
T. E. Frothingham, C. J. Hobbs, J. M. Wynne, L. Yee, A. Goyal and D. J. Wadsworth (Frothingham et al., 2000)	2000	UK	Comparative, matched cross-sectional study	188	Sexual abuse	5
K. A. Kendall-Tackett and J. Eckenrode (Kendall-Tackett & Eckenrode, 1996)	1996	USA	Comparative, matched cross-sectional study	744	Neglect only; neglect & abuse.	5
J. Leiter and M. C. Johnsen (Leiter & Johnsen, 1994)	1994	USA	Comparative, cross-sectional study	990	Children with one or more substantiated reports of maltreatment	5
D. Lisak and L. Luster (Lisak & Luster, 1994)	1994	USA, undergraduate students	Retrospective, comparative cross-sectional study	90	Abuse; sexual and/or physical	2
S. Y. McCourt (McCourt, 2013)	2014	USA	Comparative, cross-sectional study (entire birth cohort)	608,432	Maltreated	9

Authors	Year	Country & setting	Method	Number of participants ²	Type of exposure	Quality score (max 10)
J. E. Paradise, L. Rose, L. A. Sleeper and M. Nathanson (Paradise et al., 1994)	1994	USA	Prospective, comparative study	207	Sexual abuse	6
K. C. Pears, P. A. Fisher, J. Bruce, H. K. Kim and K. Yoerger (Pears et al., 2010)	2010	USA	Prospective, comparative study	141	Foster care children exposed to maltreatment	5
M. Tanaka, K. Georgiades, M. H. Boyle and H. L. MacMillan (Tanaka et al., 2015)	2015	Canada, all children born from Jan 1966-Jan 1979, residing in Ontario	Retrospective, comparative follow-up study	1,893	Physical abuse, sexual abuse	7
J. S. Wodarski, P. Kurtz, J. M. Gaudin and P. T. Howing (Wodarski et al., 1990)	1990	USA	Comparative, cross-sectional study	139	Physical abuse or neglect	6

Poor school performance

Six studies reported some measure of poor school performance. The number of studied children totalled 264,868. The age of the study populations varied between 4 and 43 years, this huge variation is due to the fact that one study (Tanaka et al., 2015) was a retrospective study of adults having been exposed to childhood abuse. The majority of studies did not specify when abuse/maltreatment had taken place. Children in the included studies had been exposed to unspecified child abuse (N=2), physical abuse (N=1), and/or sexual abuse (N=4) (see figure 3). The quality of the included studies varied between a score of 4/10 (Elmer, 1977) and 9/10 (McCourt, 2013)

The studies compared exposed and unexposed children’s poor school performance, either self-reported, teacher-reported, or as provided in school registries; (see table 4).

Table 4: Poor school performance, outcomes measured

Authors	Relevant outcomes measured
J. M. Chandy, R. W. Blum and M. D. Resnick	Self-reported grade poing average presented as percentage of below average school performance
E. Elmer	School records, presented as average or below average school achievement ratings
T. E. Frothingham, C. J. Hobbs, J. M. Wynne, L. Yee, A. Goyal and D. J. Wadsworth	School health records: “educational problems with learning or performance”
S. Y. McCourt	Proficiency in end-of-grade and end-of-course achievement testing, calculated as percentage of children not competent
J. E. Paradise, L. Rose, L. A. Sleeper and M. Nathanson	Performance below grade level, teacher rated
M. Tanaka, K. Georgiades, M. H. Boyle and H. L. MacMillan	School failure, source not specified

Research findings

The risk of poor school performance was higher among children exposed to abuse or neglect than among unexposed children (Table 5). There was a risk difference of poor school performance for all types of abuse or neglect, but we rated the quality of the evidence as very low for non-specified abuse and sexual abuse. There was low quality evidence of poor school performance occurring more than twice as frequently among children exposed to sexual abuse than among unexposed children (RR 2.15; 95% CI 1.32 to 3.494; 4 studies; 2972 participants).

Table 5: Poor school performance, summary of findings

Summary of findings:

Abuse versus no abuse

Outcome: Poor school performance

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	No of participants (studies)	Quality of the evidence (GRADE)
	Risk with No abuse	Risk with Abuse			
Poor school performance - Abuse, not specified	160 per 1 000	261 per 1 000 (257 to 265)	RR 1.67 (1.60 to 1.65)	261840 (2 observational studies)	⊕○○○ VERY LOW ^a
Poor school performance - Physical abuse	95 per 1 000	153 per 1 000 (114 to 207)	RR 1.62 (1.20 to 2.18)	1676 (1 observational study)	⊕○○○ VERY LOW ^b
Poor school performance - Sexual abuse	94 per 1 000	202 per 1 000 (124 to 328)	RR 2.15 (1.32 to 3.49)	2972 (4 observational studies)	⊕⊕○○ LOW ^b

*The risk in the intervention group (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: Confidence interval; RR: Risk ratio

GRADE Working Group grades of evidence

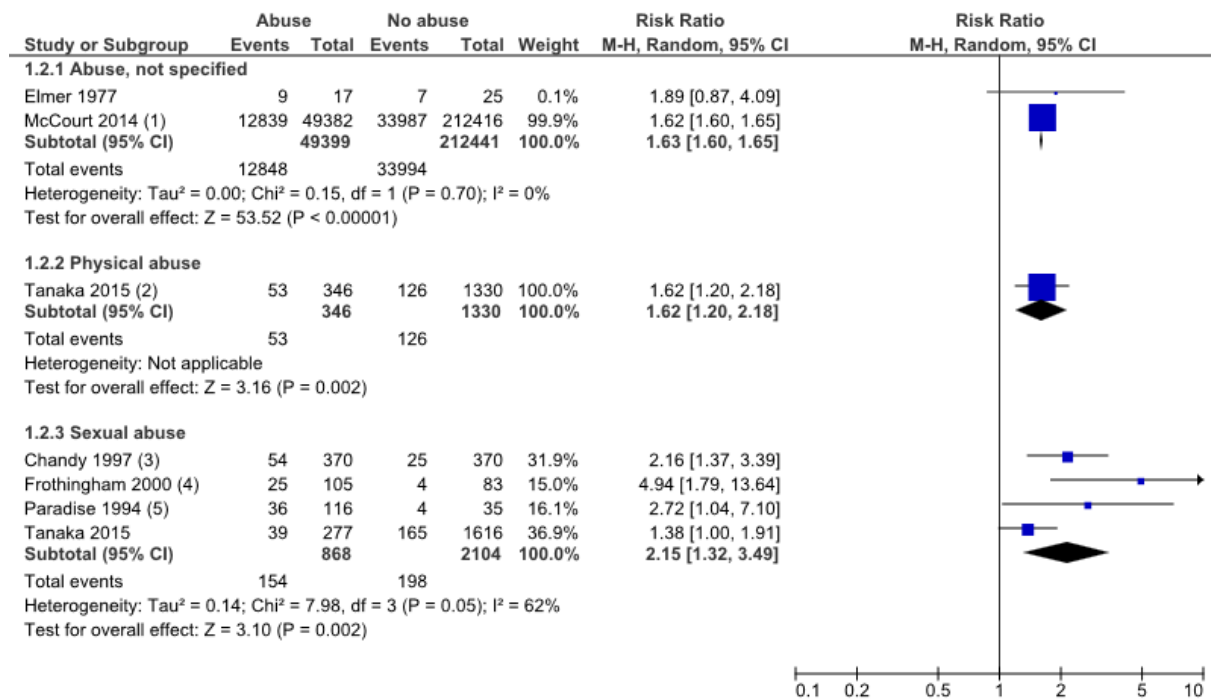
High quality: We are very confident that the true effect lies close to that of the estimate of the effect

Moderate quality: We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different

Low quality: Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect

Very low quality: We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect

Figure 3: Poor school performance, forest plot



Footnotes

- (1) Not competent 2006; Data also available for years 2007-2012
- (2) Severe physical abuse (data for non-severe physical abuse also available)
- (3) Males only; Below average school performance (GPA below C also reported)
- (4) Educational problems with learning or performance
- (5) Special or below-grade classroom placement, T1 (T2 data also available)

School performance

Nine studies reported some measure of children’s overall school performance. The number of studied children totalled 4,830. The age of the study populations varied between 3 and 43 years, this huge variation is due to the fact that two studies (Lisak & Luster, 1994; Tanaka et al., 2015) are retrospective, and investigate students who have been exposed to childhood abuse. The majority of studies did not specify when abuse/maltreatment had taken place. Children in the included studies had been exposed to unspecified child abuse (N=4), physical abuse (N=4), sexual abuse (N=3) and/or neglect (N=2) (see figure 4). The quality of the included studies varied between a score of 2/10 (Lisak & Luster, 1994) and 8/10 (Barnett et al., 1996).

The studies compared exposed and unexposed children’s grade point averages (GPAs), either self-reported or as provided in school registries; test scores; teacher ratings; or a combination of these (see table 6).

Table 6: School performance studies, outcomes measured

Authors	Relevant outcomes measured
D. Barnett, J. I. Vondra and S. M. Shonk	Self-reported perceived competence
A. J. Einbender and W. N. Friedrich	WRAT-R (Wide Range Achievement Test – Revised).
A. J. Flisher, R. A. Kramer, C. W. Hoven and S. Greenwald	Self-reported summarised grades
K. A. Kendall-Tackett and J. Eckenrode	Average of current grades in math and English
J. Leiter and M. C. Johnsen	Mean grades
D. Lisak and L. Luster	Self-reported high school grade point average
K. C. Pears, P. A. Fisher, J. Bruce, H. K. Kim and K. Yoerger	Overall school performance, based on school records and teacher assessments
M. Tanaka, K. Georgiades, M. H. Boyle and H. L. MacMillan	Teacher reported school performance
J. S. Wodarski, P. Kurtz, J. M. Gaudin and P. T. Howing	Overall school performance, based on school records and teacher assessments

Research findings

Children exposed to abuse or neglect had poorer school performance than unexposed children (Table 7). There was a difference in school performance for all types of abuse or neglect, but we rated the quality of the evidence as very low for physical abuse and sexual abuse. There was moderate quality evidence of a large difference in school performance between children exposed to neglect and unexposed children, in favour of unexposed children (SMD -1.25; 95% CI -1.71 to -0.79; 2 studies; 639 participants). There was low quality evidence of a large difference in school performance between children exposed to non-specified abuse and unexposed children, in favour of unexposed children (SMD -1.71; 95% CI -1.22 to -0.19; 4 studies; 1654 participants).

Table 7: School performance, summary of findings

Summary of findings:

Abuse versus no abuse

Outcome: School performance

Type of abuse	Anticipated absolute effects* (95% CI)		No of participants (studies)	Quality of the evidence (GRADE)	Comments
	Risk with No abuse	Risk with Abuse			
Abuse, not specified	-	SMD 0.71 SD lower (1.22 lower to 0.19 lower)	1954 (4 observational studies)	⊕⊕○○ LOW ^{a,b}	Large effect size
Physical abuse	-	SMD 0.44 SD lower (1.71 lower to 0.17 lower)	2491 (4 observational studies)	⊕○○○ VERY LOW ^c	Moderate effect size.
Sexual abuse	-	SMD 0.03 SD lower (1.16 lower to 0.1 higher)	1893 (1 observational study)	⊕○○○ VERY LOW ^{c,d}	Small effect size.
Neglect	-	SMD 1.03 SD lower (1.52 lower to 0.54 lower)	692 (3 observational studies)	⊕⊕⊕○ MODERATE ^b	Large effect size.

*The risk in the exposed group (and its 95% confidence interval) is based on the assumed risk in the unexposed group and the relative effect of the exposure (and its 95% CI).

CI: Confidence interval; SMD: Standardised mean difference; SD: Standard deviation

GRADE Working Group grades of evidence

High quality: We are very confident that the true effect lies close to that of the estimate of the effect

Moderate quality: We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different

Low quality: Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect

Very low quality: We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect

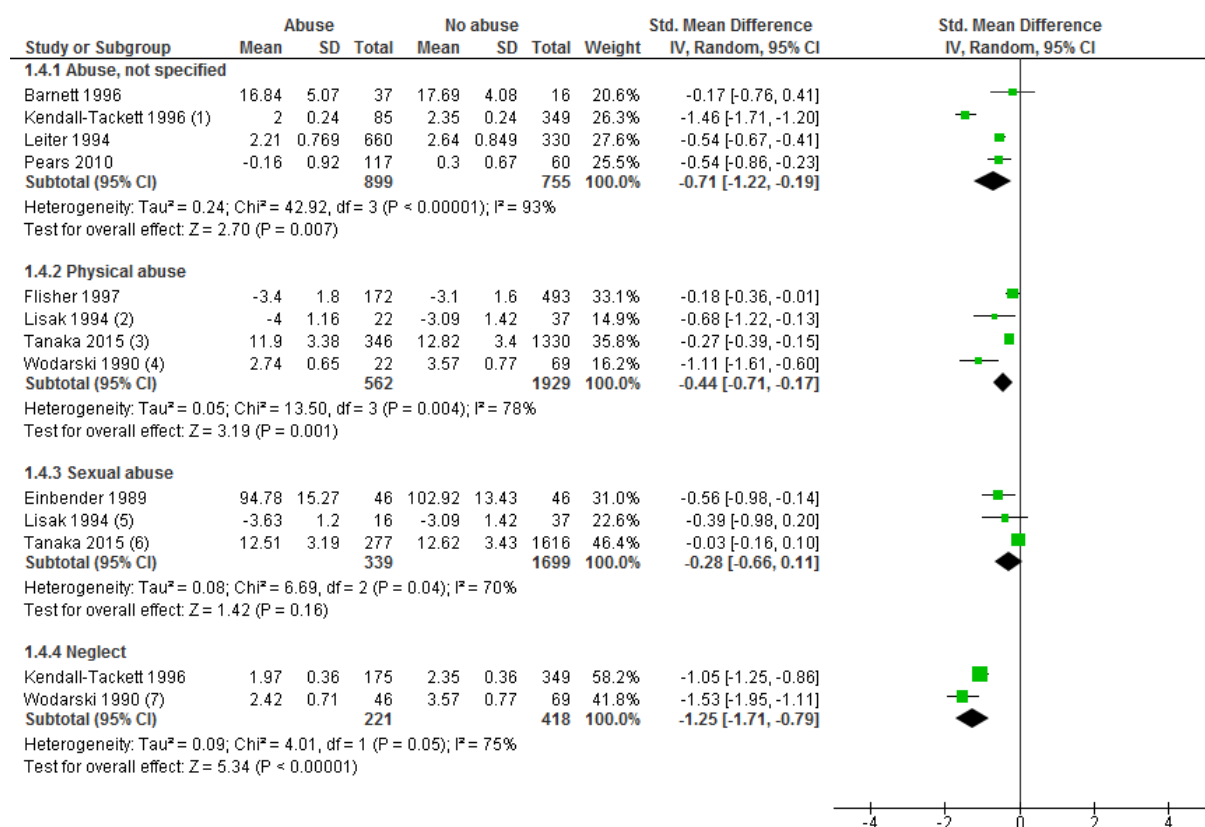
a. Unclear abuse situation

b. SMD > 0.70 = large effect (rule of thumb)

c. Unclear perpetrator

d. Confidence interval contains both poorer and better outcome

Figure 4: School performance, forest plot



Test for subgroup differences: Chi² = 11.91, df = 3 (P = 0.008), I² = 74.8%

Footnotes

- (1) Abuse AND neglect
- (2) High school grade point average (college GPA also available)
- (3) Teacher-reported; severe physical abuse (data for non-severely abused children also available; parent-reported data also available)
- (4) Overall school performance
- (5) High school grade point average (college GPA also available)
- (6) Teacher-reported; severe physical abuse (data for non-severely abused children also available; parent-reported data also available)
- (7) Overall school performance

Discussion

The 14 studies included in our review generally show that abused children generally perform less well in school than nonabused children do. However, a crucial factor to consider is the complexity of the exposure in question, and the importance of identifying potential confounders in the data set, such as poverty and low socioeconomic status, or the interaction between school absence and school performance. When comparing two population groups, ideally, we would like to calculate the effect of an exposure based on groups that are similar at baseline, prior to exposure. Obviously, this is not possible in observational studies, but comparing the two groups on other factors than the exposure and outcomes might help explain the connection between the two. For instance, Barnett et al. (1996) sought to correct for such differences by including only children from low-income families. In the appraisal of methodological quality, we have rated the included studies based on their efforts in identifying such factors. Paradise et al. (1994) investigated whether the children in their study had received psychotherapy prior to being sexually abused, and also considered school results at the time of the abuse. They found that the exposed children had received unrelated psychotherapy and did less well in school than the comparison children. The authors point to the possible explanation that children with distressed or unsupportive families “*may be particularly vulnerable to sexual victimization*”. The fact remains that, even where possible confounders have been identified, we will never know whether all such confounders have been measured, or indeed, if this is at all possible. This makes a firm conclusion impossible, and we may only conclude that our results are indications of a correlation rather than causation.

Overall, few of the included studies specified who the perpetrator of abuse or maltreatment was. In the cases where this was specified (e.g. by Lisak et al. (1994)), analyses were not done based on parental or non-familial perpetrator. However, we consider these studies relevant, as long as the exposure has been experienced in childhood. Parents not being able to prevent abuse or maltreatment may also be considered a type of maltreatment or neglect.

The methodological quality of the included studies is important for considering trust in the results. The appraisal tool we created for this review was based on a set of pre-existing tools, merged together. We found this to be useful, as the included studies utilised different methodologies, and no one checklist fit all at once. One important criterion for observational studies is, however, the response rate of the population. In many of the studies we identified, the response rate was not provided, which weakens our faith in the results. As Wodarski et al. (1990) pointed out, “*nonparticipation by a family may have reflected more severe abuse or other pathology; thus the loss of such families to the study may have resulted in underestimates of the social, emotional, academic and functional deficits in physically abused children*”. This means that when the response rate is unclear, or low, we do not know whether the responders are significantly different from non-responders. For the general school performance results in our review, only two studies (Barnett et al. (1996), Lisak et al. (1994)) have a response rate that is sufficiently high (>70%), whereas the response rate is unclear or < 70% in the remainder of the studies.

The outcomes measured in our review vary between teacher ratings, GPAs as recorded in school registries, and self-reported general achievement levels. Sometimes these outcome types have been summarised to form an overall outcome. There may be specific weaknesses connected to self-reported outcomes. When such outcomes are measured retrospectively, such as by Lisak et al (1994), the precision of the outcomes is dependent on the subjects' recollection. Furthermore, as illustrated by Barnett et al (1996), who compared teacher ratings with child self-ratings, inflated self-ratings of competencies were found among younger maltreated children. According to the authors, this may reflect a delay in social cognitive development among maltreated children, but nevertheless points to the problem that self-assessments are less reliable measurements than e.g. achievement tests.

Most of the studies included in our meta-analyses were conducted in North-America, one was from the UK. This limits the generalisability of our findings. There were no geographical restrictions in our inclusion criteria, and we did identify relevant studies from other parts of the world. However, these studies did not contain sufficient data, or provided too specific data, to be included in our meta-analyses.

The search conducted for our rapid systematic review was more limited than what would be ideal. For instance, we did not search other sources than bibliographic databases, nor did we contact authors or check for relevant references in other reviews or the included studies. We made the decision to limit the review in this way, to be able to manage the body of literature in a short period of time. This decision may have led to fewer included studies than what is actually in existence; more specifically, we might have missed studies from a different research tradition than the body of studies we have identified, using terminology other than the one we know of, or being unpublished/grey literature. We are aware of the potential risks of publication bias, i.e. the tendency of studies with significant results to be published in peer-reviewed journals, or indeed to be published at all, compared to studies with results that are not statistically significant. We have however tried to redeem this by also including studies that are considered to be grey, i.e. doctoral dissertations.

Finally, a strength of our review is the fact that we were able to conduct meta-analyses of the results of the included studies. Being able to synthesise data gives us stronger trust in the results of the studies. Furthermore, the results of the studies are consistent, exposures, outcomes, and methodological quality.

Implications for research

The studies synthesised in our review are those that reported overall outcomes related to school performance. As we found a number of studies that reported more specific outcomes, such as reading or math skills, a synthesis of these studies would be possible, and could prove useful in identifying specific areas in which abused children might struggle.

Our review does not concern interventions to help children that have been abused, nor does it concern interventions to help families at risk, or children at risk of being abused in the first place. As we have demonstrated that there is a likely connection between low school performance and abuse,

searching for or conducting a review of preventive and/or treatment interventions would be valuable in order to help a very vulnerable population.

Conclusion

The research evidence suggests that children who have been exposed to abuse, maltreatment or neglect in childhood perform worse in school than unexposed children. The studies we found vary in methodological quality, and better quality research is needed to confirm these findings.

The scientific literature regarding school performance in orphans is yet to be explored, although the number of potentially relevant studies identified in our search suggests that a systematic review of these studies might prove useful.

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Appendix 1: Description of included studies

Table 8: Included studies

Authors	Year	Country & setting	Method	Number of participants ³	Age	Sex	Type of exposure	Time of exposure	Type of control group	Time of 1st measurement ⁴	Time of follow up ⁵	Relevant outcomes measured	Quality score (max 10)
D. Barnett, J. I. Vondra and S. M. Shonk	1996	USA, low income families	Comparative cross-sectional study	76	6-11 years	Maltreated: 54% female, Comparison: 39% female	Documented child abuse and/or neglect. Physical abuse (54%), physical neglect (80%), psychological maltreatment (44%), and sexual abuse (10%):	Age of first-documented occurrence ranged from early infancy through entry into grade school. However, the majority of children were initially maltreated before 3 years of age.	Non-maltreated	N/A	N/A	Teacher ratings of scholastic performance. Subject performance ratings were averaged to create the final classroom performance rating (Grade Point Average).	8

³ The number of participants provided here is the number of participants included in the studies. However, due to factors such as drop-out and missing data, the number of participants included in the studies' final analyses may differ

⁴ We judged «Time of measurement» as N/A (not applicable) for non-retrospective cross-sectional studies, as all measurements are being done at the time of the study

⁵ We judged «Time of follow up» as N/A (not applicable) for all cross-sectional studies, as the study design implies that there is no follow up.

Authors	Year	Country & setting	Method	Number of participants ³	Age	Sex	Type of exposure	Time of exposure	Type of control group	Time of 1st measurement ⁴	Time of follow up ⁵	Relevant outcomes measured	Quality score (max 10)
J. M. Chandy, R. W. Blum and M. D. Resnick	1997	USA	Comparative, matched cross-sectional study	740	Mean: 15,3	Males	Sexual abuse	Not specified	Not reported a history of abuse	N/A	N/A	Academic performance: Perceptions measured on a 5-point Likert-type scale. GPA: Students were asked to list their grade point average at the time of the survey.	7
A. J. Einbender and W. N. Friedrich	1989	USA	Comparative, matched cross-sectional study	N=92	6-14. Mean age 10,3 years (SA), 10,4 years (comparison)	Girls	Sexual abuse	Within the past 4 years	Never been sexually abused or suspected of sexual abuse according to parental report.	N/A	N/A	WRAT-R was used to provide achievement scores for arithmetic, reading, and spelling.	5

Authors	Year	Country & setting	Method	Number of participants ³	Age	Sex	Type of exposure	Time of exposure	Type of control group	Time of 1st measurement ⁴	Time of follow up ⁵	Relevant outcomes measured	Quality score (max 10)
E. Elmer	1977	USA	Comparative, matched cross-sectional study	42	Not specified, but the study takes place approximately 8 years after a base study in which infants (12 months or less) was admitted to hospital	Not specified	Abuse, not specified	Approximately 8 years ago (later exposure not specified)	(1) Children with infantile hospital experience due to acute illness, not trauma. (2) Untraumatised children with no known history of abuse or infantile accident.	N/A	N/A	School achievement ratings	4
A. J. Flisher, R. A. Kramer, C. W. Hoven and S. Greenwald	1997	USA	Comparative cross-sectional study	665	Mean age: 13,1 years	Abuse: 57% female, Non-abuse: 50,3% female	Physical abuse	Not specified	No history of physical abuse	N/A	N/A	Youths were asked to summarise their last report card on a scale ranging from 1 (mostly A's) to 7 (mostly D's or below)	5
T. E. Frothingham, C. J. Hobbs, J. M. Wynne, L. Yee, A. Goyal and D. J. Wadsworth	2000	UK	Comparative, matched cross-sectional study	188	Mean age: 12 years	Not specified	Sexual abuse	7 years or less at the time of diagnosis	Classmates of the abused children	8 years after diagnosis	N/A	School health records: "educational problems with learning or performance"	5

Authors	Year	Country & setting	Method	Number of participants ³	Age	Sex	Type of exposure	Time of exposure	Type of control group	Time of 1st measurement ⁴	Time of follow up ⁵	Relevant outcomes measured	Quality score (max 10)
K. A. Kendall-Tackett and J. Eckenrode	1996	USA	Comparative, matched cross-sectional study	744	5/6 – 20 years	Not specified, but groups matched on gender	Neglect only; neglect & abuse.	Not specified	Non-maltreated (General population of school children)	N/A	N/A	Current grades in math and English	5
J. Leiter and M. C. Johnsen	1994	USA	Comparative, cross-sectional study	990	658 female	54% female in the maltreatment group; 49% female in the comparison group	Children with one or more substantiated reports of maltreatment	Maltreatment (substantiated)	(a) General school population (b) Children who had received services from DSS (Division of Social Services)	N/A	N/A	Mean standard (Z) scores on the California Achievement Test (CAT) across administrations in reading and Mathematics. Averages across annual grades teachers assign in reading/language arts/English, mathematics, social studies/history and science. These annual grades are further averaged to yield an overall mean grade.	5
D. Lisak and L. Luster	1994	USA, undergraduate students	Retrospective, comparative cross-sectional study	90	Mean age 26,3 years	Males	Abuse; sexual and/or physical	Not specified, but in subjects' childhood	Nonabused	N/A	N/A	High school grade point average	2
S. Y. McCourt	2014	USA	Comparative, cross-sectional study (entire birth cohort)	608,432	Mean birth year 1999	51% males	Maltreated	Average age of maltreatment report: 4.128	No documented abuse history	N/A	N/A	Proficiency in end-of-grade and end-of-course achievement testing	9

Authors	Year	Country & setting	Method	Number of participants ³	Age	Sex	Type of exposure	Time of exposure	Type of control group	Time of 1st measurement ⁴	Time of follow up ⁵	Relevant outcomes measured	Quality score (max 10)
J. E. Paradise, L. Rose, L. A. Sleeper and M. Nathanson	1994	USA	Prospective, comparative study	207	4-12 years. Mean: Sexually abused: 7,4. Control: 7,3.	Sexually abused: 78% female. Control: 74% female	Sexual abuse	«within 8 weeks after a disclosure that they had been sexually abused”	Children who received primary care in the general medical clinic or the emergency department, and were free of major illness and who had no history of sexual abuse	Study start	6 months later	School records. Academic performance in reading or English, mathematics, science and social studies were rated.	6
K. C. Pears, P. A. Fisher, J. Bruce, H. K. Kim and K. Yoerger	2010	USA	Prospective, comparative study	N=141 (drawn from a larger study of 177 children)	3-6 years	Foster care: 53% male. Control: 54% male	Foster care children exposed to maltreatment	Not specified	Non-maltreated, no contact with the child welfare system.	Start of study	Twice in the following 24 months	A composite measure of teacher report and school records data. Teachers rated the children’s performance in language, language comprehension, articulation and self-help abilities as a measure of the children’s language skills.	5

Authors	Year	Country & setting	Method	Number of participants ³	Age	Sex	Type of exposure	Time of exposure	Type of control group	Time of 1st measurement ⁴	Time of follow up ⁵	Relevant outcomes measured	Quality score (max 10)
M. Tanaka, K. Georgiades, M. H. Boyle and H. L. MacMillan	2015	Canada, all children born from Jan 1966-Jan 1979, residing in Ontario	Retrospective, comparative follow-up study	1,893	21-35 at follow up	Not provided in absolute numbers, but approximately 52% males	Physical abuse, sexual abuse	Age 4-16	No physical abuse, no sexual abuse	4-16 years	17-18 years later	Parent- and teacher rated school performance	7
J. S. Wodarski, P. Kurtz, J. M. Gaudin and P. T. Howing	1990	USA	Comparative, cross-sectional study	139	8-16 years. Mean: Abused: 12,48, Neglectful: 12,44, Nonmaltreating: 11,93	Abused: 41% male, Neglectful: 43% male, Nonmaltreating: 54% male	Physical abuse or neglect	Most recent report of abuse or neglect occurred within the previous 18 months	Children with no history of maltreatment. Randomly selected.	N/A	N/A	School records: including test scores on the language and mathematics portions of the norm- and criterions-referenced Iowa Test of Basic Skills, reading scores from the Georgia Criterion Reference Test (a test of basic academic skills administered statewide), final grades in language and mathematics.	6

Appendix 2: Relevant studies excluded from analysis

Relevant studies measuring outcomes more specific than overall (poor) school performance

Studies listed here (N=14) fulfill all inclusion criteria, but measure outcomes more specific than overall school performance, such as reading, spelling or English levels.

Blackburn, J. F. (2006). *Reading skills in children exposed to domestic violence*. (Doctoral dissertation), Indiana University, Bloomington, IN.

This study examined the question of whether children exposed to domestic violence perform more poorly than control children on tests of reading and phonological processing. In addition, the study examined what factors are related to performance on the tests. Children 6-9 years old were recruited from domestic violence shelters and the community. Their mothers completed the following questionnaires: the Conflict Tactics Scales-Revised, measuring the frequency of violence in the home (CTS2; Straus, Hamby, Warren et al., 2003); the Conflict Tactics Scales-Parent Child Version, measuring the frequency of child maltreatment in the home (CTSPC; Straus, Hamby, Boney-McCoy et al., 2003); and the Child Behavior Checklist, measuring the child's behavioral problems (CBCL; Achenbach, 2001). The participants were divided into two groups (control or domestic violence) based on the mother's responses on the CTS2. The two groups were matched on age, gender, nonverbal IQ, and socioeconomic status. The children completed the following tests: the Comprehensive Test of Phonological Processing, measuring phonological awareness and phonological memory skills (Wagner, Torgesen & Rashotte, 1999); the Woodcock Reading Mastery Tests-Revised, measuring word and nonword decoding and reading comprehension (Woodcock, 1987); the Matrices subtest of the Kaufman Brief Intelligence Test, measuring nonverbal IQ (Kaufman & Kaufman, 1990), and a hearing screening. The domestic violence group performed significantly lower than controls on phonological awareness and all reading measures, but not on phonological memory. A higher percentage of children in the domestic violence group met the criteria for a reading problem (a score of 85 or below on one or more of the reading subtests) compared to the control group. Risk factors associated with poorer performance in the domestic violence group included externalizing behavior problems, family history of reading problems, lower socioeconomic status, shorter length of residence, psychological aggression of the mother's partner, and psychological aggression of the mother toward her partner.

Colton, M., Heath, A., & Aldgate, J. (1995). Factors which influence the educational attainment of children in foster family care. *Community Alternatives: International Journal of Family Care*, 7(1), 15-36.

Explored the relationship between the educational progress of 49 foster children (ages 8-14 yrs) in long-term foster family care (mean length of placement, 6 yrs) in the UK and their histories, current home and school environments, and behavior. 58 age-matched children, who had never been in care but whose families were receiving preventive social work support, served as controls. Interviews were held with the Ss, their carers, teachers, and social workers. Results show low educational attainment

among Ss in public care, which could not be easily explained. The link between low educational attainment and behavioral problems was less apparent than expected, with Ss performing below average in reading, vocabulary, and math skills, irrespective of behavioral problem histories. However, a history of child abuse or neglect before entering care seemed to have lasting effects. Results suggest that exceptional educational inputs are required.

De Bellis, M. D., Woolley, D. P., & Hooper, S. R. (2013). Neuropsychological findings in pediatric maltreatment: Relationship of PTSD, dissociative symptoms, and abuse/neglect indices to neurocognitive outcomes. *Child Maltreatment, 18*(3), 171-183. doi: 10.1177/1077559513497420

Maltreated (n = 38), maltreated + posttraumatic stress disorder (PTSD; n = 60), and control youth (n = 104) underwent comprehensive neuropsychological testing. The two maltreated groups performed significantly lower on IQ, academic achievement, and nearly all of the neurocognitive domains than controls. Maltreated + PTSD performed significantly worse than maltreated youth without PTSD on a task in the visuospatial domain that assessed higher order visuoconstructive abilities. No group differences were evident on the fine motor domain. PTSD diagnosis duration negatively correlated with the visuospatial, and dissociation negatively correlated with the attention domain. Cumulative lifetime maltreatment types experienced negatively correlated with academic achievement. Sexual abuse negatively correlated with language and memory functions after controlling for other maltreatment types. These data support the adverse effects of maltreatment on neuropsychological functions in youth and suggest that all child protective services identified youth should be comprehensively examined for the integrity of their neuropsychological functioning and academic skills, regardless of the presence or absence of mental health symptoms.

Eckenrode, J., et al. (1993). "School performance and disciplinary problems among abused and neglected children." *Developmental Psychology 29*(1): 53-62.

Investigated the relationship of child abuse and neglect to academic achievement and discipline problems in a school-age population. A representative community sample of 420 maltreated children in kindergarten through Grade 12 were matched with 420 nonmaltreated children in the same community. Using social service and school records as the sources of data, the authors found maltreated children performed significantly below their nonmaltreated peers in standardized tests and grades and were more likely to repeat a grade. Maltreated children also had significantly more discipline referrals and suspensions. Of the maltreated children, neglected children showed the poorest outcomes on academic performance, and physically abused children showed the most discipline problems. Variations in maltreatment effects by grade level, public assistance status, and gender are also described.

Gregory, H., & Beveridge, M. (1984). The social and educational adjustment of abused children. *Child Abuse & Neglect, 8*(4), 525-531. doi: 10.1016/0145-2134%2884%2990035-8

13 6-yr-olds who had been physically abused by their parents were compared to 16 nonabused classmates. The abused Ss and their parents had received social work support. During school, 10 of the 13 abused Ss had made measurable progress in reading. There were no significant differences between the groups in language development or number skills, but the abused group did contain more high (maladjusted) scores on the Bristol Social Adjustment Guide. Monitoring educational

progress and social adjustment in school would seem to be a useful method of following the progress of such children.

Kinard, E. (1999). Psychosocial resources and academic performance in abused children. *Children and Youth Services Review, 21*(5), 351-376. doi: 10.1016/S0190-7409%2899%2900026-2

Using the stress-social support-functioning model and the social network model of child development, this paper examined the impact of child abuse, maternal perceived social support, competence, and depression, child perceived social support, and sociodemographic characteristics on child academic functioning. The sample consisted of 165 abused children (mean age 9 yrs) and their mothers and a matched comparison group of 169 nonabused children (mean age 9 yrs) and their mothers. Mothers and children were interviewed at two points, 1 yr apart. At Time 1, lower achievement test scores were significantly predicted by abuse, lower perceived support from mothers, lower maternal education, male gender, and younger age. At Time 2, abuse significantly predicted lower achievement scores on two of the three subtests even after controlling for Time 1 scores. Abused children had lower grades in academic subjects, more days absent, more placements in special education programs, more retention in grade, and more school problems than did nonabused children. These findings held after controlling for maternal education, maternal employment, and child gender.

Lansford, J. E., Dodge, K. A., Pettit, G. S., Bates, J. E., Crozier, J., & Kaplow, J. (2002). A 12-year prospective study of the long-term effects of early child physical maltreatment on psychological, behavioral, and academic problems in adolescence. *Archives of Pediatrics & Adolescent Medicine, 156*(8), 824-830.

OBJECTIVE: To determine whether child physical maltreatment early in life has long-term effects on psychological, behavioral, and academic problems independent of other characteristics associated with maltreatment. DESIGN: Prospective longitudinal study with data collected annually from 1987 through 1999. SETTING AND PARTICIPANTS: Randomly selected, community-based samples of 585 children from the ongoing Child Development Project were recruited the summer before children entered kindergarten in 3 geographic sites. Seventy-nine percent continued to participate in grade 11. The initial in-home interviews revealed that 69 children (11.8%) had experienced physical maltreatment prior to kindergarten matriculation. MAIN OUTCOME MEASURES: Adolescent assessment of school grades, standardized test scores, absences, suspensions, aggression, anxiety/depression, other psychological problems, drug use, trouble with police, pregnancy, running away, gang membership, and educational aspirations. RESULTS: Adolescents maltreated early in life were absent from school more than 1.5 as many days, were less likely to anticipate attending college compared with nonmaltreated adolescents, and had levels of aggression, anxiety/depression, dissociation, posttraumatic stress disorder symptoms, social problems, thought problems, and social withdrawal that were on average more than three quarters of an SD higher than those of their nonmaltreated counterparts. The findings held after controlling for family and child characteristics correlated with maltreatment. CONCLUSIONS: Early physical maltreatment predicts adolescent psychological and behavioral problems, beyond the effects of other factors associated with maltreatment. Undetected early physical maltreatment in community populations represents a major problem worthy of prevention.

Oates, R. K., Peacock, A., & Forrest, D. (1984). Development in children following abuse and nonorganic failure to thrive. *American Journal of Diseases of Children*, 138(8), 764-767.

Thirty-nine children who had been abused an average of 5 1/2 years earlier and 14 children who had been admitted to the hospital with nonorganic failure to thrive (NOFTT) 13 years earlier were studied to look at similarities and differences in their development. Each group was studied in relation to a comparison group matched for age, sex, social class, and ethnic background. The abused children and those with NOFTT were similar in their language ability, and were significantly behind their comparison groups in language development, reading age, and verbal intelligence. The abused children, but not the group who had NOFTT, were significantly behind their comparison group in general intelligence, interpersonal relations, and self-concept, but in contrast to the children with NOFTT they were not delayed in social maturity. The long-term adverse sequelae of these two conditions emphasize the need for a long-term, child-centered approach.

Okeke, C. W. (2006). *Dimensions of child abuse and neglect: Their relationship to academic achievement*. (Doctoral dissertation), Texas Southern University, Houston, TX.

Child abuse and neglect are major societal problems in most parts of the world, but there are cross-cultural differences in what constitute child abuse and neglect. Many advanced countries have regarded these phenomena, over the past two or three decades, with considerable official and public concern and attention. Interests in these problems are relatively recent in Nigeria. Mainly professionals in the fields of health, education, and the social sciences have researched these issues. The purposes of this study are to identify behaviors which constitute child abuse and neglect, as they exist in the Nigerian settings; to identify primary school children who are victims of physical child abuse and neglect; and to investigate the nature of the relationship between child abuse and neglect and academic achievement. Specifically, the aim of this investigation is to provide research information about the prevalence of child abuse and neglect in Nigeria, especially their educational implications. The research design used for this study was ex-post-facto. The results of this study clearly show that 11.46% of the total number of children in elementary grades four through six were abused and neglected. With the prevailing level of economic hardship and depression in Nigeria, the end of which appears not to be in sight, a present figure of 11.46% of abused and neglected children will become much higher in the next ten years. Child abuse and neglect occurred most among the ages of 10 and 14 years old. The largest number of children suffered neglect (95.76%), while 80.15% suffered abuse, and 74.96% suffered both abuse and neglect. The analyzed data revealed that the non-abused and non-neglected children performed much better in all four academic subjects of English, Mathematics, Science, and Social Studies. The difference between the academic achievement of the abused and neglected and the non-abused and non-neglected children is so large that there is a need to do something special and extra to help the 11.46%, who face intellectual handicap through deprivation. Abusive and neglectful families, because of poverty, tend to ignore their children's educational needs and requirements. In conclusion, child abuse does not discriminate against a child because of age, sex, race, religion, or socio-economic background. Children of all ages and from a myriad of incomes, racial, religious, and ethnic groups suffer from the many different forms of abuse, all harmful to their physical, emotional, psychological, and educational development.

Reyome, N. D. (1993). A comparison of the school performance of sexually abused, neglected and non-maltreated children. *Child Study Journal*, 23(1), 17-38.

Non-maltreated children were matched to maltreated children on gender, age, and grade in school. The study included 19 sexually abused children, 23 neglected children, 42 matched public assistance children (19 matched to the sexually abused children and 23 matched to the neglected children), and 42 matched lower middle class children. All children were aged 6-14 yrs. To measure social adjustment in the classroom, the Teacher Report Form of the Child Behavior Checklist was collected on all Ss. Measures of school achievement were also collected including school grades, grade repetition, and special class placement. Results indicate marked differences between both groups of maltreated Ss and their matched comparison Ss with the maltreated Ss performing less well both behaviorally and cognitively.

Rudo, Z. H. (1997). *Emotional, behavioral, social, and cognitive characteristics of children with serious emotional disturbances: A longitudinal comparison of physically abused versus non-abused children*. (Doctoral dissertation), University of South Florida, Tampa, FL.

A substantial proportion of children with serious emotional disturbances have a history of physical child abuse, yet little is known about their characteristics, nor is there a comprehensive picture of their psychological and adaptive functioning or outcomes over time. This study used the data from the seven year National Adolescent and Child Treatment Study (NACTS) to explore similarities and differences in children with serious emotional disturbances and a documented history of physical abuse and those with a documented history of non-abuse. Further, changes over time were examined in these children's emotional, behavioral, social, and academic outcomes. A total of 94 children with serious emotional disturbances, 48 physically abused and 46 non-abused, receiving services from either a mental health facility or school program were chosen for this study. Group comparisons were examined using chi-square analysis; univariate analysis of variance (ANOVA); and profile analysis. The children were found to be predominantly white males, 12 to 14 years of age, receiving mental health facility services, from family incomes reported to be \$35,000 to \$50,000, and of low average intelligence. Significant differences were found indicating that physically abused children more often lived with one biological parent and one stepparent or professional staff and others, while non-abused children lived with two biological parents. Also, physically abused children were most often legal guardians of the state, while non-abused children had both biological parents as their legal guardians. Children in the physical abuse and non-abuse groups were found to have approximately the same average scores across time for internalizing, externalizing, and total behavior problems; math achievement; and math achievement; and adaptive behavioral functioning, with neither group scoring higher than the other. On average, scores on the Child Behavior Checklist (CBCL) were in the clinical range, while the Vineland Adaptive Behavioral Scales scores and Math Wide Range Achievement Test-Revised (WRAT-R) scores were at least one standard deviation below the national norms. Differences were found indicating that physically abused children had significantly higher levels of juvenile justice involvement in Years 5 and 6. Time was a factor in the changes that occurred in both groups in CBCL and Reading WRAT-R scores and total juvenile justice offenses. The results suggest that physical abuse may be detrimental to children with serious emotional disturbances' reading achievement and involvement with juvenile justice, suggesting the importance of collaboration between social service,

education, and justice systems in order to best serve these children. There is also a need to further develop a knowledge base regarding children with serious emotional disturbances and a history of physical child abuse to be used in the identification of these children, as well as the planning, implementation, and delivery of services to this population.

Salzinger, S., Kaplan, S., Pelcovitz, D., Samit, C., & Krieger, R. (1984). Parent and teacher assessment of children's behavior in child maltreating families. *Journal of the American Academy of Child Psychiatry*, 23(4), 458-464. doi: 10.1016/S0002-7138%2809%2960325-3

Compared the intellectual and behavioral functions of 64 maltreated children from 29 families who were referred to a hospital-based family treatment program by the county protective services agency and 48 nonmaltreated children (mean age 11 yrs) from families enrolled in the same hospital's outpatient pediatric and adolescent clinics. 46 of the referred children (mean age 10.6 yrs) were targets of physical, sexual, or emotional abuse, or neglect from parents. 18 referred Ss (mean age 12.8 yrs) were not targets of their parents' abusing behavior. WISC IQs and scores on the Reading and Mathematics subtests of the Wide Range Achievement Test were obtained for some Ss. School grades were obtained for all Ss. Parent ratings of Ss were made using the Child Behavior Profile. Teacher ratings were made on the Conners Teacher Rating Scale. Results show that Ss raised in maltreating families were poorer in academic standing and showed an IQ differential of 10 points. Targeted Ss were rated by both parents and teachers as being more generally disturbed in terms of problem behaviors and social competence, but only teachers differentiated between behavior of targeted and nontargeted Ss. It is suggested that parent training in the understanding of children's behavior is an important component in the treatment of such families.

Sheppard, W. N. (2012). *An ecological approach to understanding physical child abuse and the impact on academics: Differences between behaviors in physically abused and nonabused children regarding parental disciplinary practices, family interaction and family events and their effects on social interaction and school success*. (Doctoral dissertation), The Ohio State University, Columbus, Ohio.

The impact of physical abuse on children has been heavily researched relative to their behavior and outcomes in life. Several studies have framed child abuse in terms of an ecological model and the issues surrounding the abuse (Belsky, 1980; Coohy & Braun, 1997, & Stockhammer et al., 2001). An Ecological Approach to Understanding Physical Child Abuse and the Impact on Academics: Differences between Behaviors in Physically Abused and Nonabused Children Regarding Parental Discipline Practices, Family Interaction, and Family Events and Their Effects on Social Interaction and School Success is a secondary analysis of data gathered by Salzinger, Feldman and Ng-Mak (1992-1996), of their study on Social Relationships of Physically Abused Schoolchildren. This study builds on previous physically abused children's research by framing the abuse in an ecological model and determining the role that various ecological factors that are associated with physical abuse play regarding their impact on children's reading percentiles, math percentiles, and days absent from school. This investigation examined three research questions regarding the relationship between physical abuse and children's reading percentiles, math percentiles, and absentee rates. The first hypothesis looked at the differences between physically abused children and nonabused children across the ecological model, and was mostly supported. The study found that on the average, physically abused children had more

behavioral problems, differences in parental disciplinary practices, more conflict in family interactions, and more negative family events than their nonabused peers. Physically abused children were found to have lower reading percentiles, math percentiles, and higher absentee rates than nonabused children, although only days absent was found to be significantly different. There was not a significant difference found in various types of friendships; however, nonabused children were found to have more feelings of loneliness than physically abused children. The second hypothesis was not supported. There were factors found that were correlated to both physically abused and nonabused children's reading percentiles, math percentiles, and days absent; however, more factors were found to be correlated to nonabused children's reading percentiles, math percentiles, and absentee rates than those of physically abused children. The final hypotheses looked at both physically abused and nonabused children's reading percentiles, math percentiles, and days absent. The final hypothesis was only partially supported. The models that accounted for both physically abused and nonabused children were found to be most significant while controlling for variables across the ecological model related to children's reading percentile, math percentile and absentee rate. The findings from this study were used to discuss educational psychology, social work, and educational practices, as well as policy implications. The study also provides recommendations for future research and suggestions for intervention and prevention programs.

Sites, H. (1983). *Effects of maltreatment of children on development and learning achievement*. (Doctoral dissertation), University of Cincinnati, Cincinnati, OH.

Relevant studies lacking sufficient data for meta-analysis

Studies listed here (N=fulfill all inclusion criteria, but lack sufficient data for meta-analysis. This means, for instance, that the study results are not presented in absolute numbers, or that the number of children in each group is not provided.

Studies listed here (N=74) fulfill all inclusion criteria, but lack sufficient data for meta-analysis. This means, for instance, that the study results are not presented in absolute numbers, or that the number of children in each group is not provided.

Adelmann, P. K. (2005). Social environmental factors and preteen health-related behaviors. *Journal of Adolescent Health, 36*(1), 36-47. doi: 10.1016/j.jadohealth.2003.07.027

Purpose: To examine associations among risk and protective factors with negative (substance use, delinquent behavior, sedentary recreation, empty calorie consumption, suicidal behavior) and positive behaviors (prosocial recreation, productive behavior, exercise, nutrition behavior, academic achievement, seatbelt use). Methods: Data were from sixth-grade public school students (n = 133,629) in 2001. Factor analysis produced five risks, five protectors, seven negative and six positive behaviors. Associations were tested among single and cumulative risks and protectors with behaviors (linear, logit regression) and combinations of high and low risks and protectors with behaviors (analysis of

variance, Chi-square). Results: Individual and cumulative risks were related to higher and protectors were related to lower negative behaviors. Protectors were associated with higher positive behaviors, with some exceptions. Risks and their sum were associated with lower academic achievement and seatbelt use, but were linked to higher, rather than lower productive behavior. Being bullied or victimized was correlated with higher levels of exercise, good nutrition, and prosocial recreation. The high risk/low protection combination had the highest negative behaviors and low risk/high protection the lowest, but for positive behaviors, high protectors with either high or low risks showed higher positive behaviors. Conclusions: These findings provide new information about how (a) risks and protectors are associated with negative behaviors besides substance use and delinquency, (b) cumulative protectors, as well as risks, are related to negative and positive behaviors, and (c) combinations of high and low risks and protectors are related to behaviors. The unusual findings for positive behaviors merit further exploration.

Alyahri, A., & Goodman, R. (2008). Harsh corporal punishment of Yemeni children: Occurrence, type and associations. *Child Abuse & Neglect*, 32(8), 766-773. doi: 10.1016/j.chiabu.2008.01.001

Objective: To examine the occurrence, type and associations of harsh corporal punishment in Yemen. Methods: Caregiver and teacher reports were obtained on 1,196 Yemeni 7-10-year olds obtained by systematic random sampling of children in the 1st to 4th grades of urban and rural schools. Caregivers (86% mothers) reported on disciplinary practices, socio-familial background, and child psychopathology. Teachers reported on school performance and child psychopathology. Results: More than half of the rural caregivers and about a quarter of the urban caregivers reported using harsh corporal punishment (hitting children with implements, tying them up, pinching them, or biting them). Harsh corporal punishment was significantly associated with poor school performance and both behavioral and emotional difficulties. The socio familial factors that were independently associated with harsh corporal punishment were: rural area, male gender of the child, low maternal education, and large family size. Conclusion: Harsh corporal punishment is very common in Yemen. International findings suggest that the association with school failure and psychological maladjustment may well be causal. Promoting parental use of effective and non-violent disciplinary methods should be a public health priority. Practice implications: Yemen urgently needs to develop and evaluate programs that teach parents how to use culturally appropriate rewards and non-abusive sanctions to shape children's behavior without stunting their academic and emotional development. Persuading parents to adopt such approaches may need programs that focus not just on techniques but also on attitudes, e.g. challenging the commonly held belief that children will not develop properly unless they are beaten when they do wrong.

Arnowitz, S. E. (1999). *The protective role of family cohesion and adaptability on academic, behavioral and social competence in physically abused adolescents*. (Doctoral dissertation), St. John's University, Jamaica, NY.

Ninety-nine physically abused adolescents between the ages of 12 and 18 years, who were recruited directly from the New York State Central Register for Child Abuse of the New York State Department of Social Services and 99 non abused adolescents matched for age, gender, race and socioeconomic status participated in this study. Parent and child interviews, teacher ratings and data from school

records were used to comprehensively assess adolescents' social competence, behavioral functioning and academic performance and comparisons were made between the two groups. In addition, family functioning in the areas of cohesion and adaptability were measured. Within the physically abused group, the relationship between family cohesion and adaptability and social, behavioral and academic competency was explored. Severity of abuse, gender, and IQ were controlled for. The results showed that the physically abused adolescents displayed less social competence, more behavior problems and inferior academic performance as compared to the non abused teenagers. The family functioning data revealed that significantly more abusive families than comparison families were functioning in the extreme ranges of cohesion and adaptability which according to the Circumplex Model of family functioning is not optimal. Within the abused group, the hypothesized protective nature of balanced levels of cohesion and adaptability was not confirmed.

Buckle, S. K., Lancaster, S., Powell, M. B., & Higgins, D. J. (2005). The relationship between child sexual abuse and academic achievement in a sample of adolescent psychiatric inpatients. *Child Abuse & Neglect*, 29(9), 1031-1047. doi: 10.1016/j.chiabu.2004.12.013

Objectives: To examine the relationship between sexual abuse and academic achievement in an adolescent inpatient psychiatric population. Individual factors expected to influence this relationship were measured to explore the way they each interacted with sexual abuse and its relationship to academic achievement. Method: Eighty-one adolescent psychiatric inpatients participated in the study (aged 12-18 years: M = 16.0). Participants were administered tests of academic achievement (dependent variable) and intelligence, and completed a number of self-report measures of their experience of different types of maltreatment, their perception of the parenting they received, socio-economic status, substance abuse, and psychopathology. Results: Hierarchical regression analysis revealed that intelligence was the main predictor of academic achievement (uniquely explaining 26% of the variance). A number of interaction effects were also significant indicating that intelligence, substance abuse, internalizing behavior problems, externalizing behavior problems all influenced the relationship between sexual abuse and academic achievement. Discussion: Examining the impact of sexual abuse is complex because it is typically an experience embedded in a range of other risk factors, such as poverty, family dysfunction, and other types of maltreatment. This study demonstrated coexistence between sexual abuse and a number of other variables, including other maltreatment types and parental overprotection, underscoring the requirement for complex models of research that more accurately reflect the experience of abused children.

Chandy, J. M., Blum, R. W., & Resnick, M. D. (1996). Female adolescents with a history of sexual abuse: Risk outcome and protective factors. *Journal of Interpersonal Violence*, 11(4), 503-518. doi: 10.1177/088626096011004004

Examined the school performance, suicidal involvement, disordered eating behaviors, pregnancy risk, and chemical use of 1,011 female teenagers with a history of sexual abuse and a comparison group of 1,011 female teenagers without a background of abuse. Results show that abused Ss had higher rates of these adverse outcomes than nonabused Ss. Among abused Ss, protective factors against adverse outcome included a higher degree of religiosity, perceived health, caring from adults, living with both biological parents, and the presence of a clinic or nurse at school. Risk factors that increased the

likelihood of adverse outcome included perceived substance use in school, mothers' use of alcohol, family stressor events during the past year, and worry about sexual coercion.

Currie, J., & Widom, C. S. (2010). Long-term consequences of child abuse and neglect on adult economic well-being. *Child Maltreatment, 15*(2), 111-120.

Child abuse and neglect represent major threats to child health and well-being; however, little is known about consequences for adult economic outcomes. Using a prospective cohort design, court substantiated cases of childhood physical and sexual abuse and neglect during 1967-1971 were matched with nonabused and nonneglected children and followed into adulthood (mean age 41). Outcome measures of economic status and productivity were assessed in 2003-2004 (N 1/4 807). Results indicate that adults with documented histories of childhood abuse and/or neglect have lower levels of education, employment, earnings, and fewer assets as adults, compared to matched control children. There is a 14% gap between individuals with histories of abuse/neglect and controls in the probability of employment in middle age, controlling for background characteristics. Maltreatment appears to affect men and women differently, with larger effects for women than men. These new findings demonstrate that abused and neglected children experience large and enduring economic consequences.

Deb, S., & Modak, S. (2010). Prevalence of violence against children in families in Tripura and Its relationship with socio-economic factors. *Journal of Injury and Violence Research, 2*(1), 5-18. doi: 10.5249/jivr.v2i1.31

Background: Violence against children is a deep-rooted social problem in India. The problem is also related of economic as well as cultural beliefs and practices. The objective of this study was to ascertain the prevalence and nature of violence experienced by the children in families in Tripura, India and its relationship with socio-economic factors. Methods: A group of 320 children (160 males and 160 females) studying in Class VIII and IX and aged between 14-19 participated in the study after obtaining their informed consent from eight randomly selected English and Bengali medium schools in Agartala, Tripura (India). Data were collected by using a specially designed 'Semi-structured Questionnaire. Results: Findings revealed that about 20.9% (67/320), 21.9% (70/230) and 18.1% (58/230) of the children experienced psychological, physical and sexual violence respectively. Male children were more likely to be victims of psychological and physical violence while female children experienced more sexual violence ($p < 0.01$). Further analysis of data revealed some relationship between violence against children and nuclear family ($p < 0.01$), uncongenial and/or disturbed family environment ($p < 0.01$) and dominating, short-tempered and/or aggressive parent personality ($p < 0.01$), irrespective of the nature of the violence. Physical violence was found to be more prevalent in high income families ($p < 0.01$) while children from the lower income group of families experienced more psychological violence ($p < 0.01$). Sexual violence was found to be equally prevalent in all socio-economic groups. The study also clearly indicated that academic performance of violence-experienced children, irrespective of nature of violence and socio-economic groups was poor compared to academic performance of non-violence-experienced children ($p < 0.01$). Conclusions: About one-fifth of the children under study did experience violence in Tripura. Findings speak in favor of an intervention program for creating awareness among parents and teachers about the issue of violence

against children, targeted at parents when they meet for periodic parent-teacher meetings in the educational institutions.

Delgado Weiss, A. M. (1998). *The unique and combined impact of health and caretaking risk factors on the school adjustment of urban first grade students*. (Doctoral dissertation), University of Pennsylvania, Philadelphia, PA.

Although aspects of child health and the caretaking environment are important for early development, little is known about how these factors relate to school adjustment. The empirical research literature has identified seven health and caretaking environment risk factors that threaten children's adjustment to school. Health risk factors examined were low birth weight, low Apgar score, and lead poisoning while caretaking risk factors included birth to a single mother, birth to a teenage mother, child maltreatment, and placement in out-of-home care. Important indicators of school adjustment were also identified, namely report card marks, grade retention, receipt of special education services, and school attendance. The purpose of this study was to examine the relationships among risk factors and indicators of school adjustment for a population of first grade children. Participants were 9,088 students drawn from the population of 15,294 first graders in a large urban public school district. Information on risk factors and school adjustment indicators was obtained from computerized records of three city agencies as part of a larger collaborative study: public health, child protective services, and the school district. Individual records were combined across agencies using record linkage procedures. The independent and interactive effects of risk factors on school adjustment were assessed using logistic regression. Results showed that six of the seven risk factors significantly increased risk for poor school adjustment, in order of decreasing relative strength: birth to a single mother, child maltreatment, out-of-home care, low birth weight, lead poisoning, and birth to a teen mother. Independent effects were found for academic, behavior, grade retention, and school attendance outcomes. Effects remained stable for two random subsamples, males, females, and minorities but less so for Whites. No significant interactive effects were found among the risk factors. The cumulative effects of multiple risk factors were examined using correlation analysis, however, little support was found. Implications of the findings for research, policy, and practice were discussed.

Eckenrode, J., Rowe, E., Laird, M., & Brathwaite, J. (1995). Mobility as a mediator of the effects of child maltreatment on academic performance. *Child Development, 66*(4), 1130-1142. doi: 10.2307/1131803

Examined the role of family moves and school transfers as a mediator between child maltreatment and academic outcomes in 360 maltreated and 366 nonmaltreated children (aged 5-15 yrs) matched on gender, grade, school, and SES. Path analytic techniques were employed to assess direct and indirect effects of maltreatment on recent achievement test scores, current grades, and grade repetitions. Mobility helped to account for the effects of maltreatment on each of the outcomes. For grades in English/reading, 32.7% of the effect of maltreatment was accounted for by amount of mobility, while for test scores and grade repetitions 14.6% and 19.1%, respectively, of the effect of maltreatment was accounted for by amount of mobility.

Fantuzzo, J., & Perlman, S. (2007). The unique impact of out-of-home placement and the mediating effects of child maltreatment and homelessness on early school success. *Children and Youth Services Review, 29*(7), 941-960. doi: 10.1016/j.childyouth.2006.11.003

Increased national attention has underscored the importance of promoting educational well-being for children who have been placed in out-of-home care. The present study, informed by a developmental epidemiology framework, examined the unique impact of out-of-home placement and the mediating effects of child maltreatment and homelessness on the academic achievement and school adjustment of an entire cohort of second grade children in a large urban school district. Data on birth risks, placement history, child maltreatment, and homelessness from birth through second grade were integrated across municipal agencies for over 11,000 second grade students. Multiple Logistic Regression analyses demonstrate that children with a history of out-of-home placement were at increased risk for poor literacy and science achievement controlling for demographics and birth risks. These children also evidenced significantly higher levels of behavior problems and school suspensions than children with no out-of-home placement history. Maltreatment and homelessness were found to have significant mediating effects on the relationship between out-of-home placement and children's educational well-being. Implications for policy and practice were discussed.

Fantuzzo, J. W., LeBoeuf, W. A., & Rouse, H. L. (2014). An Investigation of the Relations between School Concentrations of Student Risk Factors and Student Educational Well-Being. *Educational Researcher, 43*(1), 25-36.

This study investigated the unique relations between school concentrations of student risk factors and measures of reading, mathematics, and attendance. It used an integrated administrative data system to create a combined data set of risks (i.e., birth risks, teen mother, low maternal education, homelessness, maltreatment, and lead exposure) for an entire cohort of third-grade students in a large urban school district. At the school level, high concentrations of children with low maternal education, inadequate prenatal care, homelessness, and maltreatment were most significantly detrimental for student educational well-being. When concentrations of risks at the school level were considered simultaneously with race and poverty, the concentration of poverty was no longer significantly related to targeted educational well-being indicators. For reading achievement and attendance, concentrations of both poverty and race were not significant. Implications for school accountability and community collaborations are discussed.

Fantuzzo, J. W., Perlman, S. M., & Dobbins, E. K. (2011). Types and timing of child maltreatment and early school success: A population-based investigation. *Children and Youth Services Review, 33*(8), 1404-1411. doi: 10.1016/j.childyouth.2011.04.010

The purpose of the present study was to investigate the prevalence of types of child maltreatment and co-occurring risks in an entire county population of children in public education and to examine the unique relations of the child maltreatment types and timing on children's early academic success while accounting for the children's multiple-risk context. A cohort of 11,835 second grade students who were born in the county and attended the public school district served as participants. Information on first reported experiences of substantiated physical abuse, neglect, unsubstantiated child

maltreatment reports, health, maternal, and social risks, and academic and behavioral outcomes was obtained and linked through a county-wide integrated data system. Results indicated that after controlling for demographics and the set of other risks, substantiated child neglect and unsubstantiated reports were associated with poorer outcomes than physical abuse. Also, first substantiated child maltreatment and unsubstantiated reports prior to kindergarten were related to a more comprehensive set of poor outcomes than post-kindergarten first reports. The differential patterns that emerged for the association between age of first reported maltreatment by type and educational outcomes were discussed with implications for future research and policy.

Fuller-Thomson, E., & Hooper, S. R. (2015). The Association Between Childhood Physical Abuse and Dyslexia: Findings From a Population-Based Study. *Journal of Interpersonal Violence, 30*(9), 1583-1592. doi: 10.1177/0886260514540808

The objective of this study was to determine the relationship between a history of dyslexia and childhood physical abuse in a large population-based epidemiological sample. It was hypothesized that the prevalence of dyslexia would be significantly higher in individuals who reported a childhood history of physical abuse in comparison to those who did not report such a history. A secondary analysis examined data from respondents 18 years and older from the Saskatchewan and Manitoba sample of the 2005 Canadian Community Health Survey (CCHS). There were 13,640 respondents ages 18 and older. Due to missing data, the final sample size was 13,054 respondents. One third (34.8%) of respondents who reported they had been physically abused during their childhood or adolescence also reported being diagnosed with dyslexia in comparison with 7.2% of those who did not report being physically abused ($p < .001$). Initial adjustments for sociodemographic variables produced an odds ratio (OR) for dyslexia that was more than 7 times higher (OR = 7.09; 95% confidence interval [CI] = [4.42, 11.35]) for those who had reported being physically abused in comparison with their peers who did not report such a history; with additional adjustments for other adverse childhood experiences, these odds decreased only slightly to 6.09 times higher (95% CI = [3.58, 10.35]). Further research is needed to understand the mechanism linking physical abuse and dyslexia.

Geoffroy, M.-C., Pinto Pereira, S., Li, L., & Power, C. (2016). Child neglect and maltreatment and childhood-to-adulthood cognition and mental health in a prospective birth cohort. *Journal of the American Academy of Child & Adolescent Psychiatry, 55*(1), 33-40. doi: 10.1016/j.jaac.2015.10.012

Objective: Life-long adverse effects of childhood maltreatment on mental health are well established, but effects on child-to-adulthood cognition and related educational attainment have yet to be examined in the general population. We aimed to establish whether different forms of child maltreatment are associated with poorer cognition and educational qualifications in childhood/adolescence and whether associations persist to midlife, parallel to associations for mental health. Method: Cognitive abilities at ages 7, 11, and 16 years (math, reading, and general intellectual ability) and 50 years (immediate/delayed memory, verbal fluency, processing speed) were assessed using standardized tests, and qualifications by age 42 were self-reported. Information on childhood maltreatment (neglect and abuse: sexual, physical, psychological, witnessed), cognition, and mental health was available for 8,928 participants in the 1958 British Birth Cohort. Results: We found a strong association of child neglect with cognitive deficits from childhood to adulthood. To illustrate, the most

neglected 6% of the population (score > 4) had a 0.60 (95% CI = 0.56-0.68) SD lower cognitive score at age 16 and a 0.28 (95% CI = 0.20-0.36) SD deficit at age 50 years relative to the non-neglected participants (score = 0) after adjustment for confounding factors and mental health, and they also had increased risk of poor qualifications (i.e., none/low versus degree-level). Childhood neglect and all forms of abuse were associated with poorer child-to-adulthood mental health, but abuse was mostly unrelated to cognitive abilities. Conclusion: The study provides novel data that child neglect is associated with cognitive deficits in childhood/adolescence and decades later in adulthood, independent of mental health, and highlights the lifelong burden of child neglect on cognitive abilities and mental health.

Haight, W., Kayama, M., Kincaid, T., Evans, K., & Kim, N. K. (2013). The elementary-school functioning of children with maltreatment histories and mild cognitive or behavioral disabilities: A mixed methods inquiry. *Children and Youth Services Review, 35*(3), 420-428. doi: 10.1016/j.childyouth.2012.12.010

This mixed methods inquiry examined the school functioning of elementary school-aged children with maltreatment histories and mild cognitive or behavioral disabilities. Quantitative analyses of linked social service and education administrative data bases of 10,394 children in Minnesota with maltreatment histories indicated that 32% were eligible for special education services. Of those children with maltreatment histories and identified disabilities, 73% had mild cognitive or behavioral disabilities. The most frequent primary disabilities categories were specific learning disabilities (33%) and emotional/behavioral disabilities (27%). Children with maltreatment histories and mild cognitive or behavioral disabilities scored significantly below children with maltreatment histories and no identified disabilities on standardized assessments of math and reading, and this gap increased with grade level for math. Qualitative interviews with 22 child welfare professionals and 15 educators suggested why some children with maltreatment histories, especially those with mild cognitive or behavioral disabilities, struggle in school. Risks to school functioning included children's and families' multiple unmet basic and mental health needs which can mask or overshadow children's mild disabilities; poor cross systems collaboration between child welfare, education and mental health systems; and inadequate funding, especially for mental health services. Protective factors included child engagement in school, parent engagement with child welfare services and a professional culture of cross-systems collaboration. Implications are discussed for holistic child, family and system-level interventions.

Heath, A. F., Colton, M. J., & Aldgate, J. (1994). Failure to escape: A longitudinal study of foster children's educational attainment. *British Journal of Social Work, 24*(3), 241-260.

Examined whether 49 foster children (aged 8-14 yrs) had lower educational attainment than a control group of 58 children. Data indicate that even those foster children in long-term, settled placements in middle-class environments failed to escape from disadvantage. The notion of self-fulfilling prophecies arising from low teacher expectations is rejected, but a history of child abuse or neglect before entering care appears to have lasting effects. Results are compared with French work on adoption, where an escape from disadvantage does seem to occur. Data suggest that exceptional educational inputs are required.

Hecker, T., Hermenau, K., Salmen, C., Teicher, M., & Elbert, T. (2016). Harsh discipline relates to internalizing problems and cognitive functioning: findings from a cross-sectional study with school children in Tanzania. *BMC Psychiatry, 16*, 118. doi: 10.1186/s12888-016-0828-3

BACKGROUND: Child maltreatment poses a risk to children and adolescents' mental health and may also affect cognitive functioning. Also harsh discipline has been frequently associated with mental health problems. However, within societies in which harsh disciplinary methods are culturally normed and highly prevalent less is known about the association between harsh punishment, mental health problems, and cognitive functioning. METHODS: In a cross-sectional study, we conducted structured clinical interviews with a sample of Tanzanian primary school students assessing exposure to harsh discipline (Maltreatment and Abuse Chronology of Exposure), internalizing problems (Strength and Difficulties Questionnaire, Children's Depression Inventory), and working memory (Corsi Blocktapping Task). School performance was measured by using the exam grades in 4 core subjects. The 409 children (52 % boys) had a mean age of 10.5 years (range: 6 - 15). RESULTS: Using structural equation modeling, a strong relationship was found between harsh discipline and internalizing problems ($\beta=.47$), which were related to lower working memory capacity ($\beta=-.17$) and school performance ($\beta=-.17$). CONCLUSIONS: The present study suggests that harsh discipline is closely linked to children's internalizing mental health problems, which are in turn associated with lower cognitive functioning and school performance. Given the high rates of harsh discipline experienced by children in East African homes and elsewhere, the findings of the present study emphasize the need to inform the population at large about the potentially adverse consequences associated with harsh discipline.

Huang, L., & Mossige, S. (2012). Academic achievement in Norwegian secondary schools: The impact of violence during childhood. *Social Psychology of Education, 15*(2), 147-164. doi: 10.1007/s11218-011-9174-y

Using data from a national survey (N = 6,979) of young people in their last year in Norwegian secondary schools in 2007 (aged 18 and 19), this paper examines the effect of experience of violence including sexual abuse during childhood (before the age of 13) on the later academic achievement of young people. This investigation includes three types of violence: non-physical, physical and sexual, and two types of victimisation: being abused and witness to abuse. First we investigate the relationship between the experience of various violent acts before the age of 13 and young people's later academic achievement. Second, applying the structural equation modelling technique, we take into account the effect of background factors such as parents' educational attainment and gender, and the effect of mediating factors such as social capital and educational motivation on the academic achievement of the young victims. The results show that exposure to violence during childhood not only directly influences young people's educational outcomes but also exerts indirect influences on their achievement through its impact on young victims' social relations and psychological health.

Kendall-Tackett, K. (1997). Timing of academic difficulties for neglected and nonmaltreated males and females. *Child Abuse & Neglect, 21*(9), 885-887. doi: 10.1016/S0145-2134%2897%2900050-1

Explored sex differences in the timing of academic difficulties for 324 neglected (with vs without abuse) and 420 nonmaltreated students in grades K-12. Males and females differed on timing of academic difficulties for both mathematics and English, with males appearing to have more problems in junior high school and females having more problems in senior high school. Neglected and abused and neglected-only Ss followed patterns similar to those of nonmaltreated peers.

Kline, D. F. (1977). Educational and psychological problems of abused children. *Child Abuse and Neglect*, 1(2-4), 301-307. doi: 10.1016/0145-2134(77)90005-9

Despite an increased research emphasis, relatively little is known about the sequelae to abuse. Studies reporting on the sequelae to abuse may be classified as: (1) studies reporting emotional problems; (2) studies reporting retardation; (3) studies reporting permanent neurological damage; (4) studies reporting correlations between reported physical abuse/neglect problems and subsequent antisocial behavior on the part of the subject of the abuse report or antisocial behaviors on the part of another family member. Although many authors have speculated that abused (and/or neglected) children are likely to have problems which extend beyond the immediate physical consequences, there is limited data to substantiate such claims. This study seeks to determine the seriousness of the problem of abuse and neglect as it relates to educational and psychological problems including the use of special education programs and admission to detention facilities, hospitals, and other institutions.

Kurtz, P., Gaudin, J. M., Wodarski, J. S., & Howing, P. T. (1993). Maltreatment and the school-aged child: School performance consequences. *Child Abuse & Neglect*, 17(5), 581-589. doi: 10.1016/0145-2134%2893%2990080-0

139 children (aged 8-16 yrs) participated in a multi-model, multi-source assessment; 22 of the children had been physically abused, 47 had been neglected, and the remainder served as comparison Ss. Parent and child interviews, teacher ratings, and data from school records were used to assess children's school performance; social and emotional development in school, at home, in the community, and with peers; and adaptive behavior in areas such as motor skills, personal care skills, and community orientation. With the effects of SES covaried out, results show that the abused children displayed pervasive and severe academic and socioemotional problems. Neglected children differed little from children who were neither abused nor neglected on measures of socioemotional development, but they displayed severe academic delays. Both groups of maltreated children showed unexpected strengths on measures of adaptive behavior.

Maclean, M. J., Taylor, C. L., & O'Donnell, M. (2016). Pre-existing adversity, level of child protection involvement, and school attendance predict educational outcomes in a longitudinal study. *Child Abuse & Neglect*, 51, 120-131. doi: 10.1016/j.chiabu.2015.10.026

Maltreatment largely occurs in a multiple-risk context. The few large studies adjusting for confounding factors have raised doubts about whether low educational achievement results from maltreatment or co-occurring risk factors. This study examined prevalence, risk and protective factors for low educational achievement among children involved with the child protection system compared to other children. We conducted a population-based record-linkage study of children born in Western

Australia who sat national Year 3 reading achievement tests between 2008 and 2010 (N=46,838). The longitudinal study linked data from the Western Australian Department of Education, Department of Child Protection and Family Support, Department of Health, and the Disability Services Commission. Children with histories of child protection involvement (unsubstantiated maltreatment reports, substantiations or out-of-home care placement) were at three-fold increased risk of low reading scores. Adjusting for socio-demographic adversity partially attenuated the increased risk, however risk remained elevated overall and for substantiated (OR=1.68) and unsubstantiated maltreatment (OR=1.55). Risk of low reading scores in the out-of-home care group was fully attenuated after adjusting for socio-demographic adversity (OR=1.16). Attendance was significantly higher in the out-of-home care group and served a protective role. Neglect, sexual abuse, and physical abuse were associated with low reading scores. Pre-existing adversity was also significantly associated with achievement. Results support policies and practices to engage children and families in regular school attendance, and highlight a need for further strategies to prevent maltreatment and disadvantage from restricting children's opportunities for success.

Manly, J. T., Lynch, M., Oshri, A., Herzog, M., & Wortel, S. N. (2013). The impact of neglect on initial adaptation to school. *Child Maltreatment, 18*(3), 155-170.

This study examined the impact of child neglect during the first 4 years of life on adaptation to school during kindergarten and first grade in the context of neighborhood poverty (NP). Processes related to the development of school competencies were examined, including the mediational role of cognitive functioning and ego-resiliency (ER) in shaping children's school outcomes. A total of 170 low-income urban children were followed prospectively for 2 years (ages 4-6). Results indicated that neglected children had significantly lower scores on kindergarten classroom behavior and first-grade academic performance than nonneglected children. Children's cognitive performance at age 4, controlling for maternal intelligence quotient, mediated the relation between severity of neglect and children's behavior in kindergarten as well as their academic performance in first grade. Moreover, severity of neglect was related to children's ER at age 4. However, additional ecological adversity in the form of NP moderated the link between ER and classroom behavior, such that at lower levels of poverty, ER mediated the relation between severity of neglect and school adaptation. Conversely, when NP was extreme, the effects of ER were attenuated and ER ceased to predict behavioral performance in kindergarten. The implications of these findings for prevention and intervention are discussed.

Mills, R., Alati, R., O'Callaghan, M., Najman, J. M., Williams, G. M., Bor, W., & Strathearn, L. (2011). Child abuse and neglect and cognitive function at 14 years of age: Findings from a birth cohort. *Pediatrics, 127*(1), 4-10. doi: 10.1542/peds.2009-3479

Objective: To examine the association between child maltreatment (abuse and neglect) and long-term cognitive outcomes within a prospective birth cohort. Methods: A birth cohort of 7223 children was recruited. Independent reports of suspected child maltreatment were confidentially linked to the longitudinal study database. The principal predictor variable was notification to the state child-protection authority for suspected maltreatment (abuse, neglect, or both). The outcome variables were scores on the Wide Range Achievement Test (WRAT) reading test and Raven's Standard Progressive Matrices (RSPM), completed at 14 years of age. Multivariate regression analysis was used

to adjust for potential confounders. Results: A total of 3796 subjects completed either the WRAT or RSPM. There was a higher loss to follow-up among children who had been reported to the state as suspected victims of maltreatment. After controlling for a range of possible confounders and modifiers, notification to the state for child maltreatment (abuse, neglect, or both) was associated with a lower score on both the WRAT (mean difference: -4.4 when the SD is 15 [95% confidence interval: -6.3 to -2.5]) and RSPM (mean difference: -4.8 when the SD is 15 [95% confidence interval: -6.7 to -2.9]). Both reported abuse and neglect were independently associated with lower reading ability and perceptual reasoning. Conclusions: Both child abuse and child neglect are independently associated with impaired cognition and academic functioning in adolescence. These findings suggest that both abuse and neglect have independent and important adverse effects on a child's cognitive development.

Moran, E. C. (2008). *The effects of maltreatment on the academic and social adjustment of high school students*. (Doctoral dissertation), California State University, Long Beach, CA.

The purpose of this study was to examine how the academic achievement and social adjustment of high school-aged children are affected by experiencing child maltreatment. The study focused on student's math scores, English scores, and overall GPA to analyze academic achievement, and on student suspensions, residential moves, and school transfers to analyze social adjustment. This study made use of an existing dataset obtained from the World Wide Web. The dataset was obtained from the "National Data Archive on Child Abuse and Neglect" The participants were high school students (N = 174) ranging in age from 14 to 24. The participants were put in the category of control group or maltreated group (based on the New York State Child Abuse and Maltreatment Register) and were monitored for 1 school year from 1987-1988. Results found that the maltreated group had more suspensions, residential moves, and school transfers when compared with the control group. Future studies should include a larger, more diverse sample.

Pears, K. C., Kim, H. K., Fisher, P. A., & Yoerger, K. (2013). Early school engagement and late elementary outcomes for maltreated children in foster care. *Developmental Psychology, 49*(12), 2201-2211. doi: 10.1037/a0032218

Children with a history of maltreatment and placement into foster care face elevated risks of poor psychosocial outcomes including school failure, substance use, externalizing, and deviant peer association. For children in the general population, school engagement appears to be a promotive factor in preventing negative outcomes. In this study, differences in 3 dimensions of school engagement (behavioral, affective, and cognitive) in early elementary school were explored in maltreated children in foster care (n = 93) and a community comparison group of low-socioeconomic status, nonmaltreated children (n = 54). It was also hypothesized that these 3 dimensions of school engagement would mediate the association between being maltreated and in foster care and several outcomes in late elementary school (Grades 3-5): academic competence, endorsement of substance use, externalizing behaviors, and deviant peer association. Measures were multimethod and multi-informant. Results showed that the children in foster care had lower affective and cognitive school engagement than children in the community comparison group. Structural equation modeling revealed that both affective and cognitive school engagement mediated the association between

group status and academic competence in late elementary school. Cognitive engagement also mediated the association between group status and engagement in risk behaviors. The identification of dimensions of early school engagement that predict later outcomes suggests potential points of intervention to change trajectories of academic and behavioral adjustment for maltreated children in foster care.

Perlman, S., & Fantuzzo, J. (2010). Timing and influence of early experiences of child maltreatment and homelessness on children's educational well-being. *Children and Youth Services Review, 32*(6), 874-883. doi: 10.1016/j.chidyouth.2010.02.007

Major national reports have highlighted the deleterious influence of early childhood familial risk factors that adversely influence young children's educational well-being. Guided by a developmental epidemiology framework, the purpose of the present population-based study was to examine the timing and influence of first experiences of substantiated child maltreatment and homelessness on children's academic achievement and attendance at the end of second grade for an entire cohort of 12,045 second grade students in a large, urban school district. Information on first experiences of substantiated child maltreatment and homelessness, birth risks, demographics, and academic achievement and attendance outcomes was obtained and linked through an integrated data system. Event history analyses were used to examine the timing of first experiences of homelessness and substantiated child maltreatment in early childhood. A series of multiple regression models was used to examine the relationship between first experiences of child maltreatment and homelessness on second grade academic achievement and attendance, when controlling for demographics, poverty, and birth risks. Results showed that after controlling for birth risks, poverty, and demographics, different patterns emerged for the influence of timing of first substantiated child maltreatment and homelessness on academic achievement and attendance. Practice and policy implications were discussed.

Perlman, S. M. (2011). *Building bridges to promote educational well-being: A population-based study of the impact and timing of out-of-home placement, child maltreatment & homelessness*. (Doctoral dissertation), University of Pennsylvania, Philadelphia, PA.

Major federal legislation has placed the educational well-being of at-risk children in the national spotlight. No Child Left Behind legislation has pressed American public schools to ensure that all children are meeting minimum academic standards by third grade (U.S. Department of Education, 2004). By setting the target at grade three, this legislation affirms the significance of early childhood and the necessity of early identification and intervention for vulnerable young children. Similarly, the Adoption and Safe Families Act has increased the accountability of state child welfare agencies for meeting the educational well-being needs of children in public child welfare systems. Guided by a developmental epidemiology framework, the purpose of the present population-based study was to examine the unique impact of out-of-home placement in a multiple risk context and explore the timing of first out-of-home placement, child maltreatment, and homelessness experiences in early childhood. Participants were a population of 12,045 second grade students in a large, urban school district. Information on social risk factors, birth risks, demographics, and academic achievement and adjustment outcomes were obtained and linked through the Kids Integrated Data System as part of a

larger collaborative study. Approximately four-percent of children in the cohort had a history of out-of-home placement by the end of second grade. Findings revealed a high co-occurrence of out-of-home placement with child maltreatment and homelessness. The unique impact of out-of-home placement in a multiple risk context was assessed using multiple logistic regression. Results showed that after controlling for substantiated child maltreatment and homelessness, out-of-home placement was no longer significantly related to academic achievement. Cox regression analyses demonstrated that child maltreatment and homelessness predicted to out-of-home placement and uncovered a significant interaction between poverty and homelessness and child maltreatment. This study provides an illustration of how administrative data can be used in a collaborative research process to inform understanding of the educational well-being of young children with histories of out-of-home placement. Implications from this study include: cross-agency training, integrated service planning and delivery, and enhanced collaboration between early childhood education programs and child welfare systems to promote access to high quality early childhood education experiences.

Reyome, N. D. (1994). Teacher ratings of the achievement-related classroom behaviors of maltreated and non-maltreated children. *Psychology in the Schools, 31*(4), 253-260. doi: 10.1002/1520-6807%28199410%2931:4%3C253::AID-PITS2310310402%3E3.0.CO;2-I

Studied the effects of maltreatment on achievement-related classroom behaviors in children (aged 5-12 yrs). Teachers completed an elementary school behavior rating scale for 33 maltreated Ss, 33 nonmaltreated public assistance Ss, and 33 nonmaltreated lower middle class Ss. Maltreated Ss' behavior was less adjusted to classroom demands and was less academically successful than the behavior of nonmaltreated Ss. Maltreated Ss exhibited fewer behaviors (e.g., originality) that were positively linked and more behaviors (e.g., disruptive social involvement) that were negatively linked to classroom achievement than did nonmaltreated lower middle class Ss. While maltreated Ss did not differ from nonmaltreated public assistance Ss in most negative classroom behaviors, maltreated Ss did engage in fewer academically oriented classroom behaviors.

Rouse, H. L. (2007). *What's behind being behind: A population-based investigation of multiple risks and school success*. (Doctoral dissertation), University of Pennsylvania, Philadelphia, PA.

No Child Left Behind (2001) requires all children to meet minimum academic standards by grade three. This mandate underscores the importance of early childhood intervention and the need for comprehensive methodological approaches to understand groups of children most vulnerable to early educational difficulty. The current study used a developmental-epidemiological approach to examine empirically the nature and extent of poverty, child maltreatment, homelessness, low maternal education, and birth risk for an entire population of urban second grade children. Findings from this study indicate that over 50% of these children experience two or more risk factors prior to second grade. The prevalence of each individual risk factor was over twice the national averages. Multiple logistic regression analyses of multifinality and equifinality revealed distinct patterns of risk related to cognitive and behavioral outcomes. Poverty, maltreatment, and homelessness were the most detrimental risk factors that negatively related to every outcome. Reading and mathematics achievement were significantly affected by every risk. Cumulative analyses revealed that the number of risk experiences significantly related to poor outcomes, regardless of the type of risk. No Child Left

Behind makes visible the fact that many children are not meeting minimum academic standards. It also makes visible the schools that are behind by implementing a zero tolerance accountability system for failure. Unfortunately, this legislation fails to make visible what's behind being behind. The current research study uncovers the multiple risk context that is significantly associated educational failures and thereby provides an opportunity to address equity. Educating children challenged by a disproportionate set of multiple risks calls for an allocation of resources capable of meeting these challenges. Moreover, this study illustrates a collaborative model that enhances the capacity to reveal what's behind being behind and makes visible the multiple public service agencies that are simultaneously charged with the well-being of children who are behind. This research calls for a broader multidisciplinary research agenda that empirically manifests risk and protective factors to promote educational well being for all children in public education, regardless of the challenges they face.

Rouse, H. L., & Fantuzzo, J. W. (2009). Multiple risks and educational well being: A population-based investigation of threats to early school success. *Early Childhood Research Quarterly, 24*(1), 1-14. doi: 10.1016/j.ecresq.2008.12.001

The current research study used a developmental-epidemiological approach to examine the prevalence and impact of multiple risks on educational outcomes for an entire population of second grade children in a low-income, urban public school system. The Kids Integrated Data System (KIDS) provided information about children's entire histories of involvement with public services from birth through the end of second grade. Educational risk factors identified through these systems included poverty, child maltreatment, homelessness, low-maternal education, and biological birth risks. Multiple logistic regression analyses revealed the differential impacts of type and amount of risk on multiple academic and behavioral outcomes. Findings emphasized the disproportionate educational challenges that fall squarely in the purview of other publicly funded service providers outside the education system. Implications of this study include the increasing of the collaborations between early childhood educators and public service systems such as child welfare and homelessness. Enhancing the educational well being of young children with disproportionate risks requires intentional, systematic, and comprehensive interventions that can only be done through such collaboration.

Rouse, H. L., Fantuzzo, J. W., & LeBoeuf, W. (2011). Comprehensive challenges for the well being of young children: A population-based study of publicly monitored risks in a large urban center. *Child & Youth Care Forum, 40*(4), 281-302. doi: 10.1007/s10566-010-9138-y

This population-based study investigated the unique and cumulative relations between risks that are monitored by public surveillance systems and academic and behavioral outcomes for an entire cohort of third graders in a large, urban public school system. Using integrated, administrative records from child welfare, public health, housing, and education for a population of over 10,000 students, this study documented the disproportionate prevalence of early risks that included low birth weight or preterm birth, inadequate prenatal care, teen mother, high lead exposure, low maternal education, child maltreatment, and homelessness. Multiple logistic regression analyses demonstrated that low maternal education (i.e., mothers without a high school degree) had the strongest association with third grade reading and math achievement, attendance, and school suspensions, controlling for child

demographics, poverty, and all other risks. Classroom behavior was significantly influenced by familial and social risks (i.e., teen mother, low maternal education, homelessness, and maltreatment), but not biological risks (i.e., preterm or low birth weight and high lead). The cumulative number of risk experiences was significantly related to both academic and behavioral outcomes and was most strongly associated with school attendance problems. Implications of the study for national child welfare and educational policy are discussed.

Rowe, E., & Eckenrode, J. (1993). *The Timing of Academic Problems among Maltreated and Non-Maltreated Children*. Paper presented at the Annual Convention of the American Psychological Association, Toronto.

This study uses survival analysis to investigate when maltreated children may become at risk in their school performance. While past research captures the average effect of maltreatment on academic achievement, it has not addressed how the effect is distributed across time. Using a sample of 330 maltreated and 330 non-maltreated children, researchers concentrated on poor grades (D, F, or Unsatisfactory) in English and mathematics and grade repetitions as their outcomes of interest. Maltreated children displayed greater risk than non-maltreated children for most outcomes from kindergarten through sixth grade. First grade was the time of highest risk for grade repetition for maltreated children whereas second grade was the period of highest risk for non-maltreated children. For mathematics and English grades, kindergarten was the time of greatest risk for both maltreated and non-maltreated children. While both groups exhibited similar outcomes for English grades, they varied for grade repetitions and math grades. While it is not surprising that maltreatment is associated with higher risk, these results suggest that maltreatment status may also produce differences in the timing of the risk. Included are 12 graphs which present the statistical findings.

Rowe, E., & Eckenrode, J. (1999). The timing of academic difficulties among maltreated and nonmaltreated children. *Child Abuse & Neglect*, 23(8), 813-832. doi: 10.1016/S0145-2134(99)00044-7

Examined the relationship between child maltreatment and the timing of academic difficulties. The timing of risk of experiencing an academic difficulty for the 1st time was analyzed for 314 maltreated and 330 nonmaltreated children (aged 5-18 yrs). Three types of academic difficulties were examined: (1) grade repetitions, (2) poor English grades, and (3) poor math grades. Results show that maltreated children displayed greater risk than nonmaltreated children of repeating a grade and receiving a poor English and mathematics grade for the 1st time across most elementary years. Maltreated children were at substantially higher risk than nonmaltreated children of repeating kindergarten and 1st grade. From 2nd-6th grade, maltreated and nonmaltreated children were indistinguishable in their risk of repeating a grade for the 1st time. In contrast, while the absolute risk of receiving a poor English or mathematics grade changed across the elementary years, the relative risk by maltreatment status did not.

Sawyer, R. J., & Dubowitz, H. (1994). School performance of children in kinship care. *Child Abuse & Neglect*, 18(7), 587-597. doi: 10.1016/0145-2134(94)90085-x

This study represents the first comprehensive assessment of the school performance of children placed in the care of a relative, an arrangement termed kinship care. The educational programs, academic achievement, and cognitive and language skills of the children were assessed with a teacher questionnaire and standardized tests. Compared to their peers, high rates of grade retention and participation in special and remedial education, as well as significant academic achievement, cognitive, and language deficits were found. Most teachers, however, reported that educational services were appropriate and several interventions had proven successful. Analyses of predictor variables showed that placement at a later age and fewer children in the home were associated with higher academic achievement. Results are reviewed in the context of other foster care studies, and recommendations are made regarding future research and educational needs of children in kinship care.

Sexton, E. T. (1998). *A study of the impact of risk factors on the developmental trajectory of maltreated children*. (Doctoral dissertation), University of Nevada, Reno, NV.

Maltreatment is becoming an increasingly common reality in children's lives. Both physical abuse and sexual abuse, and neglect have been implicated in a range of negative developmental outcomes for school-aged children. These include below average performance on IQ tests, learning problems, and a range of social and emotional problems—from aggression and hostility to apathy and withdrawal. Successful adaptation to school has been identified as a key developmental task for children. However, little research has been done on the impact of maltreatment on the school competence of children. This was a prospective study attempting to examine the effects of maltreatment on the trajectory of children through school. Its goal was first to extend the little research that has been done, and second to provide new information to schools to help inform more effective interventions to improve the success of maltreated children in school. Statistical analysis indicated that, although there was no evidence of a negative trajectory of achievement as the Sample children moved through school, there was a significant difference in achievement between the Sample and Comparison groups. Sample children had significantly lower achievement scores, and mean IQ scores than did a typical population. Children in the Sample group also had a significantly greater need for both Total Support Services and special education support services. They were also significantly more at risk for subsequent trauma and injury, having more hospitalizations, suicide attempts and police contacts than did children in the Comparison group. As earlier research found, the children in the Sample group were also significantly at-risk for subsequent identification as having learning disabilities and behavioral disorders. They were also more at-risk for developing psychopathology, which ranged from depression and thought disorders, to conduct disorder and attention deficit-hyperactivity disorder. Through analysis of within-group differences, this study found that children who had experienced physical or sexual abuse in conjunction with neglect had poorer outcomes than did children exposed to neglect alone.

Shonk, S. M., & Cicchetti, D. (2001). Maltreatment, competency deficits, and risk for academic and behavioral maladjustment. *Developmental Psychology, 37*(1), 3-17. doi: 10.1037/0012-1649.37.1.3

Maltreatment was predicted to negatively affect children's academic and behavioral adjustment through the creation of deficits in academic engagement, social competencies, ego resiliency, and ego control. Teachers' comprehensive evaluations, school records, and camp counselors' ratings were

obtained for 229 socioeconomically disadvantaged children (ages 5-12 years), 146 of whom had been maltreated. Maltreated children showed less academic engagement, more social skills deficits, and lower ego resiliency than nonmaltreated comparison children. Maltreated children manifested multiple forms of academic risk and showed more externalizing and internalizing behavior problems. The effects of maltreatment on academic maladjustment were partially mediated by academic engagement, whereas maltreatment's effects on behavior problems were mediated fully by social competencies and ego resiliency.

Strom, I. F., Thoresen, S., Wentzel-Larsen, T., & Dyb, G. (2013). Violence, bullying and academic achievement: A study of 15-year-old adolescents and their school environment. *Child Abuse & Neglect*, 37(4), 243-251. doi: 10.1016/j.chiabu.2012.10.010

Objectives: This study investigated academic achievement among adolescents exposed to violence, sexual abuse and bullying. Moreover, we sought to determine the individual and contextual influence of the adolescents' school environment in terms of bullying, classmate relationships and teacher support on academic achievement. Finally, we wished to assess whether school-level influence is different for the adolescents exposed to violence and sexual abuse versus the adolescents not exposed to these forms of abuse. **Methods:** This is a cross-sectional study of a sample of 7,343 adolescents between the ages of 15 and 16 from 56 schools in Oslo, Norway. We investigated associations between violence, sexual abuse, bullying, classmate relationships, teacher support and academic achievement. Linear regression was used to investigate associations on the individual level. Multilevel analyses were conducted to test for school level differences while controlling for both individual and contextual factors. **Results:** On the individual level, all combinations of violence and sexual abuse categories were significantly associated with lower grades. This was also true for bullying, while teacher support resulted in better grades. At the school level, the analysis showed that students in schools with higher levels of bullying performed worse academically. Each unit of increment in bullying in school corresponded to an average 0.98 point decrease in grades ($p < .01$) when we controlled for sociodemographic characteristics. The association remained significant when the model was tested separately for the nonbullied students, with a small reduction in the coefficient value (-.84, $p < .01$). No overall significance was found for the interaction between the school environment and adolescent exposure to violence, indicating that the school environment affects all students. **Conclusion:** Factors on both levels can contribute to reduced grades. This stresses the need to investigate individual and contextual factors simultaneously when examining academic achievement. Our results indicated that students attending schools with higher levels of bullying may show poorer school performance. This was true for all students regardless of previous exposure to violence and sexual abuse. This emphasizes the need for preventive efforts that focus not only on vulnerable groups, but on all students and the school context.

Sullivan, P. M., & Knutson, J. F. (2000). Maltreatment and disabilities: A population-based epidemiological study. *Child Abuse & Neglect*, 24(10), 1257-1273. doi: 10.1016/S0145-2134(00)29001-3

Assessed the prevalence of abuse and neglect among a population of children identified as a function of an existing disability, related specific types of disabilities to specific types of abuse, and determined

the effect of abuse and neglect on academic achievement and attendance rates for children with and without disabilities. Ss for this study were all 50,278 children enrolled in the Public (OPS) and Archdiocese schools of Omaha, Nebraska during the 1994-95 school year. An electronic merger of school records with Central Registry, Foster Care Review Board, and police databases was followed by a detailed record review of the circumstances of maltreatment. Analyses of the circumstances of maltreatment and the presence of disabilities established a 9% prevalence rate of maltreatment for nondisabled children and a 31% prevalence rate for the disabled children. Thus, the study established a significant association between the presence of an educationally relevant disability and maltreatment.

Trickett, P. K., McBridechang, C., & Putnam, F. W. (1994). The classroom performance and behavior of sexually abused females. *Development and Psychopathology*, 6(1), 183-194.

This study examines the relationship of child sexual abuse to classroom academic performance and behavior in a sample of 6-16-year-old girls. Half of the sample was sexually abused by a family member. The other half is a demographically similar nonabused comparison group. Measures of academic performance include school records, teacher's ratings of classroom behavior and performance, and parental reports of school performance. Possible mediators of the impact of sexual abuse on classroom performance and behavior - cognitive capability, perceived competence, and behavior problems-are also measured. Results can be summarized as follows. (a) A history of sexual abuse does predict academic performance: Abuse is directly negatively related to ratings of classroom social competence, competent learner, and overall academic performance and positively related to school avoidant behavior, but is not related to grades. (b) Sexual abuse is negatively related to cognitive ability and positively related to measures of behavior problems indicating depression, destructiveness, and dissociation. (c) Cognitive ability and perceived competence predict the more "academic" aspects of academic performance - grades, ratings as a competent learner, and overall academic performance. Behavior problems predict ratings as a competent learner, classroom social competence, school avoidant behavior, and overall academic performance.

Weiss, A. D., & Fantuzzo, J. W. (2001). Multivariate impact of health and caretaking risk factors on the school adjustment of first graders. *Journal of Community Psychology*, 29(2), 141-160. doi: 10.1002/1520-6629(200103)29:2<141::aid-jcop1010>3.0.co;2-6

The current investigation examined seven health and caretaking risk factors that threaten children's school adjustment: low birth weight, low Apgar score, lead poisoning, birth to a single mother, birth to a teen mother, child maltreatment, and out-of-home care. The purpose of this study was to assess the relationships among these risk factors and several indicators of school adjustment in an entire population of students. Participants included 9,088 first-grade students in a large urban school district. Information on risk factors and school adjustment was obtained from computerized records that were combined using record linkage. The independent and interactive effects of the risk factors on school adjustment were assessed using logistic regression. Results showed that six of the seven risk factors significantly increased children's risk for poor school adjustment. Findings were stable across several subsamples. No significant interactive effects were found among the risk factors. Implications for research and practice were discussed.

Widom, C. S., Czaja, S., Wilson, H. W., Allwood, M., & Chauhan, P. (2013). Do the long-term consequences of neglect differ for children of different races and ethnic backgrounds? *Child Maltreatment, 18*(1), 42-55. doi: 10.1177/1077559512460728

Scant research has examined how children of different races or ethnic backgrounds manifest consequences of neglect. We examined multiple domains of functioning (academic/intellectual, social/behavioral, and psychiatric), three theories (racial invariance, double jeopardy, and resilience), and potential confounding variables. Children with documented cases of neglect (ages 0-11) and matched controls without such histories were followed up and interviewed in adulthood (N = 1,039). The sample was 47.3% female, 62.4% White, 34.3% Black, and 3.4% Hispanic. Black and White neglected children showed negative consequences for IQ, reading ability, and occupational status compared to controls. Compared to same race and ethnic group controls, neglected White children showed extensive mental health consequences, Black children showed more anxiety and dysthymia, and Hispanic children showed increased risk for alcohol problems. Black and White neglected children differed in risk for violence compared to same race controls: Neglected Black children were arrested for violence two times more often than Black controls, whereas neglected White children were more likely than White controls to report engaging in violence. Findings provide some support for each theory (racial invariance, double jeopardy, and resilience). Understanding the factors that account for similarities and differences in consequences requires further investigation. Implications for research and policy are discussed.

Zolotor, A., Kotch, J., Dufort, V., Winsor, J., Catellier, D., & Bou-Saada, I. (1999). School performance in a longitudinal cohort of children at risk of maltreatment. *Maternal & Child Health Journal, 3*(1), 19-27.

OBJECTIVE: Previous research has suggested that child maltreatment is associated with poor school performance. However, previous studies have largely been cross-sectional or, if longitudinal, have had small sample sizes, short follow-up periods, or have not adequately controlled for confounders. The objective of this study is to determine the relationship between child maltreatment and school performance in a cohort of children at risk of maltreatment and followed since birth. METHOD: This prospective study followed children born at risk for maltreatment with semi-annual reviews of the North Carolina Central Registry of Child Abuse and Neglect. At ages six and eight years, children's teachers were surveyed using the Achenbach Teacher Report Form and project-developed questions regarding peer status. This information, along with control variables from maternal interviews, was used in logistic regression models to determine the impact of maltreatment on academic performance, peer status, and adaptive functioning. The generalized estimating equations (GEE) method was applied to adjust variance estimates for within-person correlations of school performance measures at two points in time. RESULTS: A substantiated maltreatment report is significantly associated with poorer academic performance ($p < 0.01$) and poorer adaptive functioning ($p < 0.001$) but not with peer status. CONCLUSIONS: Understanding the consequences of maltreatment, including poor academic performance and adaptive functioning, is important in planning educational, health, and social service interventions that may help abused or neglected children succeed in school and later in life. Longitudinal analysis is the best way to establish a causal relationship between maltreatment and subsequent school problems.

Appendix 3: Excluded studies (with reasons)

Aagaard, J. (1986). Prediction of educational achievement, behaviour and health at school using information from infancy health service. *Scandinavian Journal of Primary Health Care*, 4(2), 115-121.
Exclusion reason: Wrong outcomes

Alzate, M. M., & Rosenthal, J. A. (2009). Gender and ethnic differences for Hispanic children referred to child protective services. *Children and Youth Services Review*, 31(1), 1-7. doi: 10.1016/j.chilyouth.2008.05
Exclusion reason: Wrong comparator

Armenta, M.-F., & Romero, J. C. (2008). Consequences of direct and indirect family violence on children: Depression, anxiety, antisocial behavior and academic performance. *Revista Mexicana de Psicología*, 25(2), 237-248.
Exclusion reason: Not English/Scandinavian language full text;

Casanueva, C., Dolan, M., Smith, K., Ringeisen, H., & Dowd, K. (2012). Indicators of Well-Being Among Children in the United States Child Welfare System. *Child Indicators Research*, 5(3), 547-565. doi: 10.1007/s12187-012-9148-4
Exclusion reason: Wrong outcomes

Catipivic, M., Catipovic, V., & Novalic, D. (2010). The effects of neglect on child's school performance. *Socijalna Psihijatrija*, 38(3), 209-213.
Exclusion reason: Not English/Scandinavian language full text

Chandy, J. M., Blum, R. W., & Resnick, M. D. (1996). Gender-specific outcomes for sexually abused adolescents. *Child Abuse & Neglect*, 20(12), 1219-1231.
Exclusion reason: Wrong comparator

Chang, K. B., Jurecska, D. E., Lee-Zorn, C. E., & Merrick, J. (2012). If I value myself, I value school: The protective effect of self-esteem among abused females. *International Journal of Adolescent Medicine and Health*, 24(4), 349-353. doi: 10.1515/ijamh.2012.
Exclusion reason: Wrong comparator

Chapple, C. L., & Vaske, J. (2010). Child neglect, social context, and educational outcomes: Examining the moderating effects of school and neighborhood context. *Violence and Victims*, 25(4), 470-485. doi: 10.1891/0886-6708.25.4.470
Exclusion reason: Wrong comparator

Cheung, C., Lwin, K., & Jenkins, J. M. (2012). Helping youth in care succeed: Influence of caregiver involvement on academic achievement. *Children and Youth Services Review*, 34(6), 1092-1100. doi: 10.1016/j.chilyouth.2012.01.033
Exclusion reason: Wrong comparator

Christiansen, J. L. (1975). *Educational and psychological problems of abused children*. (Doctoral dissertation), Utah State University, Logan, UT.

Exclusion reason: Wrong comparator

Colon-Cordova, Y. (2012). *Sexual abuse and its relevance in the diagnosis and treatment of specific learning disabilities in school-age children*. (Doctoral dissertation), Universidad del Turabo, Gurabo, Puerto Rico.

Exclusion reason: Not English/Scandinavian language full text

Colon-Cordova, Y. (2012). *Abuso sexual y su relevancia en el diagnostico y tratamiento de problemas especificos de aprendizaje en ninos de edad escolar*. (Doctoral dissertation), Universidad del Turabo, Gurabo, Puerto Rico.

Exclusion reason: Not English/Scandinavian language full text

Crozier, J. C., & Barth, R. P. (2005). Cognitive and Academic Functioning in Maltreated Children. *Children & Schools*, 27(4), 197-206. doi: 10.1093/cs/27.4.197

Exclusion reason: Wrong population

Daignault, I. V., & Hebert, M. (2009). Profiles of school adaptation: Social, behavioral and academic functioning in sexually abused girls. *Child Abuse & Neglect*, 33(2), 102-115. doi: 10.1016/j.chiabu.2008.06.001

Exclusion reason: Wrong comparator

De Bellis, M. D., Hooper, S. R., Spratt, E. G., & Woolley, D. P. (2009). Neuropsychological findings in childhood neglect and their relationships to pediatric PTSD. *Journal of the International Neuropsychological Society*, 15(6), 868-878. doi: 10.1017/S1355617709990464

Exclusion reason: Dual publication

Dodge Reyome, N. M. (1988). *An investigation of the school performance of sexually abused and neglected children*. (Doctoral dissertation), Cornell University, Ithaca, NY.

Exclusion reason: Dual publication

Egeland, B. (1997). Mediators of the effects of child maltreatment on developmental adaptation in adolescence. In D. Cicchetti & S. L. Toth (Eds.), *Developmental perspectives on trauma: Theory, research, and intervention* (pp. 403-434). Rochester, NY: University of Rochester Press.

Exclusion reason: Full text not available

Farruggia, S. P., Greenberger, E., Chen, C. S., & Heckhausen, J. (2006). Perceived social environment and adolescents' well-being and adjustment: Comparing a foster care sample with a matched sample. *Journal of Youth and Adolescence*, 35(3), 349-358. doi: 10.1007/s10964-006-9029-6

Exclusion reason: Wrong population

Font, S., & Maguire-Jack, K. (2013). Academic engagement and performance: Estimating the impact of out-of-home care for maltreated children. *Children and Youth Services Review*, 35(5), 856-864. doi:

10.1016/j.chilyouth.2013.02.010

Exclusion reason: Wrong comparator

Frerer, K., & Sosenko, L. (2011). *Investigating the impact of at-risk factors and foster care status in secondary education outcomes*. Paper presented at the 5th International Technology, Education and Development Conference (INTED), Valencia, Spain.

Exclusion reason: Full text not available

Gibby-Smith, B. M. (1995). Correlations of grade point averages at a rural college with reports of abuse in rural families. *Psychological Reports, 77*(2), 619-622. doi: 10.2466/pr0.1995.77.2.

Exclusion reason: Wrong population

Goodman, M. B. (1996). *Cracks in the bell curve: the impact of chronic and complex trauma on the cognitive skills and knowledge of school-age children*. (Doctoral dissertation), Massachusetts School of Professional Psychology, Newton, MA.

Exclusion reason: Wrong outcomes

Goodman, R. D., Miller, M. D., & West-Olatunji, C. A. (2012). Traumatic Stress, Socioeconomic Status, and Academic Achievement Among Primary School Students. *Psychological Trauma-Theory Research Practice and Policy, 4*(3), 252-259. doi: 10.1037/a0024912

Exclusion reason: Wrong population

Hallbrooks, L. D. (2015). *The effects of childhood abuse and maltreatment on educational achievement and the role of parental emotional and financial support*. (Doctoral dissertation), California State University, Los Angeles, Los Angeles, CA.

Exclusion reason: Full text not available

Hegar, R., & Hegar, R. (1995). Maltreatment and the School-Age Child: Developmental Outcomes and Systems Issues. *Children and Youth Services Review, 17*(3), 452-454.

Exclusion reason: Not a primary study

Holt, M. K., Finkelhor, D., & Kantor, G. K. (2007). Multiple victimization experiences of urban elementary school students: Associations with psychosocial functioning and academic performance. *Child Abuse & Neglect, 31*(5), 503-515. doi: 10.1016/j.chiabu.2006.12.006

Exclusion reason: Wrong comparator

Hunter, N., & Mathur, S. (2007). *Educational Outcomes of Children on Guardianship or Custody Orders: A Pilot Study*. *Child Welfare Series. Number 42*. Canberra: Australian Institute of Health and Welfare.

Exclusion reason: Wrong exposure

Hunter, N., & Topfer, A. (2011). *Educational Outcomes of Children on Guardianship or Custody Orders: A Pilot Study, Stage 2*. *Child Welfare Series. Number 49*. Canberra: Australian Institute of Health and Welfare.

Exclusion reason: Wrong population

Ibrahim, N. K., Jalali, E. A., Al-Ahmadi, J. R., & Al-Bar, A. A. (2008). Prevalence, risk factors and outcome of childhood abuse reported by female university students in Jeddah. *Journal of the Egyptian Public Health Association*, 83(5-6), 329-351.

Exclusion reason: Wrong population

Irigaray, T. Q., Pachecob, J. B., Grassi-Oliveiraa, R., Fonseca, R. P., de Carvalho, J. C., & Kristensen, C. H. (2013). Child Maltreatment and Later Cognitive Functioning: A Systematic Review. *Psicologia-Reflexao E Critica*, 26(2), 376-387.

Exclusion reason: Ineligible meta-analysis/systematic review

Jimenez, M. E., Wade, R., Jr., Lin, Y., Morrow, L. M., & Reichman, N. E. (2016). Adverse Experiences in Early Childhood and Kindergarten Outcomes. *Pediatrics*, 137(2), e20151839. doi: 10.1542/peds.2015-1839

Exclusion reason: Wrong exposure

Jones, M. F. (1993). *Long-term consequences of child abuse and neglect on school achievement, behavior problems, health, and mental health in adolescence*. (Doctoral dissertation), University of California, Los Angeles, Los Angeles, CA.

Exclusion reason: Full text not available

Jonson-Reid, M., Kim, J., Barolak, M., Citerman, B., Laudel, C., Essma, A., . . . Thomas, C. (2007). Maltreated Children in Schools: The Interface of School Social Work and Child Welfare. *Children & Schools*, 29(3), 182-191.

Exclusion reason: Wrong outcomes

Keith-Lucas, A. (1995). Maltreatment and the School-Age Child: Developmental Outcomes and System Issues. *Residential Treatment for Children & Youth*, 12(3), 76-78.

Exclusion reason: Not a primary study

Kendall-Tackett, K. A., & Eckenrode, J. (1997). The effects of neglect on academic achievement and disciplinary problems: A developmental perspective. In G. K. Kantor & J. L. Jasinski (Eds.), *Out of darkness: Contemporary perspectives on family violence* (pp. 105-112). Thousand Oaks, CA: Sage.

Exclusion reason: Full text not available

Kerr, M. A., Black, M. M., & Krishnakumar, A. (2000). Failure-to-thrive, maltreatment and the behavior and development of 6-year-old children from low-income, urban families: A cumulative risk model. *Child Abuse & Neglect*, 24(5), 587-598. doi: 10.1016/S0145-2134%2800%2900126-5

Exclusion reason: Wrong outcomes

Khamis, V. (2000). Child psychological maltreatment in Palestinian families. *Child Abuse & Neglect*, 24(8), 1047-1059. doi: 10.1016/S0145-2134%2800%2900157-5

Exclusion reason: Wrong comparator

Khawaja, S., Khoja, A. A., & Motwani, K. (2015). Abuse among school going adolescents in three major cities of Pakistan: is it associated with school performances and mood disorders? *JPMA - Journal of the*

Pakistan Medical Association, 65(2), 142-147.

Exclusion reason: Wrong exposure

Kinard, E. (2001). Perceived and actual academic competence in maltreated children. *Child Abuse & Neglect*, 25(1), 33-45. doi: 10.1016/S0145-2134%2800%2900219-2

Exclusion reason: Wrong outcomes

Kline, D., & Christiansen, J. (1975). *Educational and Psychological Problems of Abused Children. Final Report*. Logan, UT: Utah State University, Logan. Department of Special Education.

Exclusion reason: Full text not available

Knight, S. K. (1986). *Learning characteristics of abused children in a residential treatment facility*. (Doctoral dissertation), University of Denver, Denver, CO.

Exclusion reason: Wrong comparator

Koutselini, M., & Valanidou, F. (2014). Children living with violence against their mothers: the side effects on their behaviour, self-image and school performance. *Pedagogy, Culture and Society*, 22(2), 213-231. doi: 10.1080/14681366.2013.815259

Exclusion reason: Wrong population

Kurtz, D. A. (2003). *Determining competent/resilient outcomes across multiple domains in sexually abused and nonabused females*. (Doctoral dissertation), University of Southern California, Los Angeles, CA.

Exclusion reason: Wrong population

Kurtz, P. D., Gaudin, J. M., Howing, P. T., & Wodarski, J. S. (1993). The consequences of physical abuse and neglect on the school age child: mediating factors. *Children and Youth Services Review*, 15(2), 85-104. doi: 10.1016/0190-7409(93)90038-B

Exclusion reason: Wrong outcomes

Lamphear, V. S. (1985). The impact of maltreatment on children's psychosocial adjustment: A review of the research. *Child Abuse & Neglect*, 9(2), 251-263. doi: 10.1016/0145-2134%2885%2990018-3

Exclusion reason: Outdated meta-analysis/systematic review

Leiter, J., Myers, K. A., & Zingraff, M. T. (1994). Substantiated and unsubstantiated cases of child maltreatment: Do their consequences differ? *Social Work Research*, 18(2), 67-82.

Exclusion reason: Dual publication

Macmillan, R., & Hagan, J. (2004). Violence in the transition to adulthood: Adolescent victimization, education, and socioeconomic attainment in later life. *Journal of Research on Adolescence*, 14(2), 127-158. doi: 10.1111/j.1532-7795.2004.01402001.x

Exclusion reason: Wrong comparator

Maguire, S., Williams, B., Naughton, A., Cowley, L., Tempest, V., Mann, M., . . . Kemp, A. (2015). A systematic review of the emotional, behavioural and cognitive features exhibited by school-aged

children experiencing neglect or emotional abuse. *Child: Care, Health and Development*, 41(5), 641-653. doi: 10.1111/cch.12227

Exclusion reason: Ineligible meta-analysis/systematic review

Mathias, J. L., Mertin, P., & Murray, A. (1995). The psychological functioning of children from backgrounds of domestic violence. *Australian Psychologist*, 30(1), 47-56. doi:

10.1080/00050069508259606

Exclusion reason: Wrong exposure

Navalta, C. P., Polcari, A., Webster, D. M., Boghossian, A., & Teicher, M. H. (2006). Effects of childhood sexual abuse on neuropsychological and cognitive function in college women. *The Journal of Neuropsychiatry and Clinical Neurosciences*, 18(1), 45-53. doi: 10.1176/appi.neuropsych.18.1.45

Exclusion reason: Wrong outcomes

Nikulina, V., Widom, C. S., & Czaja, S. (2011). The role of childhood neglect and childhood poverty in predicting mental health, academic achievement and crime in adulthood. *American Journal of Community Psychology*, 48(3-4), 309-321. doi: 10.1007/s10464-010-9385-y

Exclusion reason: Wrong outcomes

Oates, R., Peacock, A., & Forrest, D. (1984). The development of abused children. *Developmental Medicine & Child Neurology*, 26(5), 649-656. doi: 10.1111/j.1469-8749.1984.tb04504.x

Exclusion reason: Wrong outcomes

Oddone Paolucci, E., Genuis, M. L., & Violato, C. (2001). A meta-analysis of the published research on the effects of child sexual abuse. *The Journal of Psychology: Interdisciplinary and Applied*, 135(1), 17-36. doi: 10.1080/00223980109603677

Exclusion reason: Ineligible meta-analysis/systematic review

Peral Espejo, A. (1992). Psychopedagogical consequences of victims of child abuse: On self-image and scholastic performance. *Folia Neuropsychiatrica*, 27(1), 33-40.

Exclusion reason: Not English/Scandinavian language full text

Perez, C. M., & Widom, C. S. (1994). Childhood victimization and long-term intellectual and academic outcomes. *Child Abuse & Neglect*, 18(8), 617-633. doi: 10.1016/0145-2134%2894%2990012-4

Exclusion reason: Wrong population

Pieterse, D. (2015). Childhood maltreatment and educational outcomes: Evidence from South Africa. *Health Economics*, 24(7), 876-894. doi: 10.1002/hec.3065

Exclusion reason: Wrong outcomes

Potter, D. J. (2010). How maltreatment matters: Effects of child maltreatment on academic performance. *Sociological Studies of Children and Youth*, 13, 167-202. doi: 10.1108/S1537-4661(2010)0000013010

Exclusion reason: Wrong outcomes

Romano, E., Babchishin, L., Marquis, R., & Frechette, S. (2015). Childhood maltreatment and educational outcomes. *Trauma, Violence, & Abuse, 16*(4), 418-437. doi: 10.1177/1524838014537908
Exclusion reason: Ineligible meta-analysis/systematic review

Runyan, D. K., & Gould, C. L. (1985). Foster care for child maltreatment. II. Impact on school performance. *Pediatrics, 76*(5), 841-847.
Exclusion reason: Wrong comparator

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Exclusion reason: Not English/Scandinavian language full text

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Appendix 4: Orphans and school performance – a systematic mapping of literature

Year	Country	Study & Abstract
2004	England	<p>Abdelnoor, A., & Hollins, S. (2004). The effect of childhood bereavement on secondary school performance. <i>Educational Psychology in Practice</i>, 20(1), 43-54.</p> <p>This paper reports on a UK survey of GCSE examination results for children from schools throughout England who had lost a parent (n = 73) or sibling (n = 24) through death to establish whether this had a long-term impact on school performance, levels of anxiety and self-esteem, and school attendance. Participants were matched for school, age, gender and ethnicity, and a smaller group for socio-economic status. The Speilberger Anxiety and Coopersmith self-esteem inventories were administered alongside a customised family history questionnaire. Bereaved participants underachieved significantly depending upon age, gender, and parents' employment history. There was also a significant rise in anxiety among the parentally bereaved group. School attendance seemed unaffected. Childhood bereavement appears to be a robust factor in underachievement. The totality of the survey findings is discussed prospectively in this paper.</p>
2013	USA	<p>Amar, S. (2013). <i>Attachment, parentally bereaved adolescents, and high school outcomes in a large inner-city high school. (Doctoral dissertation). Walden University, Minneapolis, MN.</i></p> <p>U.S. and world communities face the challenges of understanding how children grieve and of giving them sufficient social and educational support. Inner-city minority adolescents have not been represented well in the bereavement and attachment literature. The purpose of the quantitative study was to use the attachment theory to understand the impact of parental bereavement on these adolescents. Data were collected using the Adult Attachment Interview (AAI), the Piers-Harris Children's Self- Concept Scale (2nd ed.), and school records. MANOVAs were used to analyze the influence of attachment organization, bereavement status, and gender on self-concept and academic and behavioral functioning in school. Results indicated that securely attached adolescents functioned better across all 3 variables than did insecure and unresolved/disorganized adolescents. There were no differences in functioning in the bereaved group according to attachment organization. Results according to gender indicated that although the female participants experienced more academic success and had fewer behavioral difficulties in school, their self-concept was more negative than that of their male counterparts. There were no differences in functioning in the bereaved group according to gender, but compared to the entire sample, the bereaved females no longer functioned better than males academically or behaviorally, and there were no longer differences in self-concept. Possible positive social changes include improvements in school-related student support such as promoting the use of the AAI, linking educational and clinical environments, and assisting schools in developing safe-base classroom environments that</p>

Year	Country	Study & Abstract
		could better meet students' needs according to their attachment organization and bereavement status.
1996	Spain	<p>Bengoechea Garin, P. (1996). Un análisis comparativo de respuestas a la privación parental en niños de padres separados y niños huérfanos en régimen de internado. [A comparative analysis of response to parental loss in orphans and children of separated parents in a boarding school]. <i>Psicothema</i>, 8(3), 597-608</p> <p>A comparative analysis of response to parental loss in orphans and children of separated parents in a boarding school. This study is to ascertain whether the response to parental loss in children of separated parents differs from that of orphans, in a boarding school context. Of the 976 children studied, 227 came from separated families, 69 were orphans and 17 were of unknown parentage, and these were compared to 663 children from normal families of differing ages and school levels. An analysis was carried out of the differences in several variables, such as personality, depression, maladjustment, family dissatisfaction, family atmosphere and education.</p>
2014	Sweden	<p>Berg, L., Rostila, M., Saarela, J., & Hjern, A. (2014). Parental death during childhood and subsequent school performance. <i>Pediatrics</i>, 133(4), 682-689.</p> <p>Objectives: Parental death during childhood has been linked to increased mortality and mental health problems in adulthood. School failure may be an important mediator in this trajectory. We investigated the association between parental death before age 15 years and school performance at age 15 to 16 years, taking into account potentially contributing factors such as family socioeconomic position (SEP) and parental substance abuse, mental health problems, and criminality. Methods: This was a register-based national cohort study of 772 117 subjects born in Sweden between 1973 and 1981. Linear and logistic regression models were used to analyze school performance as mean grades (scale: 1-5; SD: 0.70) and school failure (finished school with incomplete grades). Results are presented as beta-coefficients and odds ratios (ORs) with 95% confidence intervals (CIs). Results: Parental death was associated with lower grades (ORs: -0.21 [95% CI: -0.23 to -0.20] and -0.17 [95% CI: -0.19 to -0.15]) for paternal and maternal deaths, respectively. Adjustment for SEP and parental psychosocial factors weakened the associations, but the results remained statistically significant. Unadjusted ORs of school failure were 2.04 (95% CI: 1.92 to 2.17) and 1.51 (95% CI: 1.35 to 1.69) for paternal and maternal deaths. In fully adjusted models, ORs were 1.40 (95% CI: 1.31 to 1.49) and 1.18 (95% CI: 1.05 to 1.32). The higher crude impact of death due to external causes (ie, accident, violence, suicide) (OR: -0.27 [90% CI: -0.28 to -0.26]), compared with natural deaths (OR: -0.16 [95% CI: -0.17 to -0.15]), was not seen after adjustment for SEP and psychosocial situation of the family. Conclusions: Parental death during childhood was associated with lower grades and school failure. Much of the effect, especially for deaths by external causes, was associated with socially adverse childhood exposures.</p>

Year	Country	Study & Abstract
1942	USA?	<p>Blanchard, R., & Nemzek, C. (1942). The comparative academic achievement of orphanage and non-orphanage children. <i>The Journal of Social Psychology, 15(2)</i>, 309-315.</p> <p>77 pairs of orphanage and non-orphanage children, matched in age, sex, mental rating, grade location, teacher, language spoken at home, and physical defects, were compared in terms of teachers' marks in 11 academic subjects. No significant difference was found between the 2 groups. Citizenship marks of non-orphanage pupils were reliably the higher, while attendance records favored the orphanage group.</p>
1992	South Africa	<p>Cherian, V. I. (1992). Relation of parental education and life status to academic achievement by Xhosa children. <i>Psychological Reports, 71(3, Pt 1)</i>, 947-956.</p> <p>This study investigated the relationship between parental education and academic achievement of 1021 Xhosa pupils (369 boys and 652 girls) whose ages ranged from 13 to 17 years (M age, 15.6 yr.). The sample included 712 children for whom both parents were alive and 308 children for whom either or both parents were deceased. Children were chosen at random from the Standard 7/Year 9 population of Transkei, South Africa. A simple questionnaire was administered students to identify whether one or both parents were dead or both parents were living. A second questionnaire was administered parents or parent surrogates to obtain their formal education. The marks obtained by the pupils in the Standard 7 external examination conducted by the Department of Education of the Government of Transkei in seven subject areas were aggregated as the criterion measure. Analysis of variance showed significant effects of parental education on academic achievement of children regardless of whether the children's parents were deceased or alive.</p>
1997	South Africa	<p>Cherian, V. I., & Cherian, L. (1997). Relationship between parents' interest, life status and the academic achievement of Xhosa children in South Africa. <i>Journal of Psychology in Africa, 2</i>, 54-66.</p> <p>This study researched the relationship between parental interest, life status and academic achievement of 1021 Xhosa pupils (369 boys and 652 girls) whose ages ranged from 13 to 17 years (Mean age, 15.6 yr). The sample included 712 children for whom both parents were alive and 308 children for whom either or both parents were deceased. Children were chosen at random from the Standard 7 / Grade 9 erstwhile South African homeland of Transkei which remains incorporated into the Eastern Cape Province of South Africa. A questionnaire was used to obtain information on parental interest, life status and socioeconomic status. The aggregate of the marks awarded to pupils in seven subject areas in the Standard 7 examination held by the Department of Education was used as the criterion measure. Analysis of variance showed a significant relationship between parental interest and academic achievement of children from parents-living as well as parents-deceased homes except at low and high socioeconomic levels in parents-deceased homes among boys and at low socioeconomic level among boys in parents-living homes. The results are discussed contextually.</p>

Year	Country	Study & Abstract
1964	USA	<p>Crescimbeni, J. (1964). Broken homes affect academic achievement. <i>Education, 84(7), 437-441.</i></p> <p>On the basis of CA, IQ, sex, grade, school, teacher, and socio-economic level, 92 pupils from united homes were equated with 92 pupils from homes in which parents were separated, divorced, or dead. Children from intact homes were observed to be achieving .9 of a year beyond children from broken homes. Irrespective of the reason for family disorganization, achievement was significantly lower than that in the united home.</p>
1938	USA	<p>Curtis, E., & Nemzek, C. (1938). The relation of certain unsettled home conditions to the academic success of high school pupils. <i>The Journal of Social Psychology, 9(4), 419-435.</i></p> <p>Six factors were considered broken-home conditions: loss of father by death, divorce or separation, unemployment of father, loss of mother by death, divorce or separation, and employment of mother outside the home. 50 pupils for each of these categories were paired with pupils from normal homes on the bases of intelligence, chronological age, grade in school, sex, and nationality. An honor-point average based upon teachers' marks, computed for each of the 600 pupils, indicated that the school achievement of pupils from broken homes is inferior to that of pupils from normal homes. This was true for 7 comparisons, 4 of which were statistically significant while 2 approached statistical significance. The experimental and control pupils were later compared on a number of additional factors, such as number of siblings and language spoken in the home; none of these additional variables revealed more than a negligible difference.</p>
2005	USA	<p>Edelschick, T. L. (2005). <i>The effects of childhood bereavement on high school students' academic performance and perceived self-competence.</i> (Doctoral Dissertation). Harvard University, Cambridge, MA.</p> <p>This study examines the effects of childhood bereavement and parental response to bereavement on high school Grade Point Average (GPA) and Self-Competence, as measured by the Self-Perception Profile for Adolescents (Hatter, 1998), in a sample of 255 students from a low-income, predominantly minority high school in the Northeast. In Phase One of the study, I found that students who experienced non-parental losses did not differ from their non-bereaved peers in either GPA or Self-Competence. Students who experienced a parental loss prior to age 8 or after age 12 had significantly lower GPAs, on average, than their nonbereaved peers, while students who experienced a parental loss from 8 to 12 years of age had significantly higher GPAs, on average, than their non-bereaved peers. Regression analysis to predict GPA revealed an interaction between Bereavement and one of the nine domains of Self-Competence, Close Friendship. (For bereaved students, the effect of Close Friendship on GPA was negative; for non-bereaved students the effect was positive.) In Phase 2 of the study, using traditional item analysis to analyze self-report questionnaires, I identified three distinct, highly reliable dimensions of parental response: Parental Mental Health, Role Distinction, and Family Function. Parental Mental Health was significantly correlated with both GPA</p>

Year	Country	Study & Abstract
		and one of the domains of Self-Competence, Job Competence. Together, the findings from both phases of the study suggest that: (1) developmental considerations play a role in the effect of bereavement on academic performance; (2) social relationships may be affected by bereavement and may also play a mediating role in the effects of bereavement on GPA; and (3) parental responses to the death of an immediate family member are multi-dimensional and parents may respond well in one area while responding poorly in another.
1957	USA	<p>Feinberg, H., & Moscovitch, E. (1957). Achievement on the Stanford Achievement Test of children in difficult own home situations compared with children placed out of the home. <i>Journal of Experimental Education</i>, 26, 67-80.</p> <p>The Ss were children from the following 4 groups: living at home but referred to a guidance agency, in home for socially maladjusted, foster home, and orphan home. A previous study dealt with comparisons of the last 3 groups on the Stanford Achievement Test; in the study they are compared with the 113 children of the normal home group. Average subtest scores and inter-subtest correlations for the 4 groups are presented and compared. In addition, several brief case studies of Ss from the normal home group are given.</p>
1993	USA	<p>Feldman, B. I., & Rafferty, E. A. (1993). <i>Familial Configuration Influences on the Educational Performance of Urban High School Freshmen</i>. Paper presented at the Annual Meeting of the American Educational Research Association, Atlanta, GA.</p> <p>An ethnographic study assessed the family constellations of ninth graders in an urban public school through cluster analysis. Survey data were collected from a random sample of 120 high school freshmen and were used to compute 4 variables for each student: (1) presence of the mother in the home; (2) presence of the father in the home; (3) presence of other adults in the home; and (4) presence of other children in the home. The familial configurations of subjects were extended maternal (n=7), nuclear family (n=26), mother with children (n=46), orphaned (n=13), only child (n=21), and adopted (n=7). Family constellation, determined by cluster analysis, and gender served as independent variables in a general linear model used to assess student attendance at school and grade point average. Results indicate that the educational performance of males and females differs with respect to the types of familial configurations in which they find themselves. Females appear to perform most poorly in family units characterized by mother's presence and father's absence, but males perform best in groups where the mother and/or maternal relations were present. Contrary to expectations, males in this group of students perform best when the father is absent from the family configuration. This ethnographic approach appears promising for revising familial configuration effects within heterogeneous and transient populations. Two tables present study data.</p>
2013	Ethiopia	<p>Himaz, R. (2013). Impact of Parental Death in Middle Childhood and Adolescence on Child Outcomes. <i>Journal of African Economies</i>, 22(3), 463-490.</p>

Year	Country	Study & Abstract
		<p>This paper investigates whether the death of a parent during middle childhood (ages 7–8 to 11–12) has different effects on a child's schooling and psychosocial outcomes when compared with death during adolescence (ages 11–12 to 14–15) in Ethiopia. The data come from three rounds of the Young Lives longitudinal survey, conducted in 2002, 2006 and 2009, of a sample of around 850 children across 20 sentinel sites in Ethiopia. The results show that when a child's mother dies in middle childhood, it has a significantly negative impact on school enrolment. A parent's death also has a significant negative impact on a child's sense of optimism about the future. These effects are short term in nature and do not persist into adolescence. However, the children orphaned in middle childhood engage in significantly more paid employment and self-employment at age 14–15. In contrast to maternal death in middle childhood, maternal death in adolescence has no impacts on any of the outcomes considered in our sample. However, the death of a father in adolescence has a significant negative impact on school enrolment, maths scores and a child's sense of agency. It is unclear as to why this is the case, as these orphans do not seem to engage in more employment than others and there have been no significant disruption to caregiver arrangements. It is likely that the negative impact on enrolment and scores works through the lower sense of self-efficacy or agency.</p>
2002	Tanzania	<p>Makame, V., Ani, C., & Grantham-McGregor, S. (2002). Psychological well-being of orphans in Dar El Salaam, Tanzania. <i>Acta Paediatrica</i>, 91(4), 459-465.</p> <p>Forty-one orphans whose fathers and/or mothers had died from AIDS, and were living in the poor suburbs of Dar Es Salaam, Tanzania, were compared with 41 matched non-orphans from the same neighbourhoods. The subjects were given an arithmetic test and a semi-structured questionnaire concerning any internalizing problems, their attendance at school and their experiences of punishment, reward and hunger. The scale of internalizing problems comprised 21 items adapted from the Rand Mental Health and Beck Depression Inventories concerning mood, pessimism, somatic symptoms, sense of failure, anxiety, positive affect and emotional ties. Most orphans lived with aunts and uncles. Compared with non-orphans, they were significantly less likely to be in school but those who did attend school had similar arithmetic scores. Significantly more orphans went to bed hungry. Orphans had markedly increased internalizing problems compared with non-orphans ($p < 0.0001$) and 34% reported they had contemplated suicide in the past year. Multiple regression analysis indicated that the independent predictors of internalizing problem scores were sex (females higher than males), going to bed hungry, no reward for good behaviour, not currently attending school, as well as being an orphan.</p> <p>Conclusion: The orphans not only had unmet basic needs, but also had markedly increased internalizing problems, thus their long-term mental health would be in jeopardy. There is an urgent need to expand and improve current intervention programmes not only to meet the basic needs but also to include psychosocial support, counselling services for the orphans, and training for their carers and teachers.</p>

Year	Country	Study & Abstract
2009	Zimbabwe	<p>Makoni, P. (2009). <i>Factors that impact on learning in orphanhood in Zimbabwe.</i> (Doctoral Dissertation). University of South Africa, Pretoria.</p> <p>The aim of the study was to provide scientific knowledge regarding the factors impacting on the learning profile of orphans as compared to those who are not and to identify relationships between these factors and learning outcomes. This is a quantitative study and the Evaluation-Process and Outcome design was used. Structured quantitative data collection methods, questionnaires, interviews, observation and document analysis were used in this study. Maslow's humanistic motivation theory of learning is the theoretical framework. The population consists of four students and teachers from the Harare Metropole Province in Zimbabwe. A stratified random sampling procedure was used to sample schools and the simple random procedure was used to sample both students and teachers. The experimental design was used to allow comparisons among orphans and between orphans and non-orphans. Ethical principles to include consent, confidentiality and privacy were adhered to. Measures to uphold the quality of the study were applied. Findings of the study include that in the peri-urban area, students orphaned 1 year and below performed poorly compared to other orphans and the non-orphaned in the average examination marks, ($p < .023$). Lack of books was significantly different amongst the non-orphaned and orphans ($p < .003$), affecting those orphaned 1 year and below the most. There was a significant difference in the performance of orphans without mothers alive and those with mothers alive, in average coursework marks ($p < .001$) and in average examination marks ($p < .005$). The performance of single orphans, double orphans and non-orphans did not differ significantly but the post hoc analysis informed that the double orphan performed poorest in most subjects when compared to the single orphan and the non-orphaned. The majority of teachers 12 (66.7%) ($n = 18$) did not agree that relevant assignments were being given and 16 (88.9%) ($n = 18$) did not agree that reading references were available in the HIV/AIDS/Reproductive health and life-skills teaching-learning sessions observed. The majority of students (55.2% $n = 509$) had inadequate information on HIV and AIDS prevention and comparatively, those orphaned 1 year and below (62% $n = 29$) and those orphaned 2-3 years (62.5% $n = 48$) had inadequate information on HIV and AIDS prevention than the other groups. There was a difference in what the students perceived as life-skills and what the teachers reported as life-skills. It is recommended that this study be replicated on a larger scale in order to determine orphans' and non-orphans' learning outcomes covering national school settings amidst factors that impact on learning.</p>
1988	USA	<p>McCoy, L. A. (1988). <i>High school students from father absent divorced, father absent deceased and intact families and achievement, behavior, locus of control and self concept.</i> (Doctoral Dissertation). Hofstra University, Hempstead, NY.</p> <p>The purpose of the present study was to investigate the relationship between father absence and performance on four dependent measures. Six hypotheses and a research question were tested for significance. Subjects were 107 male and female high school students. Each was given the Nowicki-Strickland Locus of Control Scale (Nowicki and Strickland, 1973) and</p>

Year	Country	Study & Abstract
		<p>the Personal Attribute Inventory (Parish, 1978). The Revised Behavior Problem Check list (Quay and Petersen, 1983) was administered to the English teacher of each subject. Subject data regarding achievement were obtained from the cumulative record folders . Achievement scores on the Iowa Test of Basic Skills (Lindquist and Hieronymous, 1975) were recorded for each subject. A 3x4 analysis of variance design was used to analyze the data. The groups were father absent deceased, father absent divorced and father present boys and girls.</p> <p>On the scales of the RBPC, father absent boys, father present boys and father absent divorced girls scored highest on the Conduct Disorder scale, and Motor Excitement scale. Father absent divorced and deceased girls scored highest on the Anxiety Withdrawal scale. On the locus of control measure, father absent deceased boys and girls and father present boys scored most internal. This was contrary to prediction. The PAI was used to investigate whether self concept was a significant variable with regard to the analysis. It was found that the father absent divorced subjects had lower self concepts than the other groups. Self concept scores were correlated with Reading scores for the deceased group, Social Anxiety and locus of control scores for the divorced group and locus of control scores for the present group. An attempt was made to investigate the potential influence of same sex sibling and age of father absence for the father absent subjects. Four t-tests were employed to analyze this data and it was found that these variables were not significant in this sample.</p> <p>The results of the study were discussed with regard to the treatment of the father absent adolescent in terms of the available literature. Suggestions for future research were also presented.</p>
2007	Uganda	<p>Musisi, S., Kinyanda, E., Nakasujja, N., & Nakigudde, J. (2007). A comparison of the behavioral and emotional disorders of primary school-going orphans and non-orphans in Uganda. <i>African Health Sciences</i>, 7(4), 202-213.</p> <p>Background</p> <p>This study investigated the emotional and behavioral problems of orphans in Rakai District, Uganda, and to suggest interventions. Studies, elsewhere, have shown orphans to have high levels of psychological problems. However, in Uganda such studies are limited and no specific interventions have been suggested.</p> <p>Methods</p> <p>The study employed a cross-sectional unmatched case control design to compare emotional and behavioral problems of 210 randomly selected primary school-going orphans and 210 non-orphans using quantitative and qualitative methods employing standardized questionnaires, Focus Group discussions and selected Key Informant interviews. All children were administered Rutter's Children's Teacher Administered Behavior Questionnaire to measure psychological distress and a modified version of Cooper's Self-Report Measure for Social Adjustment. Standardized psychiatric assessments were done on children scoring > 9 on the Rutter's Scale, using the WHO-ICD-10 diagnostic checklists.</p>

Year	Country	Study & Abstract
		<p>Results</p> <p>Both orphans and non-orphans had high levels of psychological distress as measured using Rutter's questionnaire but with no significant statistical difference between the two groups (Rutter score > 9; 45.1% & 36.5% respectively; p= 0.10) and no major psychiatric disorders such as psychotic, major affective or organic mental syndromes. Psychological distress was associated with poor academic performance (p=0.00) in both groups. More orphans, than non-orphans had more common emotional and behavioral problems e.g. more orphans reported finding "life unfair and difficult" (p=0.03); 8.3% orphans compared to 5.1 % of the non-orphans reported having had past suicidal wishes (p=0.30) and more reported past "forced sex / abuse" (p=0.05). Lastly, the orphans' social functioning in the family rated significantly worse compared to the non-orphans (p= 0.05). Qualitatively, orphans, compared to nonorphans were described as " needy, sensitive, isolative with low confidence and self-esteem and who often lacked love, protection, identity, security, play, food and shelter." Most lived in big poor families with few resources, faced stigma and were frequently relocated. Community resources were inadequate.</p> <p>Conclusion</p> <p>In conclusion, more orphans compared to non-orphans exhibited common emotional and behavioral problems but no major psychiatric disorders. Orphans were more likely to be emotionally needy, insecure, poor, exploited, abused, or neglected. Most lived in poverty with elderly widowed female caretakers. They showed high resilience in coping. To comprehensively address these problems, we recommend setting up a National Policy and Support Services for Orphans and Other Vulnerable Children and their families, a National Child Protection Agency for all Children, Child Guidance Counselors in those schools with many orphans and lastly social skills training for all children.</p>
1992	Israel	<p>Oyserman, D., Benbenishty, R., & Ben-Rabi, D. (1992). Characteristics of children and their families at entry into foster care. <i>Child Psychiatry and Human Development</i>, 22(3), 199-211.</p> <p>This study provides an overview of children, their families, and their circumstances at the time that the child entered foster care in Israel. Data regarding a representative sample of 800 children were collected as part of the ongoing operation of a clinical information system set up for Israel's foster care service in 1988. Implications of our findings for interventions are discussed.</p>
1986	Israel	<p>Pasternack, R., & Peres, Y. (1986). The contribution of marriage to socialization: A comparison of achievements and social adjustment between offspring of one and two parent families in Israel. <i>Megamot</i>, 29(4), 372-392.</p> <p>Studied the effects of fatherlessness on the scholastic achievement, peer relationships, and school adjustment of boys and girls. Human subjects: 68 normal male and female Israeli children (living with widowed mothers). 100</p>

Year	Country	Study & Abstract
		<p>normal male and female Israeli children (living with divorced mothers). 33 normal male and female Israeli children (living with separated mothers). 78 normal male and female Israeli children (living with psychologically disturbed mothers). 279 normal male and female Israeli children (from intact families). The Ss from female-headed families were compared with a pair-matched control group. Data were obtained from school records and from tests and questionnaires administered at school.</p>
2014	Zimbabwe	<p>Pufall, E. L., Nyamukapa, C., Eaton, J. W., Campbell, C., Skovdal, M., Munyati, S., et al. (2014). The impact of HIV on children's education in eastern Zimbabwe. <i>AIDS Care</i>, 26(9), 1136-1143.</p> <p>Little is known about how HIV impacts directly and indirectly on receiving, or particularly succeeding in, education in sub-Saharan Africa. To address this gap, we used multivariable logistic regression to determine the correlation between education outcomes in youth (aged 15–24) (being in the correct grade-for-age, primary school completion and having at least five “O” level passes) and being HIV-positive; having an HIV-positive parent; being a young carer; or being a maternal, paternal or double orphan, in five rounds (1998–2011) of a general population survey from eastern Zimbabwe. The fifth survey round (2009–2011) included data on children aged 6–17, which were analysed for the impacts of the above risk factors on regular attendance in primary and secondary schools and being in the correct grade-for-age. For data pooled over all rounds, being HIV-positive had no association with primary school completion, “O” level passes, or being in the correct grade-for-age in adolescents aged 16–17 years. Additionally, HIV status had no significant association with any education outcomes in children aged 6–17 surveyed in 2009–2011. In 2009–2011, being a young carer was associated with lower attendance in secondary school (69% vs. 85%, AOR: 0.44; p = 0.02), whilst being a maternal (75% vs. 83%, AOR: 0.67; p < 0.01), paternal (76% vs. 83%, AOR: 0.67; p = 0.02) or double (75% vs. 83%, AOR: 0.68; p = 0.02) orphan was associated with decreased odds of being in the correct grade-for-age. All forms of orphanhood also significantly decreased the odds of primary school completion in youths surveyed from 1998 to 2011 (all p < 0.01). We found no evidence that HIV status affects education but further evidence that orphans do experience worse education outcomes than other children. Combination approaches that provide incentives for children to attend school and equip schools with tools to support vulnerable children may be most effective in improving education outcomes and should be developed and evaluated.</p>
2005	Australia	<p>Ruschena, E., Prior, M., Sanson, A., & Smart, D. (2005). A longitudinal study of adolescent adjustment following family transitions. <i>Journal of Child Psychology and Psychiatry</i>, 46(4), 353-363.</p> <p>Background: This study examined the impact of family transitions, that is, parental separation, divorce, remarriage and death, upon the lives of Australian children and adolescents in a longitudinal study of temperament and development.</p>

Year	Country	Study & Abstract
		<p>Methods: Using longitudinal and concurrent questionnaire data, outcomes for young people experiencing transitions were compared with those of a random comparison group whose biological parents remained together.</p> <p>Results: No significant group differences were found with regard to behavioural and emotional adjustment concurrently or across time, nor on academic outcomes and social competence. Significant differences between the groups were revealed in measures of parent–teen conflict and parent–child attachment. A number of gender differences were found, with female participants displaying both greater adaptive and maladaptive behaviours. Particular dimensions of temperament, as well as the parent's overall rating of their child as easy or difficult, were found to be important predictors of adjustment status for both transitions and comparison groups.</p> <p>Conclusions: Despite some methodological limitations, this study illustrated the resilience of children experiencing family disruption across childhood and adolescence.</p>
1935	USA	<p>Smith, H., & Hixon, L. (1935). A comparative study of orphanage and non-orphanage children. <i>The Elementary School Journal</i>, 36, 110-115.</p> <p>Comparison of 113 orphan and 426 non-orphan children, comprising the entire population of one elementary school, revealed on the Otis intelligence, Gates Silent Reading, and Stanford Achievement tests consistent but small and statistically insignificant differences which favored the non-orphans. The latter, it should be noted, came from relatively superior homes.</p>
2007	USA	<p>Tillman, K. H. (2007). Family structure pathways and academic disadvantage among adolescents in stepfamilies. <i>Sociological Inquiry</i>, 77(3), 383-424.</p> <p>Using National Longitudinal Study of Adolescent Health (Add Health) data, this research documents the prevalence of the different stepfamily forms in which American adolescents live, examines the family structure pathways through which adolescents traveled to arrive at their current family form, and explores the effects of these pathways on grades, school-related behavior, and college expectations (N = 13,988). Compared to those who have always lived with both biological parents, youth in pathways including divorce/separation or a nonunion birth experience significantly lower academic outcomes, while those whose pathways include parental death do not. Specific effects vary, however, according to the outcome examined. For example, the combination of divorce/separation and movement into the least common of family forms is associated with particularly poor GPA outcomes. Divorce/separation is also more detrimental than nonunion birth for college expectations, particularly when coupled with a transition into a stepfamily based on cohabitation. Divorce/separation and nonunion birth have similar, negative effects on school behavior problems. Overall, results indicate that living in a stepfamily does not benefit youth, and can in some ways disadvantage them, even compared to their peers in single-mother families. This is especially the case if youth transition into a stepfamily following a combination of stressful family</p>

Year	Country	Study & Abstract
		experiences. These findings underscore the importance of examining family effects from a longitudinal perspective.
1985	USA	<p>Van Eerdewegh, M. M., Clayton, P. J., & Van Eerdewegh, P. (1985). The bereaved child: Variables influencing early psychopathology. <i>British Journal of Psychiatry</i>, 147(2), 188-194.</p> <p>This is a 13-month follow-up study of 105 two to 17 year-old children bereaved of one parent, with 85 controls. Data were gathered on physical and mental health in the children and surviving parents, the child's sex and age and the bereaved parent's sex and psychopathology being included as risk factors. Dysphoria, falling school performance and withdrawn behaviour were significantly increased in bereaved children of both sexes at all ages, while temper tantrums, bedwetting and the depressive syndrome only increased in the age and sex categories normally associated with these conditions. A global index of psychopathology was increased compared with controls on most subgroups of bereaved children (P less than 0.0001), the highest scores for both sexes being associated with having a mentally ill (usually depressed) widowed mother. The results are discussed and suggestions made for future research.</p>
2002	USA	<p>Wetzel, R. D. (2002). <i>The impact of the death of a parent on the academic achievement of children.</i> (Doctoral Dissertation). University of Dayton, Dayton, OH.</p> <p>The purpose of this study was to determine if the death of one parent has any direct effect on the academic achievement of children. Review of existing literature related to reduced academic achievement of children from single parent families guided this research. The purpose of this study was to investigate the academic achievement of children between the ages of 9 and 17 years from families who had lost a parent by death, to determine if similar reduction in academic achievement occurred in these children as to those from other single parent family types. Individual family interviews were conducted to ascertain existing, post death, family structure and support. The interviews were conducted to investigate present family interactions, support mechanisms prior to and following the death of the parent in both the home and school setting, and to allow open dialogue to illuminate related topics brought forth by the families. Specific, open ended questions guided each interview in order to acquire information about support mechanisms such as: family, friends, teachers, school personnel, and other groups. Each interview concluded with the question of what the school could have done differently, if anything, to assist the child with his or her educational and emotional needs. Then the grades of the children in the study were obtained and reviewed. Statistical analysis was completed on three sets of grades (where possible) to determine any changes, whether statistically significant or not. The findings of this study indicate that the participating families, through the interview process, believed schools supported the children effectively and created a productive and encouraging environment. Further, the statistical analysis, while showing a decrease in the overall grade point average, did not demonstrate a statistically significant change.</p>

Year	Country	Study & Abstract
2016	USA	<p>Williams, L. D., & Aber, J. (2016). Testing for plausibly causal links between parental bereavement and child socio-emotional and academic outcomes: A propensity-score matching model. <i>Journal of Abnormal Child Psychology</i>, 44(4), 705-718.</p> <p>The extant literature on parentally bereaved children has focused almost exclusively on the presence of negative mental health and socio-emotional outcomes among these children. However, findings from this literature have been equivocal. While some authors have found support for the presence of higher levels of internalizing and externalizing problems or mental health problems among this population, others have not found such a relationship. Additionally, study designs in this body of literature have limited both the internal and external validity of the research on parentally bereaved children. The present study seeks to address these issues of internal and external validity by utilizing propensity-score matching analyses to make plausibly causal inferences about the relationship between bereavement and internalizing and externalizing problems among children from a nearly nationally representative sample. This study also extends examination of the influence of parental bereavement to other domains of child development: namely, to academic outcomes. Findings suggest a lack of support for causal relationships between parental bereavement and either socio-emotional or academic outcomes among U.S. children. The plausibility of assumptions necessary to draw causal inferences is discussed.</p>
2010	USA	<p>Wright, C. L. (2010). <i>Parental absence and academic achievement in immigrant students</i>. (Doctoral Dissertation). Florida International University, Miami, FL.</p> <p>Academic achievement and educational expectations as a function of parental absence were examined among 268 newly immigrant elementary, middle, and high-school students from Spanish-speaking countries. Data collected as part of a longitudinal study of adaptation and achievement in newly immigrant students were analyzed. Participants had varying experiences with parental absence, in terms of length of absence, gender of absent parent, and reason for absence. Reasons for parental absence included parental divorce, parental death, and serial migration, a cause unique to immigrant children. Students who experienced parental absence reported lower educational expectations. Students who experienced the death of a parent had lower achievement scores and lower expectations than students who did not experience parental death. Prolonged absence was also important, with students who experienced parental absence for more than one year performing worse than students who had minimal parental separation. In addition, boys who experienced parental absence because of serial migration performed worse academically than boys who did not have this occurrence. Educational expectations were reduced among students who experienced parental absence as a result of the migratory process, especially for younger students. The extent to which parental absence related to achievement and expectations through potential mediating factors, such as economic hardship, perceived school support, and parental school involvement was assessed with structural equation modeling. Overall, the model was able to explain some of the relationship between</p>

Year	Country	Study & Abstract
		parental absence and the academic achievement and educational expectations of immigrant students from Spanish-speaking countries.
2014	USA	<p>Wright, C. L., & Levitt, M. J. (2014). Parental absence, academic competence, and expectations in Latino immigrant youth. <i>Journal of Family Issues</i>, 35(13), 1754-1779.</p> <p>Academic outcomes as a function of parental absence were examined among 268 newly immigrant Latino youth from Argentina, Colombia, and Cuba. Participants experienced parental absence as a result of divorce, parental death, and serial migration. Students who experienced parental absence reported lower achievement expectations. Parental death, prolonged parental absence, and serial migration negatively affected the academic competence and expectations of students. The extent to which parental absence related to competence and expectations through potential mediating factors was assessed with structural equation modeling. Overall, the model was able to explain some of the relationship between parental absence and the academic competence and expectations of these Latino immigrant students.</p>
2010	China	<p>Xu, T., Wu, Z., Duan, S., Han, W., & Rou, K. (2010). The situation of children affected by HIV/AIDS in Southwest China: Schooling, physical health, and interpersonal relationships. <i>JAIDS</i>, 53(Suppl 1), S104-S110.</p> <p>Objective: To investigate the schooling, physical health and interpersonal relationships of children affected by HIV/AIDS in rural areas of southwest China.</p> <p>Methods: Using a structured survey, quantitative data were collected on a total of 116 children and 114 of their caregivers.</p> <p>Results: Parental illness or death adversely affected children's school attendance and school performance. Over one-third (36.2%) of children reported being ill for more than 3 days during the previous 6 months; more orphans were hospitalized during the latest illness than nonorphans, although the difference was not statistically significant. One-third (33.6%) of children were aware that their parents were HIV positive. Ten percent of orphans reported that their relationships with peers became worse after parental illness or death, which was significantly higher than nonorphans. Twenty-five percent of orphans reported they were teased by others compared with 1.9% of nonorphans.</p> <p>Conclusions: HIV infection has impacted negatively on the children in terms of education, health, and peer association. These findings can be used as preliminary data supporting intervention strategies and activities to improve the general welfare of children affected by HIV/AIDS in China.</p>

Appendix 5: Search strategies: Child abuse, maltreatment & neglect

Information specialist: Sólvi Biedilæ,

Search performed: 15.08.2016

Total number of hits:

With duplicates: 3406

Without duplicates: 2415

PsycINFO 1806 to July Week 4 2016

#	Searches	Results
1	exp child abuse/	25258
2	child neglect/	3523
3	(child* adj5 (abus* or neglect* or maltreat*)).tw.	35189
4	or/1-3	38668
5	academic achievement/ or academic overachievement/ or academic underachievement/ or achievement gap/ or mathematics achievement/ or reading achievement/ or science achievement/	61113
6	(academic* adj5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)).tw.	43438
7	(school* adj5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)).tw.	35230
8	(education* adj5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)).tw.	21553
9	(learning* adj5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)).tw.	29103
10	(math* adj5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)).tw.	10932

11	(reading* adj5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)).tw.	14874
12	((math* or reading* or school*) adj5 (scores or grades or skills)).tw.	29695
13	test scores*.tw.	15913
14	((reading* or math*) adj3 test*).tw.	10619
15	(gpa or grade point average*).tw.	7168
16	(standardi* adj2 test*).tw.	8983
17	((math* or reading* or grades or scores) adj10 percentile*).tw.	1156
18	final grades.tw.	407
19	((reading* or math*) adj3 (level* or abilit*)).tw.	14275
20	or/5-19	184184
21	4 and 20	742

Medline

Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present

#	Searches	Results
1	exp child abuse/	26466
2	(child* adj5 (abus* or neglect* or maltreat*)).tw.	21366

3	or/1-2	33327
4	achievement/ or exp educational status/ or reading/ or writing/ or mathematics/	162077
5	(academic* adj5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)).tw.	10638
6	(school* adj5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)).tw.	9964
7	(education* adj5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)).tw.	12538
8	(learning* adj5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)).tw.	14207
9	(math* adj5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)).tw.	2155
10	(reading* adj5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)).tw.	3642
11	((math* or reading* or school*) adj5 (scores or grades or skills)).tw.	8651
12	test scores*.tw.	7797
13	((reading* or math*) adj3 test*).tw.	3782
14	(gpa or grade point average*).tw.	8524
15	(standardi* adj2 test*).tw.	7416
16	((math* or reading* or grades or scores) adj10 percentile*).tw.	1395
17	final grades.tw.	126
18	((reading* or math*) adj3 (level* or abilit*)).tw.	4512

19 or/4-18

229172

20 3 and 19

651

Cochrane Library

ID	Search	Hits
#1	MeSH descriptor: [Child Abuse] explode all trees	502
#2	(child* near/5 (abus* or neglect* or maltreat*)):ti,ab,kw	937
#3	#1 or #2	937
#4	MeSH descriptor: [Achievement] this term only	423
#5	MeSH descriptor: [Educational Status] explode all trees	1269
#6	MeSH descriptor: [Reading] this term only	766
#7	MeSH descriptor: [Writing] this term only	327
#8	MeSH descriptor: [Mathematics] this term only	373
#9	(academic* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)):ti,ab,kw	823
#10	(school* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)):ti,ab,kw	1486
#11	(education* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)):ti,ab,kw	3840
#12	(learning* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)):ti,ab,kw	1549
#13	(math* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)):ti,ab,kw	204
#14	(reading* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)):ti,ab,kw	523
#15	((math* or reading* or school*) near/5 (scores or grades or skills)):ti,ab,kw	758

- #16 (test scores*):ti,ab,kw 13873
- #17 ((reading* or math*) near/3 test*):ti,ab,kw 525
- #18 (gpa or grade point average*):ti,ab,kw 263
- #19 (standardi* near/2 test*):ti,ab,kw 758
- #20 ((math* or reading* or grades or scores) near/10 percentile*):ti,ab,kw 72
- #21 (final grades):ti,ab,kw 138
- #22 ((reading* or math*) near/3 (level* or abilit*)):ti,ab,kw 323
- #23 #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18 or #19 or #20 or #21 or #22 24766
- #24 #3 and #23 58

Search History: Web of Science™ Core Collection

Set	Results	
# 3	683	#2 AND #1 <i>Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years</i>
# 2	243,419	TS=(((academic* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)) or (school* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)) or (education* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)) or (learning* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)) or (math* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)) or (reading* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)) or ((math* or reading* or school*) near/5 (scores or grades or skills)) or ("test scores") or ((reading* or math*) near/3 test*) or ("gpa" or "grade point average") or (standardi* near/2 test*) or ((math* or reading* or grades or scores) near/10 percentile*) or ("final grades") or ((reading* or math*) near/3 (level* or abilit*))))))

Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years

1 **34,015** TS=(child* near/5 (abus* or neglect* or maltreat*))

Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years

ProQuest –

- ERIC (1966 - current)
- PILOTS: Published International Literature On Traumatic Stress (1871 - current)
- Social Services Abstracts (1979 - current)
- Sociological Abstracts (1952 - current)

(SU.EXACT("Child Abuse") OR SU.EXACT("Child Neglect") OR SU.EXACT("Child Sexual Abuse") OR TI(child* near/5 (abus* or neglect* or maltreat*)) OR AB(child* near/5 (abus* or neglect* or maltreat*))) AND (SU.EXACT("Academic Achievement") OR SU.EXACT("High Achievement") OR SU.EXACT("Overachievement") OR SU.EXACT("Science Achievement") OR SU.EXACT("Reading Achievement") OR SU.EXACT("Mathematics Achievement") OR SU.EXACT("Writing Achievement") OR SU.EXACT("Low Achievement") OR SU.EXACT("Underachievement") OR SU.EXACT("Knowledge Level") OR SU.EXACT("Grades (Scholastic)") OR SU.EXACT("Grade Point Average") OR SU.EXACT("Test Results") or TI((academic* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)) or (school* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)) or (education* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)) or (learning* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)) or (math* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)) or (reading* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)) or ((math* or reading* or school*) near/5 (scores or grades or skills)) or ("test scores*") or ((reading* or math*) near/3 test*) or ("gpa" or "grade point average*") or (standardi* near/2 test*) or ((math* or reading* or grades or scores) near/10 percentile*) or ("final grades") or ((reading* or math*) near/3 (level* or abilit*))) OR AB((academic* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)) or (school* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)) or (education* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)) or (learning* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)) or (math* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)) or (reading* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)) or ((math* or reading* or school*) near/5 (scores or grades or skills)) or ("test scores*") or ((reading* or math*) near/3 test*) or ("gpa" or "grade point average*") or

(standardi* near/2 test*) or ((math* or reading* or grades or scores) near/10 percentile*) or ("final grades") or ((reading* or math*) near/3 (level* or abilit*)))

1272 treff

Appendix 6: Search strategies: Orphans

Søkt av Sølvi Biedilæ, 23.8.2016

Antall treff før dublettsjekk: 1013

Antall treff etter dublettsjekk: 754

PsycINFO 1806 to July Week 4 2016

#	Searches	Results
1	orphans/	770
2	(orphan* or parentless* or motherless* or fatherless*).tw.	3095
3	((lost or loss or death* or dead* or died* or dying* or bereav* or deceased*) adj5 (parent* or mother* or father*)).tw.	7929
4	or/1-3	10722
5	academic achievement/ or academic overachievement/ or academic underachievement/ or achievement gap/ or mathematics achievement/ or reading achievement/ or science achievement/	61113
6	(academic* adj5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)).tw.	43438
7	(school* adj5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)).tw.	35230
8	(education* adj5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)).tw.	21553
9	(learning* adj5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)).tw.	29103
10	(math* adj5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)).tw.	10932

11	(reading* adj5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)).tw.	14874
12	((math* or reading* or school*) adj5 (scores or grades or skills)).tw.	29695
13	test scores*.tw.	15913
14	((reading* or math*) adj3 test*).tw.	10619
15	(gpa or grade point average*).tw.	7168
16	(standardi* adj2 test*).tw.	8983
17	((math* or reading* or grades or scores) adj10 percentile*).tw.	1156
18	final grades.tw.	407
19	((reading* or math*) adj3 (level* or abilit*)).tw.	14275
20	or/5-19	184184
21	4 and 20	323

Medline - Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present

#	Searches	Results
1	Child, Orphaned/	561
2	(orphan* or parentless* or motherless* or fatherless*).tw.	13652
3	((lost or loss or death* or dead* or died* or dying* or bereav* or deceased*) adj5 (parent* or mother* or father*)).tw.	7992

4	or/1-3	21500
5	achievement/ or exp educational status/ or reading/ or writing/ or mathematics/	162161
6	(academic* adj5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)).tw.	10664
7	(school* adj5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)).tw.	9985
8	(education* adj5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)).tw.	12575
9	(learning* adj5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)).tw.	14236
10	(math* adj5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)).tw.	2163
11	(reading* adj5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)).tw.	3651
12	((math* or reading* or school*) adj5 (scores or grades or skills)).tw.	8668
13	test scores*.tw.	7822
14	((reading* or math*) adj3 test*).tw.	3779
15	(gpa or grade point average*).tw.	8544
16	(standardi* adj2 test*).tw.	7426
17	((math* or reading* or grades or scores) adj10 percentile*).tw.	1402
18	final grades.tw.	126
19	((reading* or math*) adj3 (level* or abilit*)).tw.	4519

20 or/5-19	229419
21 4 and 20	305

Cochrane Library

ID	Search	Hits
#1	MeSH descriptor: [Child, Orphaned] this term only	18
#2	(orphan* or parentless* or motherless* or fatherless*):ti,ab,kw	163
#3	((lost or loss or death* or dead* or died* or dying* or bereav* or deceased*) near/5 (parent* or mother* or father*)):ti,ab,kw	307
#4	#1 or #2 or #3	467
#5	MeSH descriptor: [Achievement] this term only	423
#6	MeSH descriptor: [Educational Status] explode all trees	1269
#7	MeSH descriptor: [Reading] this term only	766
#8	MeSH descriptor: [Writing] this term only	327
#9	MeSH descriptor: [Mathematics] this term only	373
#10	(academic* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)):ti,ab,kw	823
#11	(school* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)):ti,ab,kw	1486
#12	(education* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)):ti,ab,kw	3844
#13	(learning* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)):ti,ab,kw	1549
#14	(math* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)):ti,ab,kw	204

- #15 (reading* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)):ti,ab,kw 524
- #16 ((math* or reading* or school*) near/5 (scores or grades or skills)):ti,ab,kw 758
- #17 (test scores*):ti,ab,kw 13874
- #18 ((reading* or math*) near/3 test*):ti,ab,kw 525
- #19 (gpa or grade point average*):ti,ab,kw 263
- #20 (standardi* near/2 test*):ti,ab,kw 759
- #21 ((math* or reading* or grades or scores) near/10 percentile*):ti,ab,kw 72
- #22 (final grades):ti,ab,kw 138
- #23 ((reading* or math*) near/3 (level* or abilit*)):ti,ab,kw 323
- #24 #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18 or #19 or #20 or #21 or #22 or #23 24772
- #25 #4 and #24 20

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3 245 #2 AND #1

Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years

2 244,149 TS=(((academic* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)) or (school* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)) or (education* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)) or (learning* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)) or (math* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)) or (reading* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or

succeed*) or ((math* or reading* or school*) near/5 (scores or grades or skills)) or ("test scores*") or ((reading* or math*) near/3 test*) or ("gpa" or "grade point average*") or (standardi* near/2 test*) or ((math* or reading* or grades or scores) near/10 percentile*) or ("final grades") or ((reading* or math*) near/3 (level* or abilit*))))))

Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years

1 **29,098** **TOPIC:** ((orphan* or parentless* or motherless* or fatherless*)) **OR TOPIC:** (((lost or loss or death* or dead* or died* or dying* or bereav* or deceased*) near/5 (parent* or mother* or father*)))

Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years

ERIC, Pilots, Social Services Abstracts, Sociological Abstract - ProQuest

(SU.EXACT("Orphans") or all((orphan* or parentless* or motherless* or fatherless*) or ((lost or loss or death* or dead* or died* or dying* or bereav* or deceased*) near/5 (parent* or mother* or father*)))) AND (SU.EXACT("Academic Achievement") OR SU.EXACT("High Achievement") OR SU.EXACT("Overachievement") OR SU.EXACT("Science Achievement") OR SU.EXACT("Reading Achievement") OR SU.EXACT("Mathematics Achievement") OR SU.EXACT("Writing Achievement") OR SU.EXACT("Low Achievement") OR SU.EXACT("Underachievement") OR SU.EXACT("Knowledge Level") OR SU.EXACT("Grades (Scholastic)") OR SU.EXACT("Grade Point Average") OR SU.EXACT("Test Results")) or all((academic* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)) or (school* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)) or (education* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)) or (learning* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)) or (math* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)) or (reading* near/5 (achievement* or outcome* or performance* or underperform* or competence* or success* or succeed*)) or ((math* or reading* or school*) near/5 (scores or grades or skills)) or ("test scores*") or ((reading* or math*) near/3 test*) or ("gpa" or "grade point average*") or (standardi* near/2 test*) or ((math* or reading* or grades or scores) near/10 percentile*) or ("final grades") or ((reading* or math*) near/3 (level* or abilit*))))))

120 hits

Appendix 7: Quality appraisal form

1. Er formålet med studien klart formulert?

TIPS: Formålet kan være klart formulert med hensikt på:

- Populasjonen som studeres
- Eksponeringen populasjonen har vært utsatt for
- Sammenligningen som gjøres
- Utfallene som vurderes

Ja

Uklart

Nei

2. Ble personene rekruttert til studien på en tilfredsstillende måte?

TIPS:

- Var populasjonen(e) representativ(e) for en definert befolkningsgruppe?
- Var det noe spesielt med personene i studien?
- Ble alle personene som burde vært inkludert tatt med?

Ja

Uklart

Nei

3. Er det gjort rede for om respondentene skiller seg fra dem som ikke har respondert?

TIPS:

- Ikke-responderer er frafall i utvalget
- Dersom det er en registerstudie, er det sjelden frafall.

Ja

Uklart

Nei

4. Er svarprosenten høy nok?

TIPS:

- I spørreundersøkelser er det vanligvis OK med en svarprosent på > 70, så lenge forfatterne viser at respondenter og ikke-responderer har like karakteristika som befolkningen de er utvalgt fra
- I registerstudier er dette ikke relevant, og kan besvares med «JA»

Ja

Uklart

Nei

5. Ble eksponeringen presist målt?

a) Foreligger det måleskjevhet?

TIPS:

- Ble det brukt subjektive eller objektive målemetoder?
- Er målemetodene pålitelige (valide)?

Ja

Uklart

Nei

b) Foreligger det klassifiseringskjevhet?

TIPS:

- Ble det brukt samme prosedyre for å klassifisere personene til de ulike eksponeringsgruppene?

Ja	Uklart	Nei
----	--------	-----

6. Ble utfallet presist målt?

a) Foreligger det måleskjevhet?

TIPS:

- Ble det brukt subjektive eller objektive målemetoder?
- Er målemetodene gyldige (valide)?

Ja	Uklart	Nei
----	--------	-----

b) Foreligger det klassifiseringskjevhet?

TIPS:

- Er det etablert et godt system for å fange opp alle sykdomstilfeller/utfall?
- Ble samme målemetode brukt i alle gruppene?
- Var personene i kohorten og/ eller de som vurderte utfallet blindet mht. hvem som var eksponert (- og spiller det noen rolle?)

Ja	Uklart	Nei
----	--------	-----

7. Konfoundere

(a) Har forfatterne identifisert alle viktige konfoundere (forvekslingsfaktorer/effektforvekslere) i studiens design og/ eller analyse?

TIPS: Er det noen du tenker er viktig, som ikke er med i studien?

Ja	Uklart	Nei
----	--------	-----

(b) Har forfatterne tatt hensyn til kjente, mulige konfoundere (forvekslingsfaktorer/effektforvekslere) i studiens design og/ eller analyse?

TIPS:

- Se etter restriksjoner i design el. teknikker, for eksempel stratifisering, regresjons- eller sensitivitetsanalyse, som er benyttet for å korrigere eller justere for konfoundere.
- Er det andre viktige konfoundere som forfatterne burde tatt hensyn til?

Ja	Uklart	Nei
----	--------	-----

Andre kommentarer:

Totalscore: