**Parental Mentalization and Children’s Externalizing Problems: A Systematic Review and Meta-Analysis**

[Supplemental Online Material]

Maitane Nieto-Retuerto, Barbara Torres-Gomez, and Itziar Alonso-Arbiol

Department of Clinical and Health Psychology & Research Methods, University of the Basque Country UPV/EHU

Authors Note

Maitane Nieto-Retuerto  https://orcid.org/0000-0002-8474-9988

Barbara Torres-Gomez Icon

Description automatically generated <https://orcid.org/0000-0003-3430-1090>

Itziar Alonso-Arbiol  https://orcid.org/0000-0002-4638-085X

**S1. Supplementary Online Materials**

**Newcastle-Ottawa Scale Adapted for Cross-Sectional Studies**

**Selection** (Maximum 4 stars):

1. Representativeness of the sample:
   1. Truly representative of the average in the target population. \* (random sampling)
   2. Somewhat representative of the average in the target population. \* (non-random sampling)
   3. Selected group of users.
   4. No description of the sampling strategy.
2. Sample size:
   1. Justified and satisfactory. \*
   2. Not justified.
3. Ascertainment of the measurement tool:
   1. Validated measurement tool. \*\*
   2. Non-validated measurement tool, but the tool is available or described. \*
   3. No description of the measurement tool.

**Comparability** (Maximum 1 star)**:**

1. The potential confounders were investigated by subgroup analysis or multivariable analysis.
   1. The study investigates potential confounders. \*
   2. The study does not investigate potential confounders.

**Outcome** (Maximum 3 stars):

1. Assessment of the outcome:
   1. Cross-report. \*\*
   2. Self-report. \*\*
   3. No description.
2. Statistical test:
   1. The statistical test used to analyze the data is clearly described and appropriate. \*
   2. The statistical test is not appropriate, not described or incomplete.

This scale has been adapted from the Newcastle-Ottawa Scale (Wells et al., 2000) for cohort studies to perform a quality assessment of experimental studies for the systematic review and meta-analysis: “Parental Mentalization and Children’s Externalizing Problems: A Systematic Review and Meta-Analysis.”.

In the assessment of the outcome, our measures allow for self-report, therefore we have considered both self-report and cross-report.

We have not selected the *Non-response rate,* due to its non-applicability to the studies in our meta-analysis.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Author** | **Selection** (Maximum 4 stars): | | | **Comparability** (Max 1 star): | **Outcome** (Max 3 stars): | | **Score**  (range 0-8) |
|  |  | **Representativeness sample** | **Sample size** | **Ascertainment** | **Potential confounders** | **Assessment outcome** | **Statistical test** |
| **1** | Benbassat & Priel (2012) | \* | \* | \*\* | \* | \*\* | \* | 8 |
| **2** | Borelli et al. (2019) | \* | \* | \*\* | \* | \*\* | \* | 8 |
| **3** | Borelli et al. (2021) | \* | \* | \*\* | \* | \*\* | \* | 8 |
| **4** | Brown et al. (2023) | \* |  | \*\* | \* | \*\* | \* | 7 |
| **5** | Camisasca et al. (2018) |  |  | \*\* | \* | \*\* | \* | 6 |
| **6** | Carlone & Milan (2021) | \* | \* | \*\* | \* | \*\* | \* | 8 |
| **7** | Centifanti et al. (2016) | \* | \* | \*\* | \* | \*\* | \* | 8 |
| **8** | Charpentier-Mora et al. (2022) | \* |  | \*\* | \* | \*\* | \* | 7 |
| **9** | Colonnesi et al. (2019) |  |  | \*\* | \* | \*\* | \* | 6 |
| **10** | Colonnesi et al. (2020) |  |  | \*\* | \* | \*\* | \* | 6 |
| **11** | Condon et al. (2019) | \* | \* | \*\* | \* | \*\* | \* | 8 |
| **12** | Dieleman et al. (2020) | \* | \* | \*\* | \* | \*\* | \* | 8 |
| **13** | Dollberg et al. (2021) | \* | \* | \*\* | \* | \*\* | \* | 8 |
| **14** | Dollberg et al. (2023) |  |  | \*\* | \* | \*\* | \* | 6 |
| **15** | Ensink, Bégin, Normandin & Fonagy (2016) | \* | \* | \*\* | \* | \*\* | \* | 8 |
| **16** | Ensink, Bégin, Normandin & Fonagy (2017) | \* | \* | \*\* | \* | \*\* | \* | 8 |
| **17** | Ensink, Bégin, Normandin, Godbout & Fonagy (2017) | \* | \* | \*\* | \* | \*\* | \* | 8 |
| **18** | Ensink, Lereoux et al. (2017) | \* | \* | \*\* | \* | \*\* | \* | 8 |
| **19** | Feniger-Schaal & Koren-Karie (2021) | \* | \* | \*\* | \* | \*\* | \* | 8 |
| **20** | Ghanbari et al. (2023) | \* | \* | \*\* | \* | \*\* | \* | 8 |
| **21** | Gray et al. (2015) | \* | \* | \*\* | \* | \*\* | \* | 8 |
| **22** | Ha et al. (2011) | \* | \* | \* | \* | \*\* | \* | 7 |
| **23** | Hobby et al. (2023) | \* | \* | \*\* | \* | \*\* | \* | 8 |
| **24** | Hughes et al. (2017) | \* |  | \*\* | \* | \*\* | \* | 7 |
| **25** | Khoshroo & Seyed Mousavi (2022) | \* | \* | \*\* | \* | \*\* | \* | 8 |
| **26** | Kochanska & An (2023) | \* | \* | \*\* | \* | \*\* | \* | 8 |
| **27** | Konijn et al. (2020) | \* | \* | \*\* | \* | \*\* | \* | 8 |
| **28** | Koren Swisa et al. (2023) | \* | \* | \*\* | \* | \*\* | \* | 8 |
| **29** | Lunn et al. (2019) | \* |  | \* | \* | \*\* | \* | 6 |
| **30** | Meins et al. (2013) |  | \* | \*\* | \* | \*\* | \* | 7 |
| **31** | Menashe-Grinberg & Atzaba-Poria (2023) | \* | \* | \*\* | \* | \*\* | \* | 8 |
| **32** | Salo et al. (2021) | \* | \* | \*\* | \* | \*\* | \* | 8 |
| **33** | Salo et al. (2022) | \* | \* | \*\* | \* | \*\* | \* | 8 |
| **34** | Shai & Belsky (2017) | \* | \* | \* | \* | \*\* | \* | 7 |
| **35** | Shalev et al. (2023) | \* | \* | \*\* | \* | \*\* | \* | 8 |
| **36** | Smaling et al. (2016) | \* | \* | \*\* | \* | \*\* | \* | 8 |
| **37** | Suardi et al. (2020) | \* |  | \*\* | \* | \*\* | \* | 7 |
| **38** | Wade et al. (2021) | \* | \* | \*\* | \* | \*\* | \* | 8 |
| **39** | Walker et al. (2012) | \* |  | \*\* | \* | \*\* | \* | 7 |
| **40** | Yatziv et al. (2020) | \* |  | \*\* | \* | \*\* | \* | 7 |
| **41** | Zeegers et al. (2020) | \* |  | \*\* | \* | \*\* | \* | 7 |
| **42** | Zimmer-Gembeck et al. (2019) | \* | \* | \*\* | \* | \*\* | \* | 8 |

**S2. Supplementary Online Materials**

*Range Years of the Child for Each Study*

In order to perform moderation analyses, the range years of the child for each study was considered. To determine age groups, the stages considered have been early childhood (0-5 years), middle childhood (6-12), and adolescence (13-18).

|  |  |  |
| --- | --- | --- |
| **Author** | **Range of Children’s Age** | **Group for the moderation analysis** |
| Benbassat & Priel (2012) | 14-18 years | Adolescence |
| Borelli et al. (2019) | 8.03–17.67 years | Adolescence |
| Borelli et al. (2021) | 12- 17 years | Adolescence |
| Brown et al. (2023) | 13,34 months | Early childhood |
| Camisasca et al. (2018) | 12-22 months | Early childhood |
| Carlone & Milan (2021) | 3- 18 years | Age range too broad (no group) |
| Centifanti et al. (2016) | 58–64 months | Middle childhood |
| Charpentier-Mora et al. (2022) | 8-12 years | Middle childhood |
| Colonnesi et al. (2021) | 2-18 years | Age range too broad (no group) |
| Colonnesi et al. (2023) | 4,5 years | Early childhood |
| Condon et al. (2019) | 4-9 years | Age range too broad (no group) |
| Dieleman et al. (2020) | 11.74-18.80 years | Adolescence |
| Dollberg et al. (2021) | 3-5 years | Early childhood |
| Dollberg et al. (2023) | 3-6 years | Early childhood |
| Ensink, Bégin, Normandin & Fonagy (2016) | 7-12 years | Middle childhood |
| Ensink, Bégin, Normandin & Fonagy (2017) | 35–143 months | Age range too broad (no group) |
| Ensink, Bégin, Normandin, Godbout & Fonagy (2017) | 5-12 years | Middle childhood |
| Ensink, Lereoux et al. (2017) | 7-12 years | Middle childhood |
| Feniger-Schaal & Koren-Karie (2021) | 5- 12 years | Middle childhood |
| Ghanbari et al. (2023) | 2-12 years | Age range too broad (no group) |
| Gray et al. (2015) | 3-5 years | Early childhood |
| Ha et al. (2011) | 7 -11 years | Middle childhood |
| Hobby et al. (2023) | 51 months | Early childhood |
| Hughes et al. (2017) | 12 years | Adolescence |
| Khoshroo & Seyed Mousavi (2022)-o | 6-10 years | Middle childhood |
| Khoshroo & Seyed Mousavi (2022)-y | 3-6 years | Early childhood |
| Kochanska & An (2023) | 3 years | Early childhood |
| Konijn et al. (2020) | 1.8–17.3 years | Age range too broad (no group) |
| Koren Swisa et al. (2024) | 3-5 years | Early childhood |
| Lunn et al. (2019) | 9-16 years | Age range too broad (no group) |
| Meins et al. (2013) | 42-64 months | Early childhood |
| Menashe-Grinberg & Atzaba-Poria (2023) | 1–6.5 years | Age range too broad (no group) |
| Salo et al. (2021) | 12 months | Early childhood |
| Salo et al. (2022) | 30 months | Early childhood |
| Shai & Belsky (2017) | 54 months | Early childhood |
| Shalev et al. (2023) | 1.30-9.39 years | Age range too broad (no group |
| Smaling et al. (2016) | 20 months | Early childhood |
| Suardi et al (2020) | 12-42 months | Early childhood |
| Wade et al. (2021) | 18 months | Early childhood |
| Walker et al. (2012) | 36-54 months | Early childhood |
| Yatziv et al. (2020) | 66 months | Early childhood |
| Zeegers et al. (2020) | 3- 11 years | Age range too broad (no group) |
| Zimmer-Gembeck et al. (2019) | 29 to 83 months | Early childhood |

*Note*. O = Older (middle) childhood; Y = Younger (early) childhood.

**S3. Supplementary Online Materials**

|  |  |
| --- | --- |
| Mentalization Questionnaires | *k* |
| Mind-Mindedness (MM; Meins & Fernyhough, 2015) | | 14 |
| Parental Reflective Functioning Questionnaire (PRFQ; Luyten et al., 2017) | 11 |
| Parent Development Interview (PDI; Sleed et al., 2020) | 8 |
| Insightfulness (Oppenheim & Koren-Karie, 2002) | 2 |
| Five Minutes Speech Sample (FMSS, Gottschalk & Gleser, 1969) | 2 |
| Social Stories (Sharp et al., 2007) | 2 |
| Reflective Function Questionnaire (RFQ; Fonagy & Ghinai, 2008) | 1 |
| Working Model of the Child Interview (WMCI; Zeanah & Benoit, 1995)  Parental embodied mentalizing | 1  1 |
| Behavior Problem Questionnaires | *k* |
| The Child Behavior Checklist (CBCL; Achenbach, 1999) | 23 |
| Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997) | 9 |
| Brief Infant-Toddler Social and Emotional Assessment (BITSEA*;* Briggs-Gowan & Carter, 2007) | 2 |
| The infant–toddler social and emotional assessment (ITSEA; Carter et al., 2003) | 2 |
| Behavior Assessment System for Children Second Edition (BASC-2; Kamphaus& Reynolds, 2004) | 1 |
| Behavioral and Emotional Screening System (BASC-3 BESS; Kamphaus & Reynolds, 2015) | 1 |
| Eyberg Child Behavior Inventory (ECBI; Eyberg & Pincus, 1999) | 1 |
| Social Competence and Behavior Evaluation Scale (SCBE-30; LaFreniere, & Dumas,1996) | 1 |
| Youth Self-Report (YSR; Achenbach & Rescorla, 2001)  Teacher Report Form (Achenbach, 1991). | 1  1 |
| Moderators | *k* |
| Parental mental health —e.g., depression, trauma, anxiety, stress— | 19 |
| Children mental health —e.g., sexual abuse— | 11 |
| Parental sensitivity | 6 |
| Parenting behaviors | 6 |
| Children theory of mind/mentalization | 4 |
| Attachment | 2 |
| Child temperament | 2 |
| Studies with interventions programs | 7 |

*Questionnaires and Moderators Analyzed in the Studies Included in the Meta-Analysis*

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